Post-depositional alterations across varying soil types from archaeological inhumation burials – a geoarchaeological approach

Volume II of II

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Appendix I: Image collection of thin section mosaics (digital format only, see attached USB)

Appendix II: Chapters 1 and 2

IIA. Experiment: Investigation into the effects of different manufacturing methods on thin sections

Aim: To create thin sections from an urban soil utilising two methods of water removal (acetone vapour exchange and by low temperature drying) and assess to what extent this has an effect on the appearance of the finished thin section.

Materials: Bleach washed kaolin, coloured sands and distilled water were used for the preliminary tests of all four methods in both small in large Kubiena tins. A loosely compacted urban soil from the environs of King's Manor, Yorkshire, was sampled with three large Kubiena tins and three small Kubiena tins for the second batch of tests on a selection of the four methods.

Method: Four methods were tested: oven drying (35°C) (Courty *et al.* 1989), acetone vapour exchange (Miedema *et al.* 1974), acetone bath, and freeze drying. Methods are reviewed in Murphy (1986). Alternative versions of acetone vapour exchange have been suggested, such as that proposed by Fitzpatrick (1993) where the vapour exchange solution is a mixture of acetone and water which is gradually increased in acetone concentration.

Rationale: To assess the levels of disturbance caused during the different methods of thin section manufacture. The preliminary testing used laminar bands of coloured sands to enable disturbance to be visible by the level of mixing or tilting of the coloured bands. The second batch of tests used soils to assess the level of disturbance on a soil.

Hypothesis: It is hypothesized that oven drying will generate the least amount of disturbance as a product of manufacture.

Results:

Preliminary tests

The blocks composed of artificially laminated bands of the wet mixtures of coloured sands and clay were dried, impregnated with resin (Polylite), thin sectioned and mosaic images were captured (Figure A1, Figure A2, Figure A3 and Appendix I).

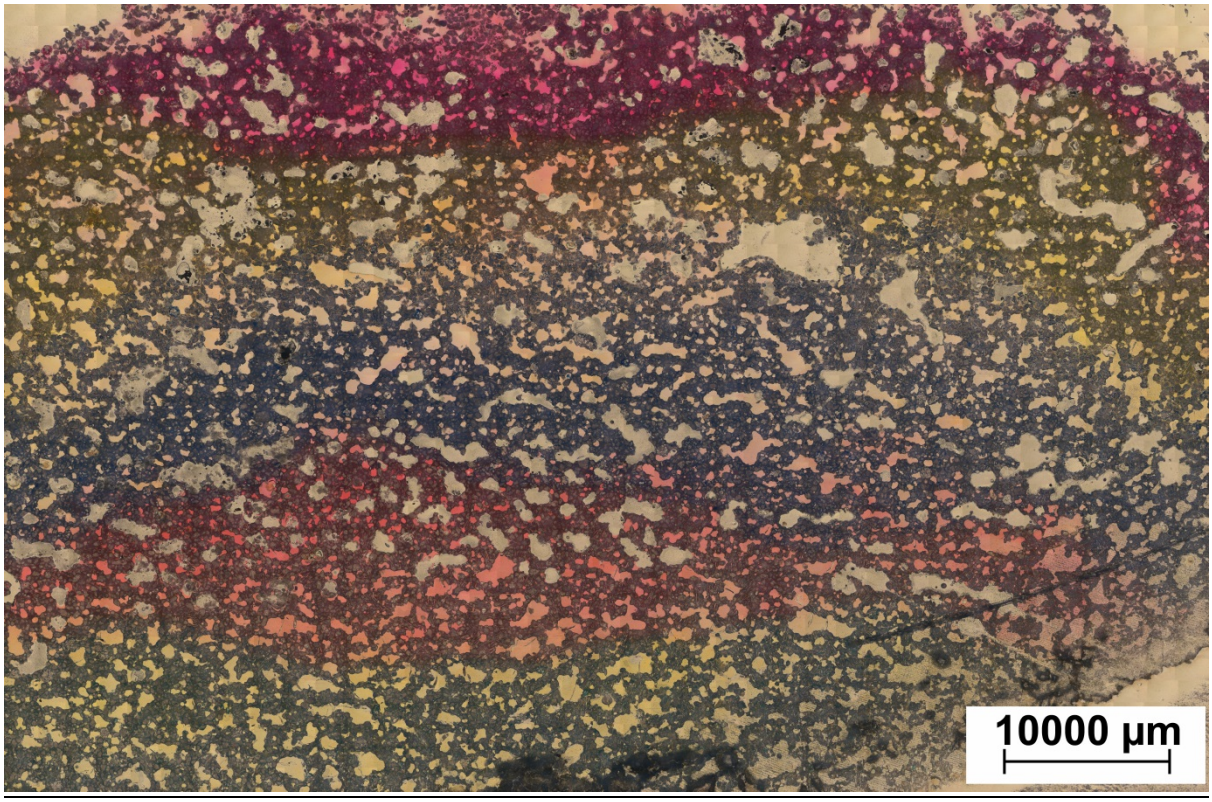


Figure A1: Freeze dry (large Kubiena tin)

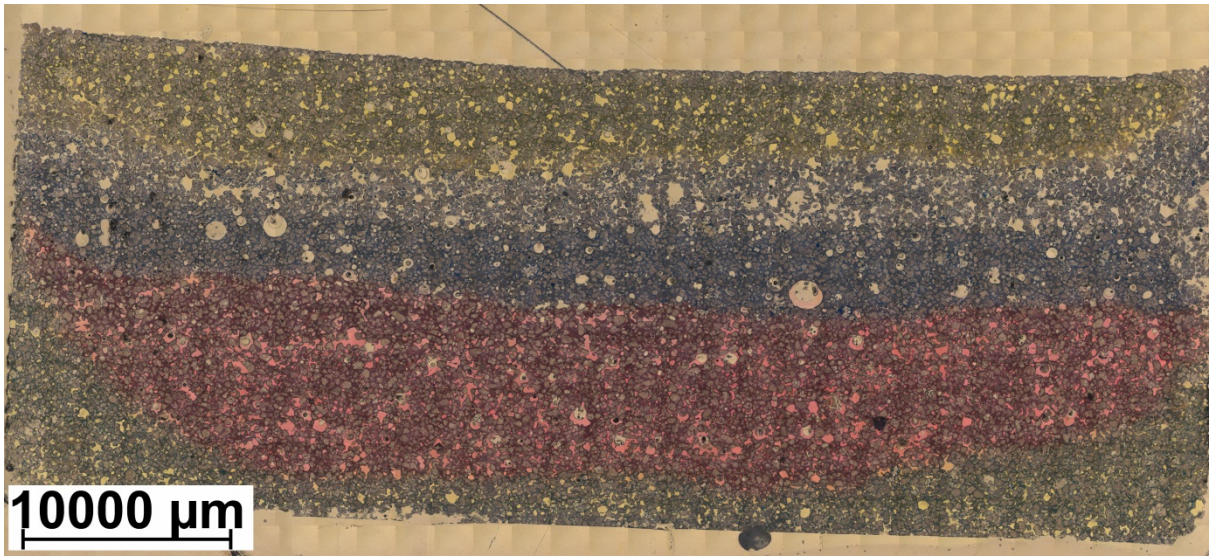


Figure A2: Oven dry (small Kubiena tin)

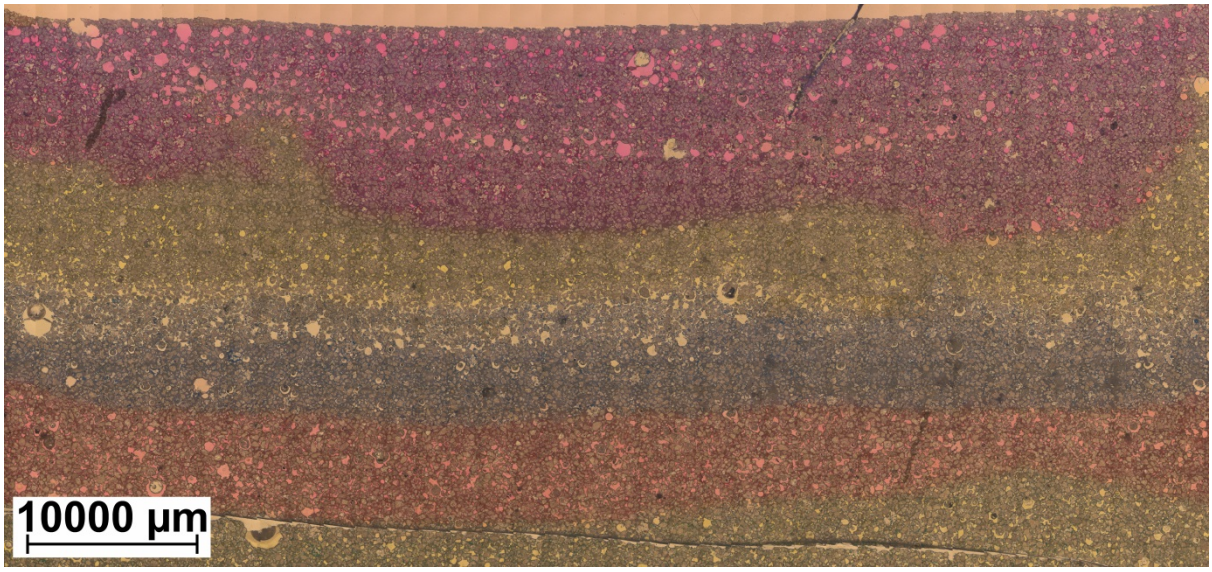
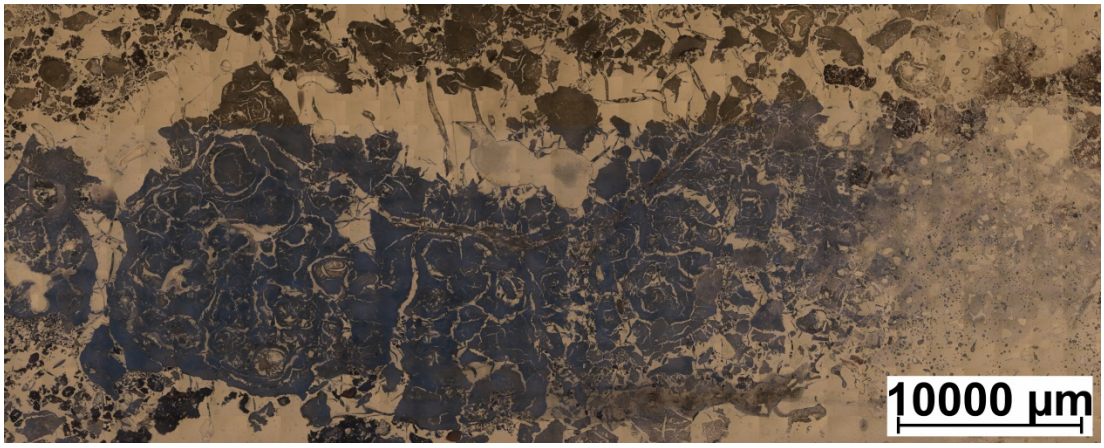


Figure A3: Acetone vapour exchange (small Kubiena tin)

Second batch of testing: drying methods on soil test blocks

The blocks composed of loosely consolidated urban soil from King's Manor were dried, impregnated with resin (Polylite), thin sectioned and mosaic images were captured (Figure A4, Figure A5 and Appendix I).

a) 

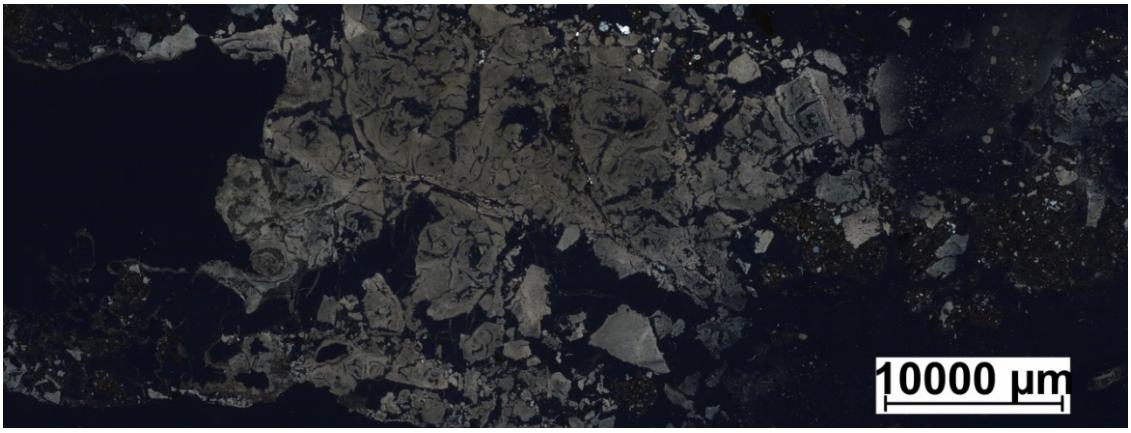
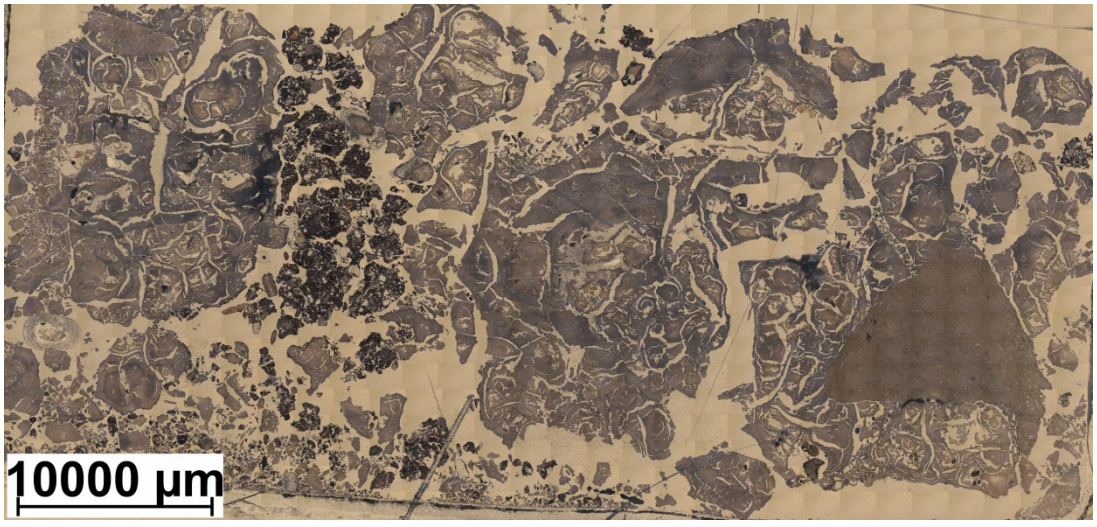
b) 

Figure A4: Soil test block dried by acetone bath (large Kubiena tin), a) plane polarised light (PPL) and b) cross polarised light (XPL)

a) 

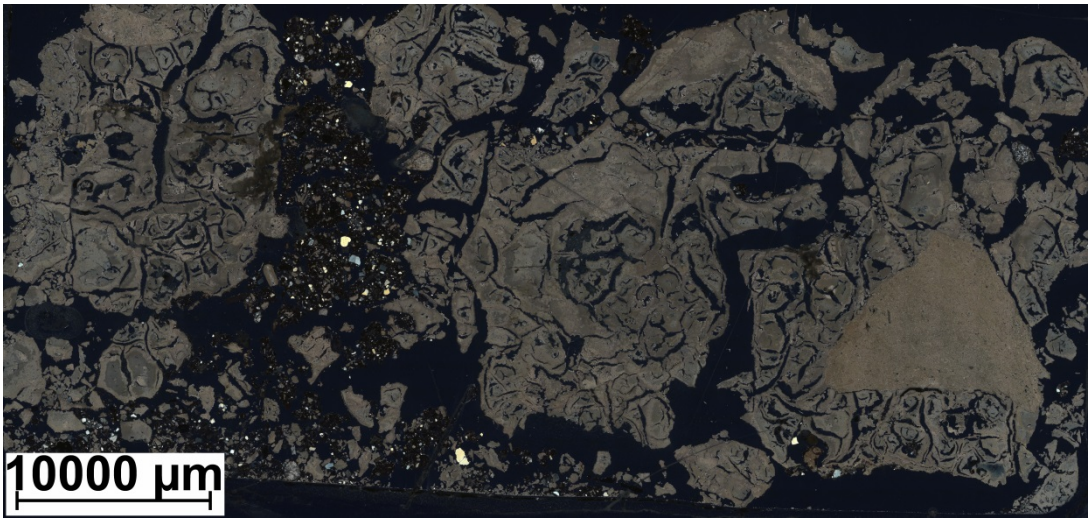
b) 

Figure A5: Soil test block dried by acetone vapour exchange (small Kubiena tin), a) (PPL) and b) (XPL).

Interpretations:

The preliminary tests of drying methods on artificially laminated coloured sand and clay mixtures showed a greater amount of large voids created in the freeze-dry sample (Figure A1) and a slight disturbance of the layers in the acetone vapour exchange sample (Figure A3), and the least amount of disturbance caused by manufacturing methods in the oven dry sample (Figure A2). In the drying methods tests on soils from King's Manor environs the sample dried by submersion in an acetone bath showed several cracks in the resin at the top of the block (Figure A4) which were not present in the sample dried by acetone vapour exchange (Figure A5). The soil sample dried by acetone vapour exchange showed the least amount of evidence for disturbance to the spatial organisation of the soil caused by manufacturing methods (Figure A5, Appendix I).

Conclusions:

Some of the drying methods cause some disturbance to the spatial organization of the samples during the manufacturing process in the drying (removal of water content) stage. Oven drying and acetone vapour exchange are the two drying methods that caused the least amount of disturbance to the soils from the four methods tested in this experiment.

IIB. Sampling sheet for experimental burials

INTERARCHIVE

Skeleton Sampling Record

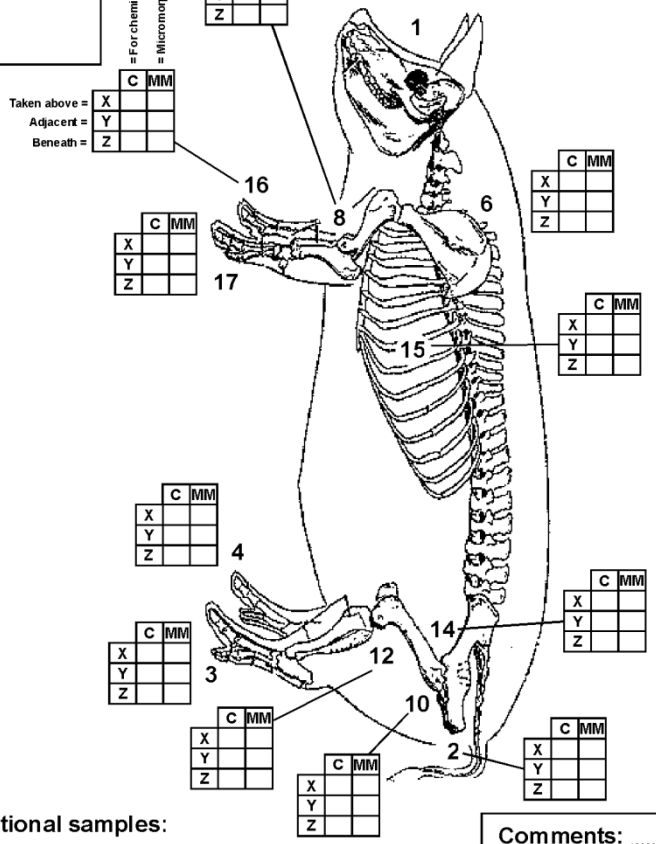
Coffin: Y/N Age of burial: .....
Soil type: .....

Site Code: .....
Skeleton No: .....
Grave Cut: .....
Fills: .....

North Arrow

= For chemistry
= Micromorph.

Taken above = C MM X Y Z
Adjacent = C MM X Y Z
Beneath = C MM X Y Z



Controls:

Site Control C1 C MM .....

Upper Grave Fill C2 C MM .....

Grave Fill Above body C3 C MM .....

C4 C MM .....

Sketch Position:

Additional samples:

A1 C MM .....

A2 C MM .....

A3 C MM .....

A4 C MM .....

.....cont.

Comments: .....

.....cont.

Digital photo numbers:

Recorded by:
Date:

IIC. Table of related distribution terminology

Courty et al. (1989)	Stoops (2003)
single population	monic
coated	chitonic
linked and coated	gefuric
intergrain	
aggregate	enaulic
embedded	porphyric

Appendix III: Hofstaðir

IIIA. Micromorphology raw data

C1 Controls (thin sections in numerical order)

Thin Section Description Recording Sheet

TS: 599 Site code: HST 11

Micro-unit: 1 of 1 Gr.: N/A

Sample positioning: C1hj Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish orange / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 2
- Channels: 2
- Chambers: 10
- Vughs: 1
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (simple twinning): 5, colourless/ 1st order greys, medium and small, 1, irregular linear;
- Inosilicates: Pyroxenes: CPX: 5, colourless/ 2nd order yellow with lower order rims, small,

2, pellicular;

- Nesosilicates: olivine: 2, colourless/ 3rd order blues with 2nd order yellow rims, small, 1 pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, pale green, medium, 2, irregular linear and pellicular;
  - 5, vitric, non-vesicular, colourless, 1, pellicular and irregular linear;
  - 5, extent 3 to 4, opaque/ opaque, isoalteromorph.

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, pale yellow / isotropic, medium, irregular form and diffuse edges, poor;
- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 1, dark brownish red/ isotropic, round, large, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): none

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, weakly clustered basic distribution, large, opaque/ opaque with purple edges, none, diffuse, none;

5, unoriented, random, large, orange/ orange, 4 laminations (<30), clear, none;

1, unoriented, random, small, red/ red, none, diffuse, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Mostly a fine grained groundmass with mottling (manganese nodules) and some yellower sediment patches (mixing from surrounding layers). Note that colourless small tephra is seen in the thinner areas of the thin section (*i.e.* slightly less than 30 µm thick) so this could be an artefact of manufacture and it could be that this is the same pale green tephra but the colour has been altered due to the thinness of the material in these areas of the slide.

Thin Section Description Recording Sheet

TS: 620 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-11

Sample positioning: C1de Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear, smooth

Groudmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown /isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: 10
- Vughs: 2
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (simple twinning): 2 , colourless/ 1st order greys, small, 1, linear;
- Inosilicates: Pyroxenes: 2, colourless/ mid 2nd order (no rims), small, 1, speckled;
- Nesosilicates: olivine: 2, colourless/ 3rd order blues with thin 2nd order yellow rims, 1,

pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, vesicular (25%), pale green, large to small, 1, pellicular;
  - 2, vitric, non-vesicular, pale green, medium to small, 1 irregular linear;
  - 1, vitric, non-vesicular, pale brown, small, 2, irregular linear and pellicular;
  - 2, opaque, small, 3, pellicular and irregular linear;

  Ash, 10, pale grey/ 4th order interference colours, small, strong linear basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: roots, 2, pale yellow/ high order white, linear and elliptical, fair;
- Other (e.g. bone, excrement, fungal remains): fungal sclerotia, 1, dark brown/ isotropic, medium round, good;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 2, medium, large tephra fragments, brown-orange;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, unoriented, random, small, red-orange/red, 2 lam (>30), diffuse, none;
- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: 1mm thick ash band horizontal to ground surface with clear straight boundaries.

Thin Section Description Recording Sheet

TS: 620 Site code: HST 11

Micro-unit: 2 of 2 Gr.: N/A

Sample positioning: C1de Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish grey/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 10
- Chambers: 10
- Vughs: none
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 1, colourless/ 1st order greys, small, 0, n/a
- Inosilicates: Pyroxenes: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale brown, small, 1, pellicular and irregular linear;

  Ash, 80, pale grey/ 4th order interference colours;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: roots, 1, pale yellow/ high order white, medium, linear and elliptical, good;
- Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): none

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, unoriented, random, small, red/ red, none, sharp, none;
- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: An ashy unit with some mixing having occurred with a brown coloured sediment at the base of the unit.

Thin Section Description Recording Sheet

TS: 623 Site code: HST 11

Micro-unit: 1 of 2 (micro-units 1 and 3, both above and below micro-unit 2) Gr.: N/A

Sample positioning: C1fh Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.):

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): medium brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 5
- Chambers: 5
- Vughs: 2
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5 , colourless/ 1st order greys, small, 2, pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ low third order blues with wide 2nd order

yellow rims, 2, pellicular;

- Nesosilicates: olivine: 2, colourless/ 3rd order blues with 2nd order pink rims, small, 2, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, opaque, small, extent 3 to 4, complex;
  - 5, vitric, non-vesicular, pale green, small, 1, irregular linear;
  - 5, vitric, non-vesicular, pale green, small, 2, irregular linear;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, small, brownish red/ isotropic, fair to poor;

•Other (e.g. bone, excrement, fungal remains): fungal sclerotia, 1, medium, dark brown /isotropic, round, good;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 5, small, rocks and minerals, medium brown/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, small, red/ red, none, clear, none, ZS texture;

2, unoriented, random, medium, red/ red, 1 lam (>30), clear, none;

1, unoriented, random, small, very dark red/ very dark red, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Tephra are quite small, units “f” and “h” are very similar in colour, inclusions, weathering and voids (most voids are horizontal and vertically oriented channels with interspersed unoriented small channels). Therefore, units “f” and “h” have been grouped together as one micro-unit, described on this sheet as micro-unit 1 of TS 623. For unit “g” see TS 623 micro-unit 2.

Thin Section Description Recording Sheet

TS: 623 Site code: HST 11

Micro-unit: 2 of 2 Gr.: N/A

Sample positioning: C1fh Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): pale grey/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 5
- Chambers: 2
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small, 0, N/A;
- Inosilicates: Pyroxenes: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, red/red, small, 3, complex;

  Pumice: 15, vesicular (25-50%), linear form, moderate clustered basic distribution, grey/ isotropic;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): none

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, unoriented, weak clustered basic distribution, small, orange/orange, 1 lamination (>30), clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Interpreted as an ash-rich layer (Aeolian deposits of volcanic silicates) with little tephra but some pumice.

Thin Section Description Recording Sheet

TS: 715 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-11

Sample positioning: C1a Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): pale yellow-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 5
- Chambers: 1
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (carlsbad twinned): 5, colourless/ 1st order greys, medium to large, A, 0, n/a;
- Inosilicates: Pyroxenes: 1, colourless/ 2nd order yellows with 2nd order pink centres,

small, 2, pellicular;

- Nesosilicates: Olivine: 2, colourless/ 3rd order blues with thin 2nd order pink rims, small, 1, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, colourless, large, 1, pellicular and irregular linear;
  - 2, hypocrystalline (25% feldspars), non-vesicular, brown, large, 1, pellicular;
  - 5, vitric, non-vesicular, pale green, medium, 1, pellicular and irregular linear;
  - 2, opaque, medium to large, 3 to 4, complex;
  - 1, vitric, non-vesicular, medium, 3 to 4, complex (to Fe-rich anisotropic septo-alteromorph)

  Ash: 5, pale grey/4th order interference colours, small, strongly clustered basic distribution and linear orientation referred to channel void;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: roots, 2, elliptical and linear, pale yellow/ high order white;

- Other (e.g. bone, excrement, fungal remains): sclerotia, 1, medium, round, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: 1, lr, plant roots, red/red;

- Matrix:

  Hypo-coatings (related, touching a surface): 30, small and medium and large, yellow-brown/ isotropic

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, small, orange/orange, none, clear, none, CZ texture;

1 nucleic, unoriented, random, medium, red/ dark red, >5 laminations of <30µm, clear, none, C texture;

1, unoriented, random, small, yellow/ yellow green, none, clear, none, CZ texture;

• Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: A mostly fine material sediment with some tephra at various stages of degradation, and some instances of Fe replacement. Most voids are channels or chambers. Wide range of nodule types.

Thin Section Description Recording Sheet

TS: 741 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-11

Sample positioning: C1bc Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow /isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 5
- Chambers: 1
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: none
- Inosilicates: Pyroxenes: CPX: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 20, hypocrystalline (75% feldspar), vesicular (20%), pale green, large with medium and small, 1, pellicular and irregular linear;
  - 20, hypocrystalline (60% feldspars and 5 % pyroxenes), vesicular (20%), pale green, large with medium and small, 2, pellicular;
  - 10, hypocrystalline, non-vesicular, pale green, 3, small with medium, pellicular and irregular linear;

  Calcite, 2, colourless/ 4th order pinks and greens, angular, 2, linear;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: roots, 2, pale yellow/ high order white, linear, excellent, strong referred distribution to channel voids;

•Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 30, small to thick, tephra, brown-yellow/isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 5, unoriented, random, small, orange/ orange, none, sharp, none;

• Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Most tephra are linked and coated large fragments of hypocrystalline tephra.

Thin Section Description Recording Sheet

TS: 741 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-11

Sample positioning: C1bc Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown /isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 10
- Chambers: 5
- Vughs: none
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, very small, 1 pellicular;
- Inosilicates: Pyroxenes: 1, colourless/ 2nd order yellows, very small, 2, pellicular;
- Nesosilicates: olivine: 1, colourless/ 3rd order blues with 2nd order yellow rims, small, 2,

pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 10, vitric, non-vesicular, pale green, medium to small, 1, irregular linear and pellicular;
  - 5, vitric, non-vesicular, pale brown, medium to small, 1 to 2, irregular linear and pellicular;
  - 2, extent 4 septo-alteromorph, red/ red, small;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: roots, 2, pale yellow/ high order white, linear, strong referred distribution to channel voids;

•Other (e.g. bone, excrement, fungal remains):

Fungal sclerotia, 5, medium to large, dark brown/ isotropic;

Fungal spores, 2,very small, dusty pink/ isotropic, strongly clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 2, small, hypocrystalline tephra at weathering extent 2, strong referred distribution to channel voids;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

1, unoriented, random, small, orange/orange (speckled in XPL), none, clear, none;

1 nucleic, unoriented, random, medium, orange/orange, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500μm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: The c/f ratio is much finer here (TS 741 micro-unit 2) in the lower micro-unit compared to the upper micro-unit (TS 741 micro-unit 1). Some tephra were at weathering extent 4 to Fe-rich alteromorphs with some of a raial structure and red anisotropic coating on their lower edges.

Grave 114 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 680 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-114

Sample positioning: 1 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50μm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: 5
- Channels: 5
- Chambers: 10
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 10, colourless/ 1st order greys, small, 2, pellicular and linear.
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks with lower order yellow rims,

strong clustered referred distribution to hypocrystalline tephra, 1 pellicular;

- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green, medium and medium large, 1 to 2, pellicular;
  - 2, hypocrystalline, non-vesicular, pale green, small, 1, pellicular;
  - 5, vitric, non-vesicular, opaque, 3 to 4, complex;
  - 1, vitric, non-vesicular, red /red, small, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, large, orange/ isotropic, irregular form with clear edges, poor, unoriented, random;

•Other (e.g. bone, excrement, fungal remains): fungal sclerotia 5, dark brown/ isotropic, medium, round, clear edges, fair to poor preservation, unoriented, weakly clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): none

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, small, orange/ orange, none, clear, none;

2, unoriented, random, small, yellow/ yellow (speckled), none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Weakly delineated regions of clustered areas of heavily degraded opaque tephra versus areas of heavily fragmented colourless tephra.

Thin Section Description Recording Sheet

TS: 680 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-114

Sample positioning: 1 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): yellow-brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 2
- Channels: 2
- Chambers: 5
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small, 1, pellicular
- Inosilicates: Pyroxenes: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 10, vitric, non-vesicular, small to medium, 1, pellicular;
  - 5, opaque, medium, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, medium, orange/ isotropic, irregular with diffuse edges, poor;
- Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): none

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 10, unoriented, random, small, orange/ orange, none, clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, yellow-brown / isotropic, small, SR, weakly clustered basic distribution, CZ;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Unit is an undulating 1.5cm thick horizontal band across the top of unit, differing by pale colour and smaller voids.

Thin Section Description Recording Sheet

TS: 713 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-114

Sample positioning: 2 (perpendicular oriented TS Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and smooth

Groudmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 15
- Chambers: 5
- Vughs: 5
- Cracks: 2

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small, 1, pellicular
- Inosilicates: Pyroxenes: none
- Nesosilicates: olivine: 1, colourless /high 2nd order pinks, very small, 1 pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, colourless/ isotropic, 1 to 3, irregular linear and speckled;

  Ash (with phytoliths): 5, pale grey/ high order pinks, strongly clustered basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 2, pale yellow/ isotropic, small and medium, SR with irregular edges, poor;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): fungal remains (sclerotia spores without rind): 5, medium and large, orange-brown/ isotropic, irregular form of botryoidal structure.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 5, medium to large, tephra, reddish orange/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, medium, opaque/ opaque, none, clear, none; 5, unoriented, weakly clustered basic, medium, none, clear, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Ashy material heavily disturbed throughout the micro-unit. Small traces in the structure of the groundmass suggest that peds (granular) may have started to develop if processes had continued. Frequent (15%) opaque material, which may be a secondary product from the weathering of tephra or a manganese-rich deposit (Mn-rich nodule), but it does not display purple colours in OIL.

Thin Section Description Recording Sheet

TS: 713 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-114

Sample positioning: 2 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish yellow / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 5
- Chambers: 10
- Vughs: 5
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys and pale 1st order yellows, small, 1,

pellicular

- Inosilicates: Pyroxenes: none
- Nesosilicates: olivine: none (see tephra)
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 10, vitric, vesicular (5%-10%), pale grey/ isotropic, 2-3 complex;
  - 2, hypocrystalline (feldspars and olivine), non-vesicular, pale grey, 2-3 complex;

  Ash (with phytoliths): 2, grey/ high order pinks, weakly clustered basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 5, medium to large, pale yellow/ isotropic, SR with clearly defined edges;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: wood: 10, medium to large, orange-brown/ isotropic, linear basic distribution;

•Other (e.g. bone, excrement, fungal remains): fungal remains (sclerotia, mycellae and spores): 10, brownish orange/ isotropic, oval and linear, sharp to diffuse, strong referred distribution to voids;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): none

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, random, medium, opaque/ opaque, none, clear, none;

2, unoriented, random, medium, red/ red, none, clear, none;

2, unoriented, random, medium and small, orange/ orange, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Thick orange band across the base of the micro-unit (c. 100 µm thick) with lots of humified plant materials and heavily weathered tephra, interpreted here as a coffin base with some fungal remains from wood rot (sclerotia a hyphae and spores all present indicative of bothh dormant and active phases of the fungal life cycle).

Thin Section Description Recording Sheet

TS: 726 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-114

Sample positioning: 16 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50μm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: none
- Channels: none
- Chambers: 5
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 10, colourless/ 1st order greys, small, 0 to 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 5, colourless/ 3rd order blues with 2nd order yellow rims, 1, pellicular;
- Nesosilicates: olivine: 1, colourless/ low 3rd order blues with lower order rims, 1,

pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 20, vitric, non-vesicular, pale brownish green/ isotropic, 1 to 4, complex (pellicular, irregular linear and speckled)

  Ash: 5, grey/ isotropic, moderate clustered basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 2, brownish red/ isotropic, medium, round, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): none

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: none

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: iron staining around speckled weathering of higher (extent 3 or 4) weathered tephras. More tephras display chemical than physical weathering.

Thin Section Description Recording Sheet

TS: 726 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-114

Sample positioning: 16 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 10
- Chambers: 2
- Vughs: 20
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ mid 2nd order yellows and oranges, 1 pellicular and irregular linear;
- Nesosilicates: olivine: 2, colourless/ low 3rd order blues with mid-2nd order yellow rims, 1,

pellicular

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 15, vitric, non-vesicular, pale grey/ isotropic, 2, complex (irregular linear and pellicular and speckled);
  - 5, hypocrystalline (feldspars and olivine), non-vesicular, colourless/ isotropic, 2 to 3, speckled and pellicular;

  Ash: 2, grey/ isotropic, moderate clustered basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 2, medium and large, yellow/ isotropic, irregular;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, medium and large, colourless/ high order white, oval, excellent;
- Other (e.g. bone, excrement, fungal remains):

Excrement: 5, small, dark brown/ isotropic, linear form of botryoidal structure, strong linear basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 5, medium, tephra, brownish red/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, random, medium and small, red/ red, none, clear, none;

10, unoriented, random, medium, opaque/ opaque, none, clear, none;

2, unoriented, random, medium and small, yellow-orange/ orange, none, clear, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Heavily chemical weathered tephras in strongly clustered distribution with topical dark brown botryoidal forms. Heavily physically weathered tephras in strong clustered distribution. Clustering of forms of weathering of tephras suggest that these alterations occurred in situ as part of the post-burial processes in these sediments. Strong evidence for Micromass disrupting tephras by internal accumulation in fissures.

Thin Section Description Recording Sheet

TS: 727 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-114

Sample positioning: C3a Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Micromass

Colour (x5 objective, PPL/XPL): orange-brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Groudmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: 5
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 10, colourless/ 1st order greys, small, 0 to 1, pellicular and linear;
- Inosilicates: Pyroxenes: none
- Nesosilicates: olivine: 2, colourless/ 3rd order blues with lower order rims, small, 1

pellicuar;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 10, hypocrystalline (30% feldspars), non-vesicular, medium to large, 1 to 3, pellicular and speckled;

  Ash, 5, grey/ low birefringence, strongly clustered basic distribution, medium sized aggregates;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

10, medium, orange-yellow / high order white, oval, good;

5, large, orange-brown/ isotropic, linear, fair;

•Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 2, small, tephra, orange-brown/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, weakly clustered basic distribution, small, opaque/ opaque, none, clear, none;

5, unoriented, rando, small, red/red, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

•Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50,

v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: A lot of fresh root remains, some with humic staining and most of which are strongly associated with the larger voids.

Thin Section Description Recording Sheet

TS: 729 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-114

Sample positioning: 3 and 4 (between feet) (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 2
- Channels: 5
- Chambers: 15
- Vughs: 2
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ mid 2nd order yellows, 1, pellicular;
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, 2 to 3, pellicular and irregular linear;

  Ash (with phytoliths): 2, grey/ high order pinks, moderately clustered basic distribution;

  Calcite: 1, colourless/ high order pinks and greens, very small;

  Pumice: 2, grey/ isotropic, small to small-medium, 1 to 2, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, orange/ brown, oval and linear with sharp edges, good;
- Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 2, medium, tephra, brown-yellow/ isotropic

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 10, unoriented, weak clustered basic distribution, medium and small, red/ red, none, clear, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: More heavily weathered tephras changed to a dark reddish brown (PPL) from exterior to interiors in a speckled fashion with central vesicles only in tephras at weathering extent 4, suggesting that perhaps the central vesicle is a post-depositional alteration rather than a vesicle of the tephra from the formation during the volcanic eruption.

Thin Section Description Recording Sheet

TS: 729 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-114

Sample positioning: 3 and 4 (between feet) (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and wavy

Groudmass

c/f ratio (50µm limit): Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: 5
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX:
- Nesosilicates: olivine: 2, colourless/ low 3rd order blues with mi-2nd order yellow rims, 1

pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, vesicular (5% -105), pale green/ isotropic, 2 to 3, complex;
  - 10, vitric, non-veisular, opaque/ opaque, SR-SA, small and very small, 3 to 4, complex;

  Calcite: 1, colourless/ high order pinks and green, very small, 1 linear;

  Pumice: 1, grey/ isotropic small-medium to medium, 2, speckled;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, orange-brown/ isotropic, linear form with diffuse edges, poor;
- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 2, medium reddish brown/ isotropic, round with clear edges;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 5, medium to large, tephra, orange-brown/ isotropic,

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, random, small and medium, orange/ orange, none, clear, none;

2, unoriented, random, medium, opaque/ opaque, none, sharp, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, ornage-brown/ isotropic, medium, clustered basic distribution, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Diffuse lower boundary. Opaque material coating most free feldspars (*i.e.* in the groundmass rather than still held within the tephra fragments). Mechanical weathered tephra (still *in situ*), in strong clustered referred distribution to excremental pedofeatures (although less common than the chemically weathered tephra).

Thin Section Description Recording Sheet

TS: 734 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-114

Sample positioning: 1 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 10
- Chambers: 2
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 1, linear, strong clustered

referred distribution to tephra;

- Inosilicates: Pyroxenes: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, small-medium to large, 2, pellicular and irregular linear;
  - 5, extents 3 to 4 and complex, brown or opaque or yellow coloured;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: roots, 2, medium, yellow/ high order white, oval, good, strong linear basic orientation and strong clustered referred distribution to channel voids;
- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 2, reddish brown/ isotropic, irregular form with diffuse edges, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 1, medium, tephra, brown-yellow/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 5, unoriented, random, medium, yellow-orange/ orange, none, diffuse, none; 1, unoriented, random, medium, orange/ orange, none, clear, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, brown-yellow/ isotropic, small and medium, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Most tephra are heavily weathered (weathering extents 3 and 4). There is a wide variety of colours and forms of heavily altered (weathering extents 3 and 4) tephra.

Thin Section Description Recording Sheet

TS: 734 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-114

Sample positioning: 1 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 45, 55

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: none
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 1, pellicular, weakly clustered referred distribution to tephra;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ high 2nd order pinks with wide mid-2nd order

yellow rims, 1, pellicular;

- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, 1, pellicular;
  - 2, vitric, non-vesicular, dark grey/ isotropic, 2, complex;
  - 10, vitric, dark greyish-brown/ isotropic, 3, complex with diffuse edges;

  Ash: 1, pale grey/ high order pinks, strongly clustered basic distribution;

  Pumice: 2, grey/ isotropic, small, diffuse and irregular edges;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 10, yellow-orange/ isotropic, linear to irregular, poor;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: charred plant material: 1, medium to large, opaque/ opaque, linear and angular, fair;

•Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: 1, medium, tephra, orange/ orange-red;

•Matrix:

Hypo-coatings (related, touching a surface): 2, large, tephra, orange-brown

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

Nucleic: 2, unoriented, random, medium, orange with pink areas/ orange, none, clear, none;

2, unoriented, weakly clustered basic, medium, red/ red, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500μm), angularity, size of clasts(e.g.CZS):

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Lots of types of processes evident regarding the coarse fraction, and should be investigated further with SED-EDS. The amorphous organic material is probably bone, but requires valid evidence for this interpretation, perhaps through SEM-EDS investigation.

Thin Section Description Recording Sheet

TS: 843 Site code: HST 11

Micro-unit: 1 of 3 Gr.: HSM-A-114

Sample positioning: 3 and 4 (between feet) (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and irregular;

Groudmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): medium brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: 5
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 1, colourless/ 1st order greys, small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: none (see tephra)
- Nesosilicates: none
- Phyllosilicates: olivine: 1, small, colourless/ low 3rd order blues with wide 2nd order yellow and pink rims, 2 pellicular;
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, hypocrystalline (feldspars and pyroxenes), non-vesicular, pale green, medium, 2, irregular linear and pellicular;
  - 10, opaque, 3 to 4, complex;
  - 1, red/ red, 3 to 4, complex,

  Calcite: 1, medium, colourless and high order pinks with wide rims of descending order interference colours down to 1st order yellows, 1, parallel linear and pellicular;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 1, reddish orange/ isotropic, small, linear, poor;
- Other (e.g. bone, excrement, fungal remains): fungal remains: 1, reddish brown, isotropic, linear, weak basic distribution, strong referred distribution to edges of voids, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 5, small, tephra, medium brown/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): 5, medium yellow-brown/ isotropic, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 1 is the medium brown unit in the mosaic image, and there are some signs that a granular pedostructure could have started to develop if the soil had remained in situ for a little longer.

Thin Section Description Recording Sheet

TS: 843 Site code: HST 11

Micro-unit: 2 of 3 Gr.: HSM-A-114

Sample positioning: 3 and 4 (between feet) (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 55, 45

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): dark brownish grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: none
- Nesosilicates: olivine: none (see tephra)
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, poro-alteromorph, medium, colourless, 2, linear and speckled;
  - 10, opaque, medium to medium large, 3 to 4, complex;
  - 1, red/ red, small to small-medium, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 1, reddish-orange/ isotropic, linear, small, poor;

•Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 2, reddish brown/ isotropic, broken and empty (fragmented rind), medium, poor;

Voids (% abundance within µ-unit)

•Vesicles: 5

•Channels: 2

•Chambers: 5

•Vughs: 2

•Cracks: none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: 2, medium, dark red/ red;

•Matrix:

Hypo-coatings (related, touching a surface): 10, thick, tephra, brown/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, small, red/ red, 2 laminations (<30), none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts (e.g.CZS): 10, orange-brown/ isotropic, small, rounded, moderate linear basic distribution, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): moderate granular, small;

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 2 is the dark brown unit in the mosaic image.

Thin Section Description Recording Sheet

TS: 843 Site code: HST 11

Micro-unit: 3 of 3 Gr.: HSM-A-114

Sample positioning: 3 and 4 (between feet) (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): linked and coated

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid (translucent)

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 2
- Channels: none
- Chambers: 5
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: none
- Inosilicates: Pyroxenes: CPX: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 50, poro-alteromorphs, vitric, colourless/ isotropic, large, 2, complex;

  Ash: 20, (coating tephra), grey/ high order pinks, strong referred distribution to tephra;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none

•Other (e.g. bone, excrement, fungal remains): fungal spores: 1, brownish red/ isotropic, very small, strong clustered basic distribution, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): none

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, small, dark red/ red, none, clear, none;

1, unoriented, random, medium, orange/ orange, angular, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 3 is the ashy unit, fine material is ash sized volcanic silicates with link and coat the larger poro-alteromorphs of weathered colourless vitric tephra.

Grave 115 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 740 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-115

Sample positioning: C2 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: 1
- Vughs: 15
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pink with lower order yellow thin rims, medium, 2, pellicular;
- Nesosilicates: olivine: 2, colourless/ 3rd order blues with lower order pink and then yellow

rims, small-medium and medium, 2

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, vesicular (40%), pale green/ isotropic, medium to large, 1, pellicular and irregular linear;
  - 5, hypocrystalline (25% Feldspars), non-vesicular, opaque and colourless/ opaque and 1st order greys, small to medium, 2, pellicular;
  - 2, vitric, non-vesicular, pale green/ isotropic, 2, pellicular and irregular linear;
  - 1, vitric, non-vesicular, pale brown/ isotropic, 2, pellicular and irregular linear;

  Calcite: 2, colourless/ high order pinks and green, large, 2, linear;

  Ash aggregate: 15, grey/ weak interference colours, irregular form with clear edges;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, pale yellow/ high order white, medium, linear form with diffuse and irregular edges, poor;
- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 2, small to medium, reddish brown/ isotropic, round, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: 10, small and medium, tephra, red/ red, strong basic distribution;
- Matrix:

  Hypo-coatings (related, touching a surface): 5, large, tephra at edges of voids, orange-brown/ isotropic

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, small, red/ red, none, clear, none;

2, unoriented, random, small and medium, yellow-orange/ speckled orange, none, clear, none;

1, unoriented, random, small, ornage/ orange, none, sharp, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: One example observed (anomalous to general trends) of a tephra fragment at weathering extent 2 to an alteromorph of speckled colours with orange-red anisotropic coatings on external and internal pores.

Thin Section Description Recording Sheet

TS: 759 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-115

Sample positioning: A6 (perpendicular to skull #2 in this grave) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 5
- Chambers: 10
- Vughs: 10
- Cracks: 2

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 2, parallel linear;
- Inosilicates: Pyroxenes: CPX: <1, small, colourless/ 2nd order pinks with very thin lower

order yellow rims, 2, pellicular;

- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, colourless/ isotropic, small-medium to medium, 2 pellicular and irregular linear;
  - 2, hypocrystalline (10-20% feldspars), non-vesicular, grey/ isotropic, 2, speckled and pellicular;
  - 5, vitric, non-vesicular, small to small-medium, brown/ isotropic 2, pellicular and irregular linear with speckled;
  - 5, opaque, small-medium to medium, 3 to 4, complex;
  - 1, small, yellow/ yellow, 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 5, medium to very large, yellow/ isotropic, irregular form with clear edges and some vesicles;

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

1, small, orange-yellow/ isotropic, SA with irregular edges, poor;

Charred plant material: 15, small to large, opaque, linear, poor to fair, strong clustered basic distribution, random orientation;

- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 5, dark reddish brown/ isotropic, very small, fair to good, strongly clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

Hypo-coatings (related, touching a surface): 1, medium, excremental pedofeatures, orange/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, medium to large, dark brown-yellow/ isotropic, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Charcoal is clustered in a vertical band on the skull side of the TS with no orientation of the long axis of the TS. Tephra weathering shows circular forms/ patterns. One anomalous tephra fragment which was at weathering extent 4 of a yellow to brownish orange colour and vitric texture. Most of the material in this TS is on the skull side of the TS as there is a large void at the other end, possibly due to cracking of the sediment during collection and loss through the base of the kubiena tin before the tops and bottoms were placed around the sides of the tin.

Thin Section Description Recording Sheet

TS: 816 Site code: HST 11

Micro-unit: 1 of 3 Gr.: HSM-A-115

Sample positioning: 1 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50μm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded (single spaced)

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within μ-unit)

- Vesicles: none
- Channels: 5
- Chambers: none
- Vughs: 20
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, large, 1, pellicular and linear;
- Inosilicates: Pyroxenes: none (see tephra)
- Nesosilicates: olivine: 1, small, colourless/ 3rd order blues with wide yellow rims, 2,

pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, large, 2, speckled and irregular linear;
  - 5, opaque/ opaque, medium, 3 to 4, complex;
  - 1, hypocrystalline (25% feldspars and pyroxenes), non-vesicular, vitric Micromass surrounding phenocrysts altered to an opaque coloured material, 2, complex;
  - 1, hypocrystalline (25% feldspars), non-vesicular, vitric Micromass surrounding phenocrysts altered to an opaque coloured material, medium, 3, complex;

  Ash aggregates: 10, grey/ weak interference colours, large, moderate clustered referred distribution to skull;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 5, pale yellow/ isotropic, medium, moderate basic clustered distribution;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

charred plant material: 5, large, linear, opaque/ opaque, heavily fragmented and poor preservation, strong clustered referred distribution to "up" direction and "skull" direction;

2, brown-orange/ isotropic, medium to large, linear with clearly defined edges, poor;

- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 1, small, round, reddish brown/ isotropic, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 5, medium, tephra, yellow-brown/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, medium, orange/ orange, 2 laminations (<30), clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, medium, orange-brown/ isotropic, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: charred plant remains and ash aggregates are clustered at the skull end of the TS but smaller parts are found throughout. Some moderately weathered (weathering extent 2) vitric tephra altered to a speckled material with gel- and fibro-palagonite phases present, and lots of fragments of vitric tephra (extent 2) with traces of biotically driven alteration processes.

Thin Section Description Recording Sheet

TS: 816 Site code: HST 11

Micro-unit: 2 of 3 Gr.: HSM-A-115

Sample positioning: 1 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 70, 30

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 15
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: none (see tephra)
- Inosilicates: Pyroxenes: 1, small, colourless/ 2nd order pinks with very wide lower order

yellow rims, 2, pellicular;

- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, pale green/ isotropic, medium, 1, irregular linear;
  - 5, vitric, non-vesicular, pale green/ isotropic, small, 2, complex (poro-alteromorph);
  - 1, vitric, non-vesicular, pale green/ isotropic, small, 2, speckled;
  - 2, hypocrystalline (25% feldspars of Carlsbad twinning), non-vesicular, opaque, 2, complex;
  - 2, small, 3 to 4, koilo-alteromorph,;
  - 1, small, red/ red, 4, iso-holo-alteromrph;
  - 2, dark green, medium, 3 to 4, complex (iso-alteromorph);

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

charred plant material: 1, small, linear with irregular edges, opaque/ opaque, poor;

2, medium, orange/ isotropic, linear with diffuse edges, poor;

- Other (e.g. bone, excrement, fungal remains): fungal spores: 15, unoriented and random, dusty pink / isotropic, very small, round to elliptical, good;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface): 2, thin, tephra (as fibro and gel palagonite on vitric tephra at weathering extent 2), yellow/ yellow;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]: 5, unoriented, random, small, orange/ orange, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, large, brown-yellow/ isotropic, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): weakly developed granular peds, very small

Other notes and comments on the description of the sample as seen in thin section: This unit winds its way curvilinear from the top of the TS in a diagonal towards the base at the skull end of the TS (see mosaic image in Appendix VIII). Granular shaped peds forming of fine organic material covered in loose spores (as opposed to spores held in a sclerotial sack) with a more developed and small and smaller granularity towards the base of the TS.

Thin Section Description Recording Sheet

TS: 816 Site code: HST 11

Micro-unit: 3 of 3 Gr.: HSM-A-115

Sample positioning: 1 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50μm limit): 60, 40

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): pale brownish-yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: none
- Channels: 5
- Chambers: 2
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, very small, 1, pellicular and linear;
- Inosilicates: Pyroxenes: CPX: 1, very small, colourless/ 2nd order yellows, 1, linear;
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, small, 2, irregular linear and speckled;
  - 5, vitric, non-vesicular, purple-grey/ isotropic, medium, 2, irregular linear and speckled;
  - 2, opaque, small, 3 to 4, complex;
  - 1, hypocrystalline (20% feldspars), non-vesicular, large, puplish-grey/ isotropic, 2, pellicular and irregular linear ;
  - 1, vitric, non-vesicular, bluish grey/ isotropic, medium, diffuse edges, 3, holo-alteromorph;

  Ash aggregates: 2, small, random and unoriented, grey/ weak interference colours;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

Charred plant material: 1, small, opaque/ opaque, linear with diffuse edges, poor;

1, small, orange/ isotropic, linear with diffuse edges, poor;

- Other (e.g. bone, excrement, fungal remains): fungal spores: 1, dusty pink/ isotropic, very small, round, moderately clustered basic distribution, excellent;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 2, small, tephra, pale brownish yellow/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, random, small, orange/ orange speckled, none, clear, none;

1, unoriented, random, medium, dark red/ dark red, 2 laminations (>30), none, sharp, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: This is a tiny micro-unit on the far and lower corner of the slide (see mosaic image in Appendix VIII), and differs from unit 1 by a paler colour, more nodules, and less coarse material and voids.

Thin Section Description Recording Sheet

TS: 826 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-115

Sample positioning: 1 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): wavy and diffuse

Groudmass

c/f ratio (50µm limit): 70, 30

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 2
- Chambers: 5
- Vughs: 15
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (carlsbad twinned): 1, colourless/ 1st order greys, very small, 1, pellicular;
- Inosilicates: Pyroxenes: colourless/ 2nd order pinks with lower order yellow rims, small, 2,

pellicular;

- Nesosilicates: olivine: 1, very small, colourless/ 3rd order blues with wide lower order yellow rims, 2, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, pale green/ isotropic, small, 1, irregular linear;
  - 2, vitric, non-vesicular, pale green/ isotropic, small, 2, speckled and irregular linear;
  - 2, grey/ isotropic, medium, 3, complex;
  - 5, opaque/ opaque, small, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

charred plant material: 1, small, opaque/ opaque, linear, poor;

humified plant material: 1, orange/ isotropic, small to medium, irregular form with diffuse edges, poor;

roots: 1, colourless/ high order white, elliptical form with clear boundaries, poor;

- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 15, very small, dusty pink with darker rims, strong clustered referred distribution to peds of fine material

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 1, thin, tephra, orange-yellow/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, small, red/ red, none, sharp, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): granular peds, very small,

Other notes and comments on the description of the sample as seen in thin section: Heavy fungal layer with granular peds of fine material and small sclerotia distributed across them. Undulating horizontal boundary with micro-unit 2. Suggested interpretation of the amorphous organic material is that it is heavily degraded bone.

Grave 116 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 826 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-115

Sample positioning: 1 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 60, 40

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 5
- Chambers: 2
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, very small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 2, small, colourless/ 2nd order pink with lower order yellow very wide rims, 2, pellicular;
- Nesosilicates: olivine: 1, small, colourless/ 3rd order blues with very wide lower order pink

rims, 2, pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, opaque/ opaque, large, 3 to 4, complex;
  - 5, hypocrystalline (25% feldspars), non-vesicular, medium, 2, complex;
  - 2, vitric, non-vesicular, pale green/ isotropic, small, 1, pellicular;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, medium, orange/ isotropic, irregular form with diffuse edges, poor;
- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 2, reddish brown/ isotropic, medium, round, poor, moderate clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 2, small, tephra, brown-orange/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, small, red/ red, none, sharp, none; 1, small, orange/ orange, none, sharp, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 1, small, SR, yellow-brown/ isotropic, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: This micro-unit covers the majority of the area of the thin section and is composed mostly of fine yellow material with a few patches of grey and purple-grey tephra (weathering extents 3 to 4) inclusions.

Thin Section Description Recording Sheet

TS: 589 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-116

Sample positioning: C2 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50μm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: 1
- Channels: 10
- Chambers: 5
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, medium, 0, n/a;
- Inosilicates: Pyroxenes: CPX: 2, medium, colourless/ 2nd order yellows, 1, irregular linear;
- Nesosilicates: olivine: none (see tephra)
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, colourless/ isotropic, small, 1, irregular linear;
  - 5, vitric, non-vesicular, pale green/ isotropic, small-medium to medium, 1, irregular linear;
  - 2, vitric, non-vesicular, pale green/ isotropic, medium to medium-large, 2, irregular linear and speckled;
  - 2, vitric, non-vesicular, pale brown/ isotropic, medium, 1, irregular linear;
  - 2, hypocrystalline (75% feldspars, CPX and olivine), non-vesicular, medium-large to very large, 1 pellicular and speckled;
  - 2, opaque, medium-large to medium, 3 to 4, complex;
  - 1, hypocrystalline (25% feldspars), vitric Micromass material altered to a red coloured secondary material, 3 to 4, complex;

  Ash aggregates: 5, large, to very large, grey/ weak interference colours, irregular form with clear edges, moderate clustered basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, large to very large, orange/ isotropic, linear, poor;
- Other (e.g. bone, excrement, fungal remains): fungal sclerotia (empty of spores, with rind only): 1, medium to large, reddish brown/ isotropic, elliptical to linear forms, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 2, thick, tephra and excremental pedofeatues, orange-brown/ isotropic, CZS;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

1, unoriented, random, small, yellow/ yellow speckled, none, sharp, none;

2, unoriented, random, medium, orange/ orange, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, medium, brownish yellow/ isotropic, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Some colourless vitric tephra very small altered to gel-palagonite of a strong basic distribution as an aggregate which looks at 1st glance like an amorphous organic material mass but it isn't (best seen in version of this sediment represented by TS 571 from this sample).

Thin Section Description Recording Sheet

TS: 717 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-116

Sample positioning: 1 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 5
- Chambers: 10
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small to medium, 2, parallel linear and pellicular, weakly clustered referred distribution to tephra;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks with lower order yellow rims, small and small-medium, 2, pellicular, strong clustered referred distribution to

hypocrystalline tephra;

- Nesosilicates: olivine: 2, colourless/ 3rd order blues with lower order yellow rims, small to small-medium, 1, pellicular, strong clustered referred distribution to hypocrystalline tephra;

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, medium to medium-large, 2 to 3, complex;
  - 2, hypocrystalline (40% feldspars, olivine and augite), non-vesicular, large to very large, 1, pellicular;

  Ash aggregates: 5, grey/ weak interference colours, irregular forms with clear edges, strong clustered basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 15, yellow/isotropic (ropey structure visible in PPL but not in XPL), small to medium, SA, irregular with clear edges, fair;

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none

- Other (e.g. bone, excrement, fungal remains): 2, very small, colourless/ isotropic, linear, A, clear edges, excellent;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface):

1, thin, lightly weathered tephra, orange-brown/ isotropic;

1, medium, heavily weathered tephra, orange-brown/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, small and medium, red/ red, none, clear, none;

5, unoriented, random, small and medium, orange/ orange, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, orange-brown/ isotropic, small to medium, SR, CZS, moderate clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Heavily weathered vitric tephra (weathering extents 3 to 4), sometimes has (25%) strange red circles and semi-circles on exterior surfaces; Colourless isotropic rods interpreted as diatoms;

Thin Section Description Recording Sheet

TS: 760 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-116

Sample positioning: 1 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50μm limit): 45, 55

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): light orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: 1
- Channels: 15
- Chambers: 10
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (Carlsbad twinned): 2, colourless/ 1st order greys, small and small-meidum, 2, linear;
- Inosilicates: Pyroxenes: CPX: 5, medium-large to large, colourless/ 2nd order pinks and

greens, 1, linear (normal to cleavage);

- Nesosilicates: olivine: none (see tephra)
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, hypocrystalline (<25% feldspars and olivine), small to large, 2, complex;
  - 1, vitric, non-vesicular, pale green/ isotropic, small to medium, 2, pellicular and irregular linear;
  - 2, vitric, non-vesicular, colourless/ isotropic, small to medium, 2, irregular linear and pellicular;
  - 1, small –medium dark red/ red, 3 to 4 complex;
  - 5, small to medium, dark purple/ opaque, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 5, irregular form, dark yellow/ isotropic, clear edges, moderate clustered and banded basic distribution, moderate horizontal orientation referred to surface;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, small to large, irregular forms, brown-orange/ isotropic, SR, poor;

•Other (e.g. bone, excrement, fungal remains):

Bone: 1, small to medium, pale yellow colours in PPL with 1st order grey ropey structure in XPL, irregular forms with sharp edges, good;

Fungal sclerotia: 2, small to medium, dark reddish brown/ isotropic, round, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 2, medium, tephra (tephra at weathering extent 2), brown-orange/ isotropic;

Quasi-coatings (not touching): 1, thin, tephra, brown-orange/ isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, small and medium,

orange, orange, none, clear, none; 1, small, red/ red, none, sharp, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100μm, medium 100-500μm, large >500μm), angularity, size of clasts(e.g.CZS): 5, small to medium, dark brownish-orange/ isotropic, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Horizontal banding of coarse clustered material with channels and heavily weathered tephra (extents 3 and 4), then less coarse material and organics with moderately weathered tephra (extent 2), then the clustered coarse material layer repeats again (ascending order). Some interesting forms of heavily weathered tephra (extents 3 and 4), with one to a brown-orange anisotropic material and neighboured to a mass of radiating crystals.

Thin Section Description Recording Sheet

TS: 801 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-116

Sample positioning: C3 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 10
- Chambers: 5
- Vughs: 2
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (simple twinned): 5, colourless/ 1st order greys, small, 1, pellicular and linear;
- Inosilicates: Pyroxenes: CPX: none
- Nesosilicates: olivine: 5, colourless/ 3rd order blues with thin lower order yellow rims, 1

pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, vesicular (<25%), pale green/ isotropic, small to large, 1 pellicular and irregular linear;
  - 2, vitric, non-vesicular, pale green/ isotropic, 2, pellicular and irregular linear and speckled;
  - 5, hypocrstalline (20% olivine and feldspars), non-vesicular, vitric Micromass altered to a grey coloured material, 2, complex;
  - 2, opaque, medium, 3 to 4, complex;

  Calcite: 1, colourless/ high order pinks and greens, small to medium, 2, linear;

  Ash aggregate: 5, medium to large, grey/ weak interference colours, moderate linear basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, medium, brown-yellow/ isotropic, linear, fair;

•Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 1, dark reddish brown/ isotropic, medium to large, round, good;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 1, thin, tephra, brown-orange/ isotropic;

Quasi-coatings (not touching): 1, thin, tephra, orange-brown/ isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, medium to large, orange-brown/ isotropic,

SR, CZS, strong linear basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): graunular, very small;

Other notes and comments on the description of the sample as seen in thin section: Well developed granular micro-structure and a fair amount of excremental pedofeatures are interpreted as evidence of soil forming processes related to biotic activities within the soil.

Thin Section Description Recording Sheet

TS: 813 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-116

Sample positioning: 3 (block suffered some mechanical damage and mixing during transport so this is a partially unconsolidated sample) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 60, 40

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 10
- Chambers: 5
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys and pale 1st order yellows, medium to large, 1, speckled;
- Inosilicates: Pyroxenes: 1, colourless/ 2nd yellows, small to small-medium, 1, irregular

linear;

- Nesosilicates: olivine: 2, colourless/ 3rd order blues with thin second order yellow rims, small, 1, pellicular;

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, pale green/ isotropic, small to small-medium, 1, speckled and irregular linear;
  - 1, vitric, non-vesicular, colourless/ isotropic, medium, 2, speckled;
  - 2, vitric, non-vesicular, brown/ isotropic, medium, 2, speckled and irregular linear;
  - 1, , vitric, non-vesicular, brown/ isotropic, medium, 1, irregular linear;
  - 10, opaque, medium, 3 to 4, complex;
  - 1, red/ red, medium, 3 to 4, complex;

  Calcite: 1, small-medium, colourless/ 4th order pinks and greens, rhombohedral structure, irregular angular form, 1, pellicular;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

Roots: 2, medium, colourless/ high order white, elliptical, cellular structure visible, irregular edges, excellent preservation;

•Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 1, medium, dark brown/ isotropic, round, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 5, thick, tephra, orange/ isotropic, CZ;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, orange/ orange, small, none, clear, none;

2, unoriented, random, red/ red, medium, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, brownish yellow/ isotropic, medium, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Heavy levels of bioalteration effects visible to tephra and some feldspars. Heavily weathered tephra (extents 3 and 4) where weathered to an iron-rich alteromorph is an aggregated nodular mass of red/ red coloured angular small shards cemented together by an adjacent Fe-rich red/ red coloured coating. Some allogenic fine (silt and clay sized) inclusions. No foot orientation possible for this slide due to the disruption to the sample prior to impregnation with resin.

Thin Section Description Recording Sheet

TS: 788 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-116

Sample positioning: 2z (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 45, 55

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded (single spaced)

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 10
- Chambers: 10
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks with very wide 1st order yellow rims, small, 2, pellicular;
- Nesosilicates: olivine: 5, colourless/ 3rd order blues with 2nd order yellow rims, small, 2,

pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, vesicular (25%), pale green/ isotropic, medium to large, 1, pellicular;
  - 5, hypocrystalline (<25% feldspars), non-vesicular, medium and medium large, pale grey vitric Micromass, 2, pellicular and speckled;
  - 10, opaque/ dark purplish grey, small to medium, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 5, pale yellow/ isotropic, SR, irregular form, small to large;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

2, medium, brown-orange/ isotropic, linear, poor;

2, medium to medium-large, red/ red, SR, irregular form, fair (mechanical damage c. 25%);

1, medium, pale yellow/ high order white, elliptical, good;

•Other (e.g. bone, excrement, fungal remains):

Fungal sclerotia: 10, medium, round, dark reddish brown/ isotropic, strong linear basic distribution, mostly as empty and often with mechanical damage;

Fungal spores: 5, very small, reddish-pink / isotropic, elliptical to round, excellent, weakly clustered basic distribution, strong referred distribution to below sclerotia cluster.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 10, thick, heavily weathered tephra, orange-brown/ isotropic, CZS;

Quasi-coatings (not touching): 2, medium, lightly weathered tephra, orange-brown/ isotropic, CZ;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, weakly clustered basic distribution, small, orange/orange, none, clear to diffuse, none;

2, unoriented, random, small, red/ red, none, clear, none;

2, unoriented, strongly clustered basic distribution, small, dark red/ very dark red, none, diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, dark orange-brown /isotropic, medium and large, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Linear distribution of similar sized empty sclerotia along the top left corner of the TS. A small cluster of aery dark coloured botryoidal structured tephra, inferred as heavily weathered tephra, is at the top centre-right and SEM-EDs should be done to see if the dark purplish colour of this tephra has an elemental compositional difference from the less weathered tephra (maybe more Mn in the heavily weathered tephra?). A cellular object is at the top right of the TS, and a photograph should be sent to Andrew Jones to identify is this could be a parasite ova.

Thin Section Description Recording Sheet

TS: 842 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-116

Sample positioning: 2z (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): pale brown-yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: none
- Chambers: 1
- Vughs: 15
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 1, colourless/ 1st order greys, small, 1, irregular linear and pellicular (with dendritic fronts);
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks with lower order yellow rims,

small and small-medium, 2, linear (regular linear and irregular linear) and pellicular;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues, 1 irregular linear and pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, pale green/ isotropic, small and small-medium, 1, irregular linear;
  - 2, vitric, non-vesicular, pale green/ isotropic, medium and medium-large, 2, complex;
  - 1, hypocrystalline (<25% feldspars), non-vesicular, glassy Micromass material altered to a dark grey colour, 2, complex;
  - 5, opaque, large and very large, 3 to 4, complex;
  - 5, hypocrystalline (25% phenocrysts), glassy Micromass material altered to opaque, 3, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 10, pale yellow/ isotropic, large and very large, irregular form with clear edges;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

Roots: 2, medium, colourless/ high order white, elliptical and linear, good to excellent;

2, red-orange/ orange-red, linear, small, poor;

- Other (e.g. bone, excrement, fungal remains):

Fungal spores: 10, very small, dusty pink/ isotropic, elliptical to round, strong clustered basic distribution and referred to amorphous organic matter;

Fungal sclerotia (empty of spores, rind only): 1, small-medium, dark reddish brown/ isotropic, irregular form, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface): 2, medium, tephra (heavily weathered tephra) yellow-brown/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

1, unoriented, random, small, red/ red, none, clear, none;

1, unoriented, random, medium, orange/ orange, 1 lamination (<30), clear, none;

1, unoriented, random, medium, yellow/ yellow speckled, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 1, yellow-brown/ isotropic, medium, SR, CZ;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 1 is paler in colour and richer in organic matter than micro-unit 2. Some fibro-palagonite was observed on tephra of varied textures and sizes.

Thin Section Description Recording Sheet

TS: 842 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-116

Sample positioning: 2 z (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit)

- Vesicles: 2
- Channels: 2
- Chambers: 5
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 1, colourless/ 1st order greys, very small, 1, pellicular and linear;
- Inosilicates: Pyroxenes: 5, colourless/ strong 1st order yellows, small to small-medium, 1, irregular linear;
- Nesosilicates: olivine: 1, colourless/ 3rd order blues with wide lower order yellow rims,

small to small-medium, 2, pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, pale green/ isotropic, medium, 1, irregular linear and pellicular;
  - 1, vitric, non-vesicular, pale green/ isotropic, medium and medium-large, 3, speckled;
  - 2, hypocrystalline (<30% feldspars), non-vesicular, medium and medium-large, 1, irregular linear;
  - 2, vitric, non-vesicular, pale green/ isotropic, medium, 2, complex;
  - 10, opaque, large and very large, 3 to 4, complex (poro-alteromorph);

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 1, medium, pale yellow/ isotropic, strong referred distribution to boundary with micro-unit 1;

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, small, linear, orange-red/ dark brownish red, poor;

- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 1, medium, dark reddish brown/ isotropic, round, good;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface): none

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, unoriented, random, small, orange/ orange, none, sharp, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 1, yellow-brown/ isotropic, medium, SR, CZ;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): granular, small;

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 2 has a more developed microstructure than micro-unit 1. There are a few sclerotia but not many spores (see micro-nit 1, which has lots of spores but no sclerotia unopened).

Grave 117 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 581 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-117

Sample positioning: C3 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 45, 55

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish orange/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: none
- Vughs: 10
- Cracks: 5

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 1, pellicular;
- Inosilicates: Pyroxenes: none
- Nesosilicates: olivine: 2, colourless/ 3rd order pinks, small to medium, 1, pellicular
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 10, vitric, non-vesicular, pale green/ isotropic, medium to large, 1 to 2, pellicular and speckled;
  - 5, opaque, small, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: medium to large, orange-brown isotropic, irregular to circular, fair to poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 5, medium, tephra, brownish-orange /isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, random, moderate clustered referred distribution to tephra, dark red/ orange and pinkish red;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, dark brownish orange/ isotropic, medium, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

•**Other notes and comments on the description of the sample as seen in thin section:** Micro-unit 1 is in two parts (listed as Micro-units 1a and 1b), either side of micro-unit 2. Both parts of micro-unit 1 have been used in the compilation of this description sheet.

•Thin Section Description Recording Sheet

TS: 581 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-117

Sample positioning: C3 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): irregular and interrupted

Groudmass

c/f ratio (50µm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): grey/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

•Vesicles: none

•Channels: 5

•Chambers: 5

•Vughs: 5

•Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 0, n/a;
- Inosilicates: Pyroxenes: CPX: colourless/ 2nd order pinks with lower order yellow rims
- Nesosilicates: olivine: colourless/ 3rd order blues with lower order yellow rims
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, opaque, small, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 2, orange/ isotropic, small, irregular form with clearly defined edges;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, medium, colourless/ high order white, cellular strcutre visible, regular form with irregular edges, fair;

•Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): none

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: none

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 2 groundmass has irregular and interrupted boundary with micro-unit 1 (both micro-unit 1a and micro-unit 1b, see TS description sheet TS 581 micro-unit 1). Some resin bubbles present in voids.

Thin Section Description Recording Sheet

TS: 619 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-117

Sample positioning: 2 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50μm limit): 50, 50

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): linked and coated

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange/ brown

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: none
- Channels: 2
- Chambers: 10
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, subhedral, small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks with lower order yellow rims,

1, pellicular, (more pyroxenes observed still in tephra, see “tephra” category);

- Nesosilicates: olivine: none (see tephra);
- Phyllosilicates: muscovite: 1, small, colourless/ mid 2nd order, 2 pellicular;
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 10, vitric, non-vesicular, pale green/ isotropic, medium to alrge, 2, pellicular and speckled, (with typic and crescent hypocotings);
  - 5, vitric, non-vesicular, pale green/ isotropic, 3 speckled and pellicular;
  - 5, hypocrystalline (pyroxene and olivine (<30%), non-vesicular, pale green/ isotropic vitric Micromass surrounds phenocrysts, medium to large, 2 speckled and pellicular;
  - 5, opaque/ opaque, small to medium, 3 to 4, complex;
  - 2, vitric, non-vesicular, brown/ isotropic, small to small-medium, 2, pellicular and irregular linear;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 1, pale yellow/ high order white, elliptical form, large, irregular edges, excellent, inclined referred distribution to “up” direction, cellular structure visible;
- Other (e.g. bone, excrement, fungal remains):

Bone: 2, large, pale yellow / 1st order greys, irregular SR form, 2, pellicular, moderate clustered basic distribution;

Fungal sclerotia: 2, medium, round, dark brown/ isotropic, good, weak clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 20, small, tephra, orang-brown/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]:

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, brown-yellow/ isotropic, medium, R, CZS, diffuse edges and strongly clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Lots of tephra but oddly no palagonite observed. Also notable, was a lack of amorphous organic matter in this unit.

Thin Section Description Recording Sheet

TS: 619 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-117

Sample positioning: 2 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): pale yellow/ speckled yellows;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: none
- Chambers: 5
- Vughs: 15
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: none (see tephra);
- Inosilicates: Pyroxenes: CPX: colourless/ 2nd order pinks with lower order yellow rims
- Nesosilicates: olivine: 5, colourless/ 3rd order blues with lower order yellow rims, 2

pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 15, vitric, non-vesicular, pale green/ isotropic, small to small-medium, 2 pellicular and speckled; , vitric, non-vesicular, brown/ isotropic, small to small-medium, 2, pellicular and irregular linear;
  - 5, opaque, small, 3 to 4, complex;
  - 1, hypocrystalline (<25% feldspars), non-vesicular, medium, 2, complex;

  Other: 5, colourless/ isotropic, rod-shaped, very small and small, sharply defined edges;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 10, large, nodules and tephra, brown-orange/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, weakly clustered basic distribution, red/ red, large, none, clear, lightly fragmented prior to coating deposition;

5, unoriented, random, orange/ orange, medium, none, diffuse, slightly fragmented;

2 nucleic, unoriented, random, opaque/ dark red, small, none, clear, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Tephra has uneven distribution of weathering in relation to extents and patterns. Some nodules (red) have mechanical damage which includes the hypocoating and some nodules (orange) do not have mechanical damage, suggesting that the fragmentation occurred *in situ* after the formation of the red nodules but before the formation of the orange nodules.

Thin Section Description Recording Sheet

TS: 621 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-117

Sample positioning: C2 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50μm limit):

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): linked and coated

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): medium orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: 2
- Channels: 5
- Chambers: 5
- Vughs: 2
- Cracks: 5

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 1, colourless/ 1st order greys and pale yellows, small, 0, n/a;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks, small and small-medium, 1,

irregular linear, weakly clustered basic distribution;

- Nesosilicates: olivine: colourless/ 3rd order blues with lower order yellow rims
- Phyllosilicates: Mica: 5, colourless/ 3rd order pinks and yellows, small, 1, regular linear;
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 25, vitric, vesicular (25%), pale green/ isotropic, 1, irregular linear and pellicular, (of these 60% have crescent hypocoatings of maximum 17 microns thickness and <40% have capping hypocoatings of maximum 58 microns thickness);
  - 2, vitric, non-vesicular, pale green/ isotropic, 1, irregular linear and pellicular, (of these most have crescent hypocoatings of 17 microns maximum thickness);
  - <1, vitric, non-vesicular, pale brown/ isotropic, medium, 1, irregular linear and pellicular, (of these most have crescent hypocoatings of 15 microns maximum thickness);
  - 10, opaque, small, 3 to 4, complex;

  Pumice: 2, large, 75% vesicles, brown coloured surface partial staining;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 10, reddish orange/ isotropic, medium to large, irregular form;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, orange/ isotropic, large, SR, cellular structure visible, fair;
- Other (e.g. bone, excrement, fungal remains):

Fungal sclerotia: 2, dark brown/ isotropic, round, good;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface):

Crescent hypocoatings: 1, medium, tephra, medium orange/ isotropic;

Capping hypocoatings: <1, large, moderately weathered tephra (extent 2), brown-orange/ isotropic, strongly clustered referred distribution to crack and channel shaped voids.

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, unoriented, random, pink and red/ pink and red, none, clear, slight;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, medium and large, yellow-brown/ isotropic, SR, CZS; weakly clustered basic distribution, moderate perpendicular orientation referred to "up" direction;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Vesicular (melted) silica object interpreted as pumice, but not a positive identification.

Thin Section Description Recording Sheet

TS: 626 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-117

Sample positioning: 1 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 50, 50

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): linked and coated

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish orange/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 15
- Chambers: 5
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (Carlsbad twinned): 5, colourless/ 1st order greys, small to medium, 0, n/a;
- Inosilicates: Pyroxenes: none
- Nesosilicates: olivine: 5, colourless/ mid-3rd order, small to small-medium, 1, parallel

linear;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 10, vitric, vesicular (25%), pale green/ isotropic, medium, 1, pellicular and irregular linear;
  - 5, hypocrystalline (<30% feldspars), none-vesicular, medium to large, 2, complex;
  - 2, opaque, small to medium, 3 to 4, complex;

  Scoriae: 2, large, opaque/ isotropic, irregular form, SA, vesicular (50%);

  Calcite: 2, small, euhedral, 1, regular linear (normal to cleavage planes);

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 5, yellow-orange/ isotropic, irregular form with diffuse edges, small to medium;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

Roots: 1, medium red/ pale red, linear to elliptical forms with diffuse edges, fair, weakly clustered referred distribution to channel shaped voids;

1, large, yellow-orange/ high order white, round, sharp, good, strong parallel referred orientation to channel shaped voids, strong linear referred distribution to channel shaped voids;

2, medium, orange/ isotropic, linear with SR corners, clear, fair;

- Other (e.g. bone, excrement, fungal remains): 5, large, yellow/ 1st order greys in ropey structural arrangement, irregular, SA, fair (pellicular and speckled weathering patterns with mechanical damage), strongly clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface):

5, thick (70 microns), lightly weathered tephra (extent 1), orange-brown/ isotropic;

2, thick (175 microns), heavily weathered tephra (extents 3 and 4), orange-brown/ isotropic;

Crescent hypocoatings: 2, thick, excremental pedofeatues, orange-brown/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, random, medium, orange-red/ red, 2 laminations (>30), sharp, none;

2, unoriented, random, small and medium, very dark purple / dark purplish red, none, diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 10, medium, brown-orange/ isotropic, SR, CZS, strongly linear basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: For tephra stages of weathering see mosaic image (Appendix VIII). The organic material described in the other category on this sheet is interpreted as bone fragments.

Thin Section Description Recording Sheet

TS: 711 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-117

Sample positioning: 1 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50μm limit): 35 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): yellow-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: none
- Channels: 10
- Chambers: 5
- Vughs: 15
- Cracks: 2

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to medium, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks, anhedral, 2, pellicular;
- Nesosilicates: olivine: colourless/ 3rd order blues with lower order yellow rims
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, small, 1, pellicular;
  - 10, vitric, vesicular (50%), pale green/ isotropic, (coated, typic hypocoatings), 2 pellicular and speckled, weakly clustered basic distribution;
  - 2, vitric, non-vesicular, brown / isotropic,, small to medium, 1, pellicular;
  - 5, opaque, small to small-medium, 3 to 4, complex;

  Ash: 2, large, pale grey / 4th order interference colours, irregular form with clear boundaries, linear basic distribution and perpendicular referred distribution to skeletal remains;

  Other: 5, colourless / isotropic, rod-shaped with sharply delineated edges, very small to small;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous [size (small <100µm, medium 100-500µm, large >500µm)]: 5, yellow/ isotropic, medium, irregular (SR) form with clear edges;
- Plant:

Roots: 2, pale yellow/ high order white, elliptical form with diffuse edges, small to small – medium, strongly clustered referred distribution to channel and chamber shaped voids,

Humified: 2, reddish brown/ isotropic, medium, linear form with diffuse edges, moderate clustered distribution referred to channel and chamber shaped voids;

- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 2, dark brown/ isotropic, round, medium, good, strong clustered referred distribution to “up” direction;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 20, thick, tephra, yellow-brown/ isotropic

  Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, weakly clustered basic distribution, medium and large, dark reddish purple/ reddish purple, none, clear, none;

2 nucleic, unoriented, random, medium, orange / orange, none, diffuse, moderately fragmented;

2, unoriented, random, large, purplish red/ orange-red, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, dark orange-brown/ isotropic, large, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Tephra in this micro-unit displayed interesting weathering patterns and is not related to spatial distribution with neighbouring individual examples of tephra weathering extent 1 appear at variable (3 and 4) stages of weathering with radial gibbsite crystals clearly visible at the crystal surface, however, there is a general (*c.*50% of the tephra at extent 1 uphold to the pattern) of increasing extent of weathering of tephra closer to the skull.

Thin Section Description Recording Sheet

TS: 724 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-117

Sample positioning: 3 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groudmass

c/f ratio (50µm limit): 50, 50

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): pale brownish yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: none
- Chambers: 5
- Vughs: 25
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: none (see tephra)
- Inosilicates: Pyroxenes: CPX: 5 (see tephra)
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, pale green/ isotropic, small to small-medium, 1, pellicular and irregular linear;
  - 5, vitric, non-vesicular, pale green/ isotropic, small to small-medium, 2, pellicular and irregular linear;
  - 10, vitric, non-vesicular, pale green/ isotropic, small to medium, 3, complex;
  - 2, , vitric, non-vesicular, colourless/ isotropic, small to medium, 2, irregular linear and pellicular;
  - 2, hypocrystalline (<30% feldspars and pyroxenes), non-vesicular, medium to medium-large, 1, pellicular;
  - 10, opaque/ opaque, small to small-medium, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 10, medium, dark brownish pink and brownish yellow/ isotropic, strongly clustered basic distribution, irregular form;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, orange-yellow/ isotropic, irregular form with irregular edges (SA), weakly clustered distribution;

•Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 2, medium, dark brown/ isotropic, round, good, strongly clustered referred distribution to voids;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 10, medium to large, tephra and nodules, brownish yellow/ isotropic;

Quasi-coatings (not touching): 5, thin, tephra, tephra (vitric tephra at weathering extent 1), brownish –yellow/ isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 5, large, dark reddish – orange/ orange, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, brownish yellow/ isotropic, large, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Small patches of bluish green seen in some thinner areas where there are small holes in the slide, this is a contaminant from the polishing fluids (3 and 1 micron monocrystalline diamond in MetaDi suspension fluid). Most tephra seems to be degrading in the pathway which lends itself towards grey cloudy coloured material in PPL but one tephra fragment shows characteristics associated with substitutions by FeOH complexes;

Thin Section Description Recording Sheet

TS: 725 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-117

Sample positioning: 2 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow /isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: 2
- Vughs: 15
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 1, pellicular and linear;
- Inosilicates: Pyroxenes: 2, colourless/ 2nd order pinks, small, 2 pellicular and linear,

strong clustered referred distribution to tephra;

- Nesosilicates: olivine: 5 (see tephra)
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, pale green/ isotropic, 1, pellicular and irregular linear;
  - 5, hypocrystalline (<10% olivine), non-vesicular, pale green / isotropic vitric Micromass surrounding phenocrysts, 2, pellicular and irregular linear;
  - 10, opaque/ opaque, 3 to 4, complex (most with diffuse edges);

  Ash aggregates: 5, grey/ weak interference colours, irregular form with clearly defined edges, banded basic distribution, with lenticular voids;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 5, yellow/ isotropic, irregular form, moderate clustered basic distribution, unoriented;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

Humified: 1, brown-orange/ isotropic, small to small-medium, linear form, poor;

•Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 10, medium, tephra, orange-brown/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, unoriented, random, red/ red (speckled with yellow), small, none, diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, yellow-brown/ isotropic, medium to large, SA

to SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Quite a different micro-unit compared to other samples from sampling position number 2. In contrast to the others, the tephra here was still pale green and more mechanically fragmented than chemically weathered, and no fungal remains were observed.

Grave 118 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 732 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-118

Sample positioning: C3 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-orange/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 2
- Chambers: 5
- Vughs: 20
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 1, pellicular and linear;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order yellows, 1, small to medium,

irregular linear and pellicular;

- Nesosilicates: olivine: none (see tephra)
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 10, vitric, non-vesicular, pale green/ isotropic, small to large, 1 to 2, pellicular and speckled;
  - 1, , vitric, non-vesicular, pale brown/ isotropic, small, 1, irregular linear and pellicular;
  - 2, non-vesicular, purplish grey/ opaque, medium, 2 to 3, complex;
  - 1, opaque/ opaque, botryoidal structure, small, porous (<30%), 3 to 4, complex;
  - 1 hypocrystalline (<25% feldspars and olivines), non-vesicular, dark grey/ isotropic, medium, 3, complex;

  Ash aggregates (with pumice): 2, medium, grey / weak interference colours, weak clustered basic distribution, irregular form (SR);

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, brown-yellow, isotropic, linear to irregular form, small to medium poor;
- Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 1, medium, tephra, orange-brown/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

1, unoriented, random, orange/ orange, small, none, clear, none;

1, unoriented, random, orange/ isotropic, small, diffuse, none;

1, unoriented, random, red/ red, small, diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, orange-brown/ isotropic, medium to large, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 1 is the lower unit in this slide (see mosaic image in Appendix VIII). There are some small areas of impregnated irregular forms near excremental pedofeatures and some gibbsite seen.

Thin Section Description Recording Sheet

TS: 732 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-118

Sample positioning: C3 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): dark orange/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 2
- Chambers: 5
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, very small, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks with thin lower order yellow

rims, very small, 1 to 2, pellicular and irregular linear;

- Nesosilicates: olivine: 2, colourless/ 3rd order blues, small, 1, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, very small, 1, irregular linear;
  - 2, vitric, vesicular (25%), pale green/ isotropic, small to small-medium, 2, irregular linear and pellicular;

  Ash aggregates: <1, grey/ weak interference colours, small, irregular (SR) forms, moderate clustered basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 2, yellow/ isotropic, A, small, moderate horizontal referred distribution to "up" direction;

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 10, yellow-orange to orange-red/ isotropic, elliptical and linear and irregular forms, A to R, strong horizontal referred distribution to "up" direction;

- Other (e.g. bone, excrement, fungal remains):

Excrement: <1, dark brown, small, botryoidal structure, clustered basic and strong clustered referred distribution to grey material;

Other: 2, yellow/ 1st greys (no ropey internal arrangement visible), irregular (A) form, small, moderate horizontal referred distribution to "up" direction;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface): 2, thin, tephra, medium brown-orange/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]:

1, unoriented, random, small, orange/ orange, none, diffuse, none;

2, unoriented, random, medium, orange/ orange, none, diffuse, none;

1, unoriented, random, red/ red, none, diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 1, medium brown/ isotropic, small, R, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Boundary between 1 and 2 is sloped horizontal, undulating and clear. Horizontal (sloped, inclined) referred distribution of AMO (amorphous organic matter) yellow with 1st grey interference colours is interpreted as heavily weathered bone material and the loss of the ropey internal structure often visible in bone in XPL is interpreted as related to the degradation of the apatite mineral component of the bone.

Thin Section Description Recording Sheet

TS: 733 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-118

Sample positioning: C2 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): dark orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 5
- Chambers: 2
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (carlsbad and albite twinning): 2, colourless/ 1st order greys, small to large, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless or pale 1st order yellows/ 2nd order pinks with

lower order yellow rims, small to medium, 1, pellicular and irregular linear;

- Nesosilicates: olivine: 2, colourless/ 3rd order blues with lower order yellow rims, small, 2, pellicular;

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, pale brown/ isotropic, small to medium, 1, pellicular;
  - 5, vitric, non-vesicular, pale green/ isotropic, small to medium, 1 to 2, pellicular and irregular linear;
  - 1, vitric, non-vesicular, colourless / isotropic, small to medium, 2, complex;
  - 2, hypocrystalline (<25%feldspars), non-vesicular, medium to medium-large, 1, pellicular;
  - 1, opaque/ opaque, small-medium, 3 to 4, complex;
  - <1, red/red, small, 3 to 4, complex;
  - <1, yellow/ yellow (palagonite), medium, 3 to 4, complex (koilo-alteromorph);

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

Humified: 5, brown-orange/ isotropic, small to medium, irregular form (A), poor;

Roots: 2, pale yellow/ high order white, small to medium, elliptical and linear forms, clear edges, good to excellent;

•Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): <1, medium, tephra (moderately weathered tephra strongly clustered referred to voids), orange-brown/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, random, small to large, red/ red, none, sharp, none;

2, unoriented, random, small, orange/ orange, none, sharp, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 10, small to large, SR to R, CZS, strong linear basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: 2 large vertical channels present, both infilled at their upper edges with large excremental pedofeatures, the lower with micro-unit material matching the sediment of the C3 thin section (TS 733, micro-unit 2). One example of red alteromorph from highly weathered (extents 3 to 4) tephra with clear rings.

Grave 119 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 597 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-119

Sample positioning: C2 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown /isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 10
- Chambers: 10
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small, 2, pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with thin lower order yellow rims, small, 1, pellicular;
- Nesosilicates: olivine: 2, colourless/ 3rd order blues with very thin lower order yellow

rims, small, 1 pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, small to large, 1 to 2, pellicular and irregular linear;
  - 2, hypocrystaline (feldspars and olivine), non-vesicular, medium to large, 1 to 2, pellicular;
  - 2, brown/ isotropic (botryoidal structure), medium to large, 3 to 4, complex;
  - 2, opaque/ opaque, small to medium, 3 to 4, complex;
  - 1, red/ red, small, 3 to 4, pellicular and irregular linear (holo-septo-alteromorph);

  Pumice: 1, large, (50>75% vesicles), pale grey/ isotropic, irregular form, 3, speckled;

  Ash aggregates: 2, small to medium, pale grey/ weak interference colours, irregular forms with clear edges, banded basic orientation;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 1, yellow/ isotropic, SA, small to medium, irregular form with clear edges;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

Humified: 5, brown-orange/ isotropic, elliptical form, banded basic distribution, medium, fair;

Charred: 2, small to large, opaque/ opaque, strongly clustered basic distribution, moderately oriented perpendicular to channel shaped voids;

•Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 1, small, round to irregular, dark orange-brown/ isotropic, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 2, small, tephra (moderately weathered tephra), brownish orange/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, moderate clustered basic distribution, small, orange/ orange, none, clear, none;

1, unoriented, random, red/ red, medium, none, diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, yellow-brown/ isotropic, small to large, R-SR, CZS, strong linear basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Possibly several micro-units at one point in the past, but now too well mixed and lack of discernible boundaries to separate out, the mixing is interpreted as attributable to bioturbation in these sediments. Grinding medium (Al2O3 aq.) and scratches are visible at the edges of the slide. Channel and chamber shaped voids are horizontally oriented and have moderate parallel distribution, and vughs are small and random. Hypocrystalline tephra were altering to kata-alteromorphs (extent 2 in thin section). There was one example of an excremental pedofeature (large) near a poro-septo-alteromorph of red colours in PPL and XPL.

Thin Section Description Recording Sheet

TS: 627 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-119

Sample positioning: C3 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): yellow-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 10
- Chambers: 2
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 10, colourless/ 1st order greys, small, 2, linear;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with wide lower order yellow rims, small to small-medium, 2, pellicular;
- Nesosilicates: olivine: 2, colourless/ 3rd order blues with lower order yellow rims, small, 1,

pellicular, strong clustered referred distribution to hypocrystalline tephra;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, brown/ isotropic, small and small-medium, 1 to 2, pellicular and irregular linear;
  - 2, vitric, non-vesicular, pale green /isotropic, small and small-medium, 1 to 2, irregular linear and pellicular;
  - 10, hypocrystalline (<25% feldspars), green/istropic vitric Micromass surrounds phenocrysts, 1 to 2, medium-large to large, speckled and pellicular;

  Ash aggregates: 5, pale grey/ weak interference colours, irregular forms (SA) with sharply delineated edges, weakly clustered basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

Roots: 2, colourless/ high order white, irregular form, poor;

Humified: 2, yellow-brown/ isotropic, medium, irregular form with diffuse edges, poor;

- Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 1, dark brown/ isotropic, round, small, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface): 2, large, tephra (vitric and hypocrystalline tephras), brownish orange/ isotropic;

Quasi-coatings (not touching): 1, small, vitric tephra (wethering extents 1 and 2) orange/ yellow;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, small, orange/ orange, none, clear, none;

1, unoriented, random, small, red/ red, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, yellow-brown, large, SR, CZS, moderate clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Some small area of contamination from the grinding process (grinding medium of Al2O3 aq. with some of the grey colouration from the abrasion of the mild steel LP50 plate). Ash concentrations appear as white rocks in hand view of the resin impregnated sample block.

Thin Section Description Recording Sheet

TS: 627 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-119

Sample positioning: C3 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): irregular and diffuse

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 2
- Chambers: none
- Vughs: 10
- Cracks: 2

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (multiple twinning): 5, colourless/ 1st order greys, small to large, 1 to 2, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 1 ,colourless/ 2nd order pinks with very wide lower order

yellow rims, medium, 3, pellicular;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with lower order yellow rims, 2 pellicular and irregular linear;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 10, vitric, non-vesicular, colourless/ isotropic, small to medium, 2, pellicular and irregular linear;
  - 5, opaque/ opaque, small to medium, 3 to 4, complex;
  - 2, vitric, non-vesicular, brown/ isotropic, 2, pellicular and irregular linear;
  - 2, hypocrystalline, (40>50% feldspars, augite and olivine), non-vesicular, 2, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, yellow-orange/ dark orange, medium, linear to irregular, diffuse, poor;
- Other (e.g. bone, excrement, fungal remains):

Excrement: 1, very dark grey brown (botryoidal structure), small, strong clustered basic distribution and strong clustered referred distribution to root internal partition;

Fungal sclerotia: 1, large, dark brown/ isotropic, round to irregular, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface): 1, medium, tephra (moderately weathered vitric tephra), orange/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, unoriented, random,

medium, orange/ orange, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 1, yellow-brown/ isotropic, medium, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Boundary clearer in lower half than in upper half where it becomes more diffuse; unit 2 is smaller than unit 1;

Thin Section Description Recording Sheet

TS: 731 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-119

Sample positioning: (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: 10
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to large, 1 to 2, linear and linear pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with wide lower order yellow

rims, small to small-medium, 2, pellicular;

- Nesosilicates: olivine: 5, colourless/ 3rd order blues with very thin lower order pink descending to yellow rims, 2, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, brown/ isotropic, small to medium, 1 to 2, pellicular and speckled and irregular linear;
  - 10, opaque/ opaque, small to small-medium, 3 to 4, complex
  - 1, hypocrystalline (<25% feldspar and olivine) ,medium, 2, complex;
  - 2, opaque/ opaque, medium-large to large, 3 to 4, complex;

  Pumice: 1, grey/ isotropic, botryoidal structure, large;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, yellow-brown/ isotropic, medium to large, irregular (SR) form, poor;

- Other (e.g. bone, excrement, fungal remains):

Fungal sclerotia: 2, dark brown/ isotropic, round, medium, fair to poor;

Other: 1, yellow/ isotropic, spiral form, medium;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface): 1, small, rocks and minerals, brown-yellow/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2,unoriented, weakly clustered basic distribution, large, orange/ orange, none, clear, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): 2, yellow-brown/ isotropic, medium, SR, CZ;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Isotropic colourless rods visible in radiating distribution possibly hyphae? The distribution and smooth exterior textures of these rods makes them different from the other colourless isotropic rods seen in other thin sections which were inferred as diatoms.

Thin Section Description Recording Sheet

TS: 731 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-119

Sample positioning: (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50μm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): yellow-brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: none
- Channels: 10
- Chambers: 10
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (Carlsbad twinned): 2, colourless/ 1st order greys, small to large, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: none
- Nesosilicates: olivine: 5, colourless/ 3rd order blues with wide lower 2nd order pinks

descending to yellow rims, small to medium, 2, pellicular and irregular linear;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, colourless/ isotropic, small to medium, 2, complex;
  - 10, opaque/ opaque, small to medium, 3 to 4, complex;
  - 1, orange-red/ red-orange, medium, 3 to 4, complex (septo-kata-alteromorph);
  - 2, vitric, non-vesicular, pale green/ isotropic, medium, 3 complex, kata-alteromorph

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 2, small, yellow/ isotropic, irregular/ amorphous (SA), weakly clustered basic distribution;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, medium to large, pale yellow/ high order white, elliptical form, fair;

•Other (e.g. bone, excrement, fungal remains): Fungal sclerotia: 2, dark reddish brown/ isotropic, medium to large, round, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 2, thick, excremental pedofeatures and tephra, brown-yellow/ isotropic;

Quasi-coatings (not touching): 2, thin, tephra, brown-yellow/ isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, medium, orange/ orange, none, clear, none, (braided texture);

1, unoriented, moderate clustered basic distribution, small, one lamination (<30), diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, yellow-brown, medium, SR, CZ, strong

clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): weakly developed small granular

Other notes and comments on the description of the sample as seen in thin section: Unit 2 is the unit closer to the skull. The boundary between units 1 and 2 is inclined /diagonal from vertical and whilst clear in hand specimen is diffuse in thin section. Unit 2 is more developed in pedostructure (towards a granular microstructure). More olivine seen in this unit than was expected from looking at other thin sections from GR 119.

Thin Section Description Recording Sheet

TS: 758 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-119

Sample positioning: 1 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 10
- Chambers: 5
- Vughs: 10
- Cracks: 1

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to medium, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with thin lower order yellow

rims, small to small-medium, 1, pellicular;

- Nesosilicates: olivine: 2, colourless/ 3rd order blues with very thin lower order yellow rims, small to medium, 1, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, dark red/ very dark red, medium to large, 3 to 4, complex;
  - 10, vitric, non-vesicular, pale green/ isotropic, small to large, 2, speckled to complex;
  - 5, hypocrystalline (<25% feldspars), non-vesicular, medium to medium-large, 2, pellicular and speckled;
  - 5, opaque/ opaque, small to medium, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): Fungal sclerotia: medium to large, dark reddish brown/ isotropic, round, fair (Micromass hypocating cappings);

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface):

Capping: 1, small, roots and sclerotia, orange/ isotropic;

Typic: 5, small to medium, excremental pedofeatures, orange-brown/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, orange/ orange, small, none, sharp, none;

1, unoriented, random, red/ red, medium, none, diffuse, none;

1, unoriented, random, pale orange/ isotropic (braided structure), none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 10, brownish yellow/ isotropic, small to alrge, SR, CZS, moderately clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Only a few, but thick coatings of palagonite and one almost completely surrounding a tephra fragment. Channel shaped voids are wide and horizontal oriented referred to “up” direction.

Thin Section Description Recording Sheet

TS: 764 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-119

Sample positioning: 3 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): pale yellow-brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 10
- Chambers: 5
- Vughs: 2
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small- medium to medium, 1 to 2, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks with lower order yellow rims,

small to small-medium, 2, irregular linear;

- Nesosilicates: olivine: none (see tephra)
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, pale green/ isotropic, small to medium, 2, complex (poro-alteromorph);
  - 5, hypocrystalline (<25% feldspars and olivine), 2, complex (holo-alteromorph);
  - 2, vitric, pale green/ isotropic, 2, irregular linear (poro-alteromorph);
  - 10, opaque/opaque, small to medium, 3 to 4, complex (popro-altermorph);
  - 2, red/ red, small, 3 to 4, complex (holo-alteromorph);

  Calcite: 2, medium, colourless/ 4th order pinks and greens, subhedral, 2 linear (normal to cleavage planes);

  Other: 2, small and very small, colourless/ isotropic, rod shaped with sharply defined smooth edges, weak clustered basic distribution, unoriented;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 10, yellow/ isotropic, medium, irregular form (SR) with moderate fragmentation, vesicular (20%);

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, orange/ isotropic, medium, linear form with diffuse edges, cellular structure visible in some areas, poor;

- Other (e.g. bone, excrement, fungal remains):

Excrement: 2, opaque/ opaque, very small, strong clustered basic distribution and strong clustered referred distribution to voids;

Fungal sclerotia: 5, round, medium, dark reddish brown/ isotropic, fair;

Fungal spores: 10, dusty pink /isotropic, circular to ovate, very small, strong clustered basic distribution, few strong clustered referred distribution to highly weathered tephra and amorphous organic matter;

Bone: 5, medium, irregular form, pale yellow/ 1st order grey (ropey internal structure visible in XPL), porous (<10%), good;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface): 5, medium, tephra, yellow-brown/ isotropic;

Quasi-coatings (not touching): 2, medium, tephra, yellow-brown /isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

5, unoriented, random, medium, red/ red/ none, clear, one;

1, unoriented, random, small, orange/orange, none, diffuse, none;

nucleic: 2, unoriented, weakly clustered basic distribution, orange/ orange, 1 lamination (>30), diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, brownish yellow/ isotropic, medium, SR, CZS, weak linear basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): granular, small;

Other notes and comments on the description of the sample as seen in thin section: Developed granular microstructure. Wide vaiety of tephra alteromorphs observed, most at extents 3 to 4 are of opaque or dark grey-purple botryoidal but a few are red anisotropic coloured. Fungal spores, AMO (amorphous organic matter) and highly weathered (extents 3 to 4) tephra are organized into clusters within the micro-unit.

Thin Section Description Recording Sheet

TS: 765 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-119

Sample positioning: 2 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 5
- Chambers: 10
- Vughs: 2
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to medium, 1, irregular linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with wide lower order yellow

rims, very small, 2, pellicular;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with very thin lower order yellow rims, very small, 2 pellicular and linear;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, colourless/ isotropic, medium to large, 2, irregular linear and speckled;
  - 2, vitric, non-vesicular, pale green /isotropic, medium, 2, complex;
  - 5, opaque/ opaque, small to medium, 3 to 4, complex;

  Ash aggreagate: 10, small to medium, grey/ weak interference colours, moderate clustered basic distribution

  Pumice: 2, vesicular (50%), grey/ isotropic, small to small-medium;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 5, pale yellow/ isotropic, medium, irregular and linear forms (SA);
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, orange/ isotropic, linear forms with mechanical damage (moderately fragmented), medium, poor;
- Other (e.g. bone, excrement, fungal remains): Fungal sclerotia: 10, round, dark brownish red/ isotropic, most (>70%) are small and strong clustered basic distribution, some large and random distribution;

Fungal spores: 1, very small, dusty pink/ isotropic, circular to ovate, strongly clustered basic distribution often with orange /orange medium diffuse typic hypocoatings;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: 1, large, amorphous organic matter, orange/ orange,
- Matrix:

  Hypo-coatings (related, touching a surface):

2, medium, tephra in voids, brown-yellow/ isotropic;

1, small, moderately weathered vitric non-vesicular tephra, orange/ orange;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, small, orange/ orange (speckled), non, clear, none;

1, unoriented, random, small, yellow/ yellow (speckled), none, diffuse, none;

1, unoriented, random, medium, brownish red/orange, 2 laminations (>30), diffuse, none;

<1 nucleic, unoriented, random, medium, dark red/ dark red, 2 laminations (>30), diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, brown-yellow/ isotropic, medium to large, SR, CZS, strongly clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: The densest concentration of small sclerotia are also in strong referred distribution with the loose spores in the top corner at the pelvis adjacent end of this TS.

Thin Section Description Recording Sheet

TS: 814 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-119

Sample positioning: 3 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: none
- Channels: 5
- Chambers: 2
- Vughs: 10
- Cracks: 2

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: none (see tephra)
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks, small, 1, linear;
- Nesosilicates: olivine: , colourless/ 3rd order blues with very thin lower order yellow rims,
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, colourless/ isotropic, small to medium, 1, linear;
  - 5, opaque/ opaque, medium, 3 to 4, complex;
  - 2, hypocrystalline (<50% feldspars and olivine), grey/ isotropic vitric Micromass surrounds phenocrysts, 2, complex;
  - 1, vitric, colourless with yellow areas/ isotropic with yellow areas, medium, 2, speckled with fibro palagonite;
  - 1, red/ red, small, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 1, medium, orange/ isotropic, linear form, poor;
- Other (e.g. bone, excrement, fungal remains): Bone: 2, pale yellow/ 1st order greys, linear form, medium, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 5, medium, tephra, yellow-brown/ isotropic;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, unoriented, random, medium, orange/ isotropic, none, clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500μm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Some of the moderately to highly weathered tephra fragments have some fibro-palagonite around their edges (*i.e.* on the exterior surfaces of vitric tephra weathering extent 2 with speckled weathering patterns).

Thin Section Description Recording Sheet

TS: 814 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-119

Sample positioning: 3 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 2
- Channels: 5
- Chambers: 10
- Vughs: 2
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (carlsbad twinned): 2, colourless/ 1st order greys, small to medium, 1 to 2, linear;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order yellows, small to small-medium, 1,

irregular linear;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with very thin lower order yellow rims, very small, 1, pellicular;

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, pale green/ isotropic, small, 1, irregular linear;
  - 2, hypocrystalline (pyroxenes and feldspars <25%), non-vesicular, pale green/ isotropic vitric Micromass surrounding phenocrysts, small-medium to large, 2, irregular liner and speckled;
  - 5, opaque/ opaque, small to medium, 3 to 4, complex;
  - 2, dark brown/ orange (50% gel palagonite), 2, complex (poro-alteromorph);
  - 1, hypocrystalline (<25% feldspars), 3, complex (poro-alteromorph)
  - 1, vitric, non-vesicular, pale green/ isotropic, medium, 2, irregular linear and speckled;

  Calcite: 1, small, colourless/ 4th order pinks and greens, 1, linear (normal to cleavage planes);

  Other: 5, colourless/ isotropic, rod-shaped, very small and small;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

1, brown-orange/ isotropic, small, SR, poor;

1, orange/ isotropic, small, linear, good;

- Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface): 1, small, tephra, yellow-brown/ isotropic;

  Quasi-coatings (not touching): 2, small, tephra, orange-brown/ isotropic;

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large

>100µm), colour, laminations (</>30µm), boundary, fragmentation]:

1, unoriented, random, small, orange/ orange, none, clear, none;

1, unoriented, random, medium, orange/ orange, none, clear, none;

1, unoriented, random, medium, orange/ orange, 2 laminations (>30), clear, none;

1, unoriented, random, medium, pale orange/ orange with yellow speckled, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, brown-yellow/ isotropic, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: A few (*c.*5%) colourless isotropic rods (random and unoriented) were seen and are interpreted as diatoms;

Thin Section Description Recording Sheet

TS: 825 Site code: HST 11

Micro-unit: 1 of 5 Gr.: HSM-A-119

Sample positioning: 2 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50μm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-orange/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: 10
- Channels: none
- Chambers: none
- Vughs: 15
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 1, colourless/ 1st order greys, very small, 1, pellicular;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, pale brown/ isotropic, medium, 2, irregular linear and speckled;
  - 5, vitric, non-vesicular, pale green/ isotropic, small to medium, 2, speckled and irregular linear;
  - 2, hypocrystalline (<10% feldspars), non-vesicular, pale green/ isotropic vitric Micromass surrounds phenocrysts, small to medium, 2, complex;
  - 5, opaque/ opaque, small, 3 to 4, complex;

  Ash aggregates: 1, medium, grey/ weak interference colours, irregular form (SR), strongly clustered basic distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 10, pale yellow /isotropic, medium, well rounded;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains):

Fungal spores: 10, reddish pink /isotropic, very small, circular to oval, excellent, strongly clustered basic distribution and strongly clustered referred distribution to amorphous organic matter, unoriented;

Fungal sclerotia: 5, brownish red/ isotropic, medium, circular to irregular, good, strongly clustered referred distribution to amorphous organic matter, unoriented;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface):

Typic: 2, medium, tephra, brownish orange/ isotropic, CZ;

Capping: 1, medium, tephra, brownish orange/ isotropic, CZ;

Pendant: 1, thick, tephra, brownish orange/ isotropic, CZ;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, unoriented, random, small, orange/ orange, none, diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, brown/ isotropic, small, R, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): granular, small

Other notes and comments on the description of the sample as seen in thin section: Granular microstructure moderately developed. Peds interspersed with aggregates of pale AMO (amorphous organic matter), covered in fungal remains. There were some rare examples of moderately weathered tephra altering to an iron-rich alteration product (gibbite with tephra at extent 2).

Thin Section Description Recording Sheet

TS: 825 Site code: HST 11

Micro-unit: 2 of 5 Gr.: HSM-A-119

Sample positioning: (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): irregular and sharp

Groundmass

c/f ratio (50µm limit): 5 ,95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 5
- Chambers: 2
- Vughs: none
- Cracks: nonw

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: none
- Inosilicates: Pyroxenes: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, colourless/ isotropic, very small to small, 1, pellicular;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): Fungal spores: 1, very small, dusty pink/ isotropic, circular to oval, good;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface):

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:
- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS):

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Fine material of single population, massive structure, with faint horizontal internal banding and sharp clear boundaries with surrounding micro-units in the TS.

Thin Section Description Recording Sheet

TS: 825 Site code: HST 11

Micro-unit: 3 of 5 Gr.: HSM-A-119

Sample positioning: 2 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): wavy and irregular

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-orange/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 2
- Chambers: 5
- Vughs: 10
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small to medium, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: , colourless/ 2nd order pinks with thin lower order yellow

rims, small to small-medium,

- Nesosilicates: olivine: 2, colourless/ 3rd order blues with lower order yellow rims, 2, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, small to medium, 2, speckled;
  - 1, vitric, non-vesicular, pale green/ isotropic, 2, complex (to a red coloured alteration product);
  - 2, vitric, non-vesicular, pale green /isotropic, 1, pellicular;
  - 1, red/ red, small, 3 to 4, complex;
  - 5, very dark grey/ dark purple-grey, small to small-medium, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

1, colourless/ high order white, medium, elliptical form with irregular clear edges, good;

2, orange/ high order white, small to medium, irregular form, fair to good, cellular structure visible;

•Other (e.g. bone, excrement, fungal remains): Fungal spores: 1, dusty pink /isotropic, very small, circular to ovate, strongly clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): none

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, unoriented, random, small, orange/ orange, 2 laminations (<30), diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): 2, brown-orange/ isotropic, small, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): weak granular small

Other notes and comments on the description of the sample as seen in thin section: A granular microstructure is in early stages of development. A wavy and irregular boundary with the lower micro-unit.

Thin Section Description Recording Sheet

TS: 825 Site code: HST 11

Micro-unit: 4 of 5 Gr.: HSM-A-119

Sample positioning: 2 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): sharp and irregular

Groundmass

c/f ratio (50µm limit): 15 ,85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 2
- Chambers: 5
- Vughs: 5
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 1, colourless/ 1st order greys, very small to small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks with wide lower 2nd order yellow rims, very small, 2, pellicular;
- Nesosilicates: olivine: 2, colourless/ 3rd order blues with wide lower order yellow rims,

very small to medium, 1 pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, hypocrystalline (<10% feldspars), non-vesicular, medium, 2 pellicular;
  - 2, red/ red, medium, 3 to 4, complex, moderate basic clustered distribution;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 5, pale yellow/ isotropic, irregular (SR) form with clear edges, medium, strong clustered basic distribution;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, orange/ isotropic, medium, irregular form with diffuse edges, poor;

•Other (e.g. bone, excrement, fungal remains): fungal sclerotia: 5, dark brown/ isotropic, medium, round, fair to poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): none

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, unoriented, random, small, red/ red, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS):

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Some traits in common with micro-unit 2 from this TS.

Thin Section Description Recording Sheet

TS: 825 Site code: HST 11

Micro-unit: 5 of 5 Gr.: HSM-A-119

Sample positioning: 2 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 25, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 2
- Channels: 5
- Chambers: 10
- Vughs: 2
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars (carlsbad twinned): 2, colourless/ 1st order greys, very small to small, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with wide 2nd order yellow

rims, small, 2, pellicular;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with very thin lower order yellow rims, very small, 1, pellicular;

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, colourless/ isotropic, small, 2, pellicular and irregular linear;
  - 5, vitric, non-vesicular, opaque/ opaque, 3, complex;
  - 2, hypocrystalline (<25% feldspars and pyroxene), non-vesicular, small to small-medium, 2, pellicular and irregular linear;
  - 1, red/ red, small, 3 to 4, complex, (poro-alteromorph);
  - 1, red/ red, small, 3 to 4, complex, (iso-alteromorph);

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 1, pale yellow/ isotropic, small, irregular form with clear edges;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

1, orange/ isotropic, small, irregular (SR) form with clear edges, poor;

1, yellow-brown/ isotropic, small, irregular (SR) with clear edges, poor;

•Other (e.g. bone, excrement, fungal remains): Bone: 1, yellow/ isotropic (heterogeneous internal structure), small, irregular form with clear edges, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 1, small, moderately weathered (extent 2) tephra, orange-brown /isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]:

2, unoriented, random, small to medium, orange/ orange, none, diffuse, none;

1, unoriented, random, small, yellow/ yellow, none, diffuse, none;

1, unoriented, random, medium, orange/ orange, 2 laminations (>30), diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 1, orange-brown/ isotropic, small, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Query arising on interconnectivity of pores and consequences of vesicles percentage greater in this slide; probably interesting processes involving iron uptake by tephra undergoing weathering processes occurred within the materials in thin section on this slide.

Grave 120 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 625 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-120

Sample positioning: C2 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): dark yellowish brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 5
- Chambers: 10
- Vughs: 5
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 15, colourless/ 1st order greys, small, 2, linear and pellicular;
- Inosilicates: Pyroxenes: none
- Nesosilicates: olivine: , colourless/ 3rd order blues with very thin lower order yellow rims,
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): ash: 5, grey/ pale interference colours, irregular form, strongly clustered basic distribution;

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, small, 1, pellicular;
  - 5, hypocrystalline, grey/isotropic vitric Micromass with feldspar phenocrysts (<25%), large, 2, complex, moderate clustered basic distribution;
  - 2, vitric, nonvesicular, brown/ isotropic, medium, 2 speckled and pellicular;
  - 2, opaque/ opaque, medium, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, medium, orange/ isotropic, irregular form, fibrous structure visible, poor;

•Other (e.g. bone, excrement, fungal remains): sclerotia: 1, large, round, dark brown/ isotropic, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 2, large, tephra (opaque tephra), orange-brown/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, medium, red/ red, 2 laminations (>30), diffuse, none; 2, small, orange/ orange, none, diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 1, yellow brown/ isotropic, large CZS, strongly

clustered referred distribution to channel voids

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Most nodules appear to still be growing and channels are either horizontal or vertically oriented;

Thin Section Description Recording Sheet

TS: 716 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-120

Sample positioning: 2X (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): irregular and clear;

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): dark brownish yellow / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): very weakly speckled

Voids (% abundance within µ-unit)

- Vesicles: 0
- Channels: 5
- Chambers: 10
- Vughs: 15
- Cracks: 2

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to small-medium, 1 to 2, pellicular;
- Inosilicates: Pyroxenes: CPX: 5, colourless/ 2nd order pinks with thin lower order yellow

rims, very small and small, 1, pellicular;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with thin lower order yellow rims, small, 1, pellicular, strongly clustered referred distribution to tephra;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, colourless/ isotropic, small to small-medium, 1, pellicular;
  - 2, vitric, non-vesicular, pale green/ isotropic, small to medium, 1 to 2, pellicular and speckled;
  - 10, small-medium to medium, opaque /opaque, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 1, yellow /isotropic, medium, SA, sharp;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): sclerotia: 2, medium, reddish brown/ isotropic, round, fair;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 2, medium, moderately weathered tephra and excremental pedofeatures, brownish yellow/ isotropic;

  Quasi-coatings (not touching): 5, small, tephra, brownish yellow/ isotropic;

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, red/ red, small, none, clear, none; 2, orange /orange, small and medium, none, clear, none; 1, opaque/ opaque, small, none visible, clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, small, SR, yellowish brown/ isotropic, CZ,

weakly clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Partially unconsolidated as part of the block crumbled during processing.

Thin Section Description Recording Sheet

TS: 716 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-120

Sample positioning: 2 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50μm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): yellowish brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within μ-unit)

- Vesicles: 0
- Channels: 2
- Chambers: 2
- Vughs: 10
- Cracks: 5

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, small to medium, 1 to 2, linear and pellicular, strongly clustered referred distribution to tephra;
- Inosilicates: Pyroxenes: CPX: 5, colourless/ 2nd order pinks with thin lower order yellow

rims, small-medium to medium, 1 to 2, pellicular and linear;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with thin lower order yellow rims, small and small-medium, 1, pellicular;

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash): pumice: 2, grey/ pale interference colours, medium, strong clustered basic distribution; ash: 2, grey/ pale interference colours, medium, moderate clustered basic distribution;

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, colourless/ isotropic, small to small-medium, 1, pellicular;
  - 1, vitric, non-vesicular, pale green/ isotropic, small-medium to medium, 1, pellicular;
  - 5, vitric, non-vesicular, pale green/ isotropic, small-medium to medium, 2, pellicular and speckled;
  - 10, opaque/opaque, medium to medium-large, 3 to 4, complex;
  - 2, medium, red/ red, 3 to 4, complex to poro-alteromorph;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 1, yellow/ isotropic, medium, SR, weakly clustered basic distribution;

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none

- Other (e.g. bone, excrement, fungal remains): bone: 1, yellow /1st order greys, medium, SA and irregular form, fair; sclerotia: 5, dark red/ isotropic, medium to small, irregular and angular form, fragmented and poor preservation;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface): 2, small, heavily weathered tephra, brownish yellow/ isotropic;

  Quasi-coatings (not touching): 2, small, tephra, brownish yellow/ isotropic;

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, yellow/ yellow, small, none, clear, none; 2, orange, orange, small, none, clear, none; 2, red, red, medium, none, clear, none;

- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): 2, yellowish brown/ isotropic, medium to large, R, clustered basic distribution, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Partially unconsolidated as block crumbled during processing.

Thin Section Description Recording Sheet

TS: 718 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-120

Sample positioning: 1 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 45, 55

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit)

- Vesicles: 0
- Channels: 5
- Chambers: 5
- Vughs: 5
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to medium, 1, linear and pellicular, strong clustered referred distribution to tephra;
- Inosilicates: Pyroxenes: CPX: 5, colourless/ 2nd order pinks with lower order yellow rims,

small to small-medium, 2, pellicular;

- Nesosilicates: olivine: 5, colourless/ 3rd order blues with lower order yellow rims, small, 2, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): calcite: 2, medium, pale grey/ high order white, angular, 1, linear; ash: 10, large, pale grey/ pale interference colours; 2 phytoliths or pumice, 1, pellicular and speckled; melted silica: 1, >70% vesicles, large, colourless/ isotropic;

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, colourless/ isotropic, small, 1 to 2, pellicular and irregular linear;
  - 1, vitric, non-vesicular, medium to large, purplish grey/ isotropic, 2, pellicular;
  - 2, vitric, vesicular (<25%), small to large, green/ isotropic, 1 to 2, pellicular and speckled;
  - 1, non-vesicular, hypocrystalline (<25% phenocrysts), medium to large, 1 to 2, pellicular and speckled;
  - 2, medium, brown/ isotropic, 3 to 4, complex to holo-alteromorph;
  - 5, medium to medium-large, grey/ isotropic, 3 to 4, complex to poro-alteromorph;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 5, yellow/ isotropic, SR, irregular, medium, homogenous internal;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): bone: 1, yellow/ isotropic, medium to medium – large, SR, linear form, fair; sclerotia: 2, large, dark brown/ isotropic, SR, diffuse, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): 15, small, tephra, brownish yellow/ isotropic;

  Quasi-coatings (not touching): 5, small, tephra (moderately weathered tephra), brownish yellow/ isotropic;

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, small, orange/ orange, none, diffuse, none; 2, medium, red/ red, none, clear, none; 1, orange/ orange, small, none,

sharp, none, moderate clustered referred distribution to hypocrystalline tephra;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, small to medium brownish yellow/ isotropic, SR, CZ, weakly clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: 2 large ash lumps at end of thin section opposite to hear and a wide variety of heavily weathered (extents 3 and 4) tephra in regards to colours and porosity.

Thin Section Description Recording Sheet

TS: 739 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-120

Sample positioning: 4 (perpendicular oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): yellowish brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 2
- Channels: 2
- Chambers: 5
- Vughs: 10
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to small-medium, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with wide lower order yellow

rims, small, 2 pellicular;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with thin lower order yellow rims, small, 1 pellicular;

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash): ash: 2, large aggregaes, grey/ pale grey interference colours, clear edges, strongly clustered basic distribution;

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, small to medium, 2, complex;
  - 5, non-vesicular, hypocrystalline (<30% phenocrysts), pale green vitric Micromass, small to medium, 2, complex;
  - 10, small to medium, opaque/ opaque, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 1, yellow/ isotropic, sharp edges, medium;

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, brownish red/ isotropic, linear, SR, small to large, poor;

•Other (e.g. bone, excrement, fungal remains): sclerotia: 1, large, dark brown/ isotropic, R, poor;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 2, medium, tephra, yellowish brown/ isotropic;

Quasi-coatings (not touching): 1, thick , tephra, yellowish brown/ isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, medium, dark red/ red, none, sharp, none; 1 nucleic, medium, dark red/ red, none, sharp, none; 2 small, orange/ orange speckled, 2 (<30), diffuse, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, small, yellow brown/ isotropic, SR, CZS,

moderate linear basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Resin blobs and bubbles present. Quasi-coatings present on the less degraded tephra (extents 1 and 2) and shattered vitric tephra at extents 3 and 2 with typic hypocoatings. Plant remains are poor and diffuse edges with Micromass. One example of heavily altered tephra with gel- or fibro-palagonite rings.

Thin Section Description Recording Sheet

TS: 753 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-120

Sample positioning: A1 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 45, 55

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 2
- Channels: 2
- Chambers: 5
- Vughs: 10
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to small-medium, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 2, colourless/ 2nd order pinks with thin lower order yellow

rims, small, 1 pellicular;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with thin lower order yellow rims, small to small-medium, 1, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): ash aggregates: 5, grey/ pale interference colours, irregular forms with sharp edges, medium to medium-large;

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 5, vitric, non-vesicular, pale green/ isotropic, small to medium, 2 complex;
  - 10, small to medium, opaque/ opaque, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 2, yellow/ isotropic, small to medium, SA, clear;
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, yellowish brown/ high order white, small, elliptical, diffuse, moderate clustered distribution; charcoal: 10, medium to large, linear, fair, horizontal orientation referred to the ground surface;
- Other (e.g. bone, excrement, fungal remains): excrement: 10, very small to small, botryoidal structure, dark red, moderately clustered distribution; bone: 10, yellow/ 1st order greys, large, irregular and SA form, horizontal orientation referred to the ground surface; sclerotia: 1, medium, dark reddish brown/ isotropic, SR, fragmented, poor preservation;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface):

typic: 1, small, tephra, orange/ isotropic;

pendant: 5, small, tephra, orange/ isotropic;

capping :1, medium, tephra, orange/ isotropic;

  Quasi-coatings (not touching): 5, large, tephra, dark orange/ isotropic;

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, small, orange/ orange, none, diffuse, none;
- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): 10, small to large, yellowish brown/ isotropic, R, CZS, weakly clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: The top of this thin section is defined by horizontal layers of bone, opaque material and ash (in ascending order). Some thick palagonite coatings on tephra present.

Thin Section Description Recording Sheet

TS: 766 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-120

Sample positioning: 4 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50μm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): yellowish brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within μ-unit)

- Vesicles: 2
- Channels: 5
- Chambers: 5
- Vughs: 10
- Cracks: 0

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to small-medium, 1, linear and pellicular;
- Inosilicates: Pyroxenes: none
- Nesosilicates: olivine: 5, colourless/ 3rd order blues with very wide lower order yellow

rims, small to medium, 2, pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): ash: 2, large, grey/ pale grey interference colours; calcite: 1, small, colourless/ high order white, 1, pellicular;

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, pale green/ isotropic, small to medium, 1, pellicular and irregular linear;
  - 5, vitric, non-vesicular, medium, pale green/ isotropic, 2, complex to poro-septo-alteromorph;
  - 10, medium, opaque/ opaque, 3 to 4, complex;
  - 1, small-medium, red/ red, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 1, brownish orange/ isotropic, medium, linear, poor;

•Other (e.g. bone, excrement, fungal remains): sclerotia rind: 1, medium, sharp edge, fragmented, irregular rounded form, poor preservation;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 5, large, tephra and nodules, orange brown/ isotropic;

Quasi-coatings (not touching): 2, medium to small, tephra, orange brown/ isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 2, small to medium, red/ red, 2 lam (<30), diffuse, none; 1 smal, dark orange/ bright orange, none, diffuse, none; 2 dark red/ opaque, none, clear, none; <1, yellow/ yellow, medium, none, sharp, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, small to medium, yellowish brown/ isotropic,

R to SR, CZS, random distribution and unoriented;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: none;

Thin Section Description Recording Sheet

TS: 767 Site code: HST 11

Micro-unit: 1 of 1 Gr.: HSM-A-120

Sample positioning: 1 (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish yellow / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 5
- Chambers: 10
- Vughs: 2
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to medium, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with wide lower order yellow

rims, small to small-medium,2, pellicular and irregular linear;

- Nesosilicates: olivine: 5, colourless/ 3rd order blues with thin lower order pink and then yellow rims, small to small-medium, 2, pellicular and irregular linear;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): ash aggregate: 5, large, irregular form, grey/ pale interference colours;

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, pale green/ isotropic, small to medium, 1, pellicular and irregular linear;
  - 2, vitric, non-vesicular, pale green/ isotropic, small to large, 2 pellciular nd irregular linear and speckled;
  - 2, hypocrystalline, grey vitric Micromass with feldspar phenocrysts (<20%), medium to large, 2, complex;
  - 5, opaque/ opaque, small to medium, 3 to 4 complex with diffuse edges;
  - 1, opaque/ opaque, poro-septo-alteromorph, medium, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 2, yellow /isotropic, medium to large, irregular, clear edges, weakly clustered basic distribution;

- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, medium, brownish orange/ isotropic, linear form and poor preservation in Micromass, elliptical form with fair preservation in channel voids;

- Other (e.g. bone, excrement, fungal remains): sclerotia: 2, large, dark brown/ isotropic, round, fair; spores: 2, good preservation, very small in medium sized aggregates, strong clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

Hypo-coatings (related, touching a surface): 5, small to medium, heavily weathered tephra, sclerotia, and minerals, brownish yellow/ isotropic;

Quasi-coatings (not touching): 2, thick, moderately weathered tephra, orange brown/ isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 5, orange/ orange, small to

large, 4 laminations (<30), diffuse, none; 5, yellow/ yellow speckled, small, none, clear, none; 1, small, dark red/ very dark red, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, small to large, orange brown/ isotropic, R to SA, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Heavily bioturbated sediment. A variety of excremental pedofeatures in terms of size and shape with moderate basic distribution. Porous organic matter described as amorphous organic matter but tentatively interpreted as heavily weathered bone.

Thin Section Description Recording Sheet

TS: 800 Site code: HST 11

Micro-unit: 1 of 2 Gr.: HSM-A-120

Sample positioning: C3 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange-brown / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 5
- Chambers: 2
- Vughs: 2
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 1, colourless/ 1st order greys, small and very small, 1, pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with wide lower order yellow rims, small, 1 pellicular;
- Nesosilicates: olivine: 1, colourless/ 3rd order blues with 2nd order yellow rims, small, 1,

pellicular;

- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, pale green/ isotropic, small, 1, pellicular;
  - 2, vitric, non-vesicular, pale brown/ isotropic, small to small medium, 1, pellicular;
  - 5, opaque/ opaque, medium, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 5, orange/ isotropic, medium, linear, poor;

•Other (e.g. bone, excrement, fungal remains): sclerotia: 1, medium, brown/ isotropic, irregular form as fragmented, poor; spore: 1, very small, dark pink/ isotropic, strong clustered basic distribution and moderate clustered referred distribution to opaque tephra;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): none

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, small, orange/ orange, none, clear, none; 1, small, red/ red, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 10, large, yellow-brown/ isotropic, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Fine material is organic and very cloudy, some signs of granular pedostructure beginnings;

Thin Section Description Recording Sheet

TS: 800 Site code: HST 11

Micro-unit: 2 of 2 Gr.: HSM-A-120

Sample positioning: C3 Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): greyish brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 0
- Chambers: 2
- Vughs: 10
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 1, colourless/ 1st order greys, small to medium, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with thin lower order yellow

rims, small to small-medium, 1, irregular linear;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with wide lower order yellow rims, small, 2, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 1, vitric, non-vesicular, pale green/ isotropic, small to medium, 2, pellicular and speckled;
  - 1, vitric, non-vesiculr, colourless/ isotropic, small, 1, pellicular;
  - 5, hypocrystalline, non-vesicular, pale green/ isotropic vitric Micromass with feldspar phenocrysts (<25%), medium to medium large, 2, pellicular and speckled;
  - 5, opaque/ opaque, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 15, orange/ isotropic, large, linear and irregular forms, fair to poor; charcoal: 5, opaque/ opaque, large, linear, good to poor;

•Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 2, medium, tephra, brownish orange/ isotropic;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, yellow/ yellow, small, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 5, medium, orange brown/ isotropic, SA, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Lots of orange/ isotropic plant remains at poor to fair preservation and in moderate basic clustered distribution and some of them with substantial deposits of iron deposits;

Thin Section Description Recording Sheet

TS: 824 Site code: HST 11

Micro-unit: 1 of 3 Gr.: HSM-A-120

Sample positioning: 2X (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and irregular

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish orange / isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 1
- Channels: 10
- Chambers: 2
- Vughs: 5
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 5, colourless/ 1st order greys, small to medium, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with thin lower order yellow

rims, small to small-medium, 2, pellicular;

- Nesosilicates: olivine: 1, colourless/ 3rd order blues with thin 2nd order yellow rims, small, 1, pellicular;
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):

- 2, vitric, non-vesicular, pale green/ isotropic, small, 2, pellicular and irregular linear;
- 5, opaque/ opaque, small to medium, 3 to 4, complex;
- 2, hypocrystalline (<30% phenocrysts), non-vesicular, small to medium, 2, complex;
- 1, vitric, grey/ isotropic, 2 complex to poro-alteromorph;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]:

1, colourless/ high order white, elliptical, sharp, good, strong clustered referred distribution to voids;

2, brownish orange/ istorpic, SR, diffuse, poor;

•Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface):

Quasi-coatings (not touching): 1, small, moderately weathered tephra, brownish orange/ isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, orange/ isotropic, small, none, clear, none; 2, medium, orange/ orange, 2(<30), clear, none; 1, medium, red/red, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm,

large >500µm), angularity, size of clasts(e.g.CZS): 5, medium SR, yellowish brown/isotropic, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Block partially crumbled during manufacture causing some disturbance.

Thin Section Description Recording Sheet

TS: 824 Site code: HST 11

Micro-unit: 2 of 3 Gr.: HSM-A-120

Sample positioning: 2X (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50μm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): pale yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within μ-unit)

- Vesicles: 0
- Channels: 2
- Chambers: 2
- Vughs: 10
- Cracks: 0

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: none
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, opaque/ opaque, small to small-medium, 3 to 4, complex;
  - 1, vitric, non-vesicular, colourless/ isotropic, 2 irregular linear and pellicular;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant [size (small <100µm, medium 100-500µm, large >500µm)]: none
- Other (e.g. bone, excrement, fungal remains): spores: 5, random distribution and orientation, very small, dark pink/ isotropic, round, good;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): none

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: none
- Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: A fine graine and very thin horizontally oriented micro-unit of pale yellow colour with less voids compared to surrounding micro-units (micro-units 1 and 3 from this thin section).

Thin Section Description Recording Sheet

TS: 824 Site code: HST 11

Micro-unit: 3 of 3 Gr.: HSM-A-120

Sample positioning: 2X (tangential oriented TS) Sk & fills: N/A

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish yellow/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit)

- Vesicles: 5
- Channels: 2
- Chambers: 2
- Vughs: 5
- Cracks: 0

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: Feldspars: 2, colourless/ 1st order greys, very small to small, 1, linear and pellicular;
- Inosilicates: Pyroxenes: CPX: 1, colourless/ 2nd order pinks with 2nd order yellow rims,

small, 2 pellicular;

- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

  Tephra (abundance, vitric or hypocrystalline, vesicular or non-vesicular, colour, size, weathering extent, weathering pattern):
  - 2, vitric, non-vesicular, pale brown/ isotropic, small to medium, 2, irregular linear;
  - 10, opaque/ opaque, small, 3 to 4, complex;

Organics type, % abundance of the µ-unit, size (v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant [size (small <100µm, medium 100-500µm, large >500µm)]: 2, brownish orange/ isotropic, small to medium, linear, poor;

•Other (e.g. bone, excrement, fungal remains): spores: 10, very small, round, dark pink/ isotropic, moderate clustered basic distribution and weak clustered referred distribution to voids;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (small <10µm, medium 10-30µm, large >30µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): none

Quasi-coatings (not touching): 1, small, moderately weathered tephra, yellowish orange/ isotropic;

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (small <30µm, medium 30-100µm, large >100µm), colour, laminations (</>30µm), boundary, fragmentation]: 1, orange/ orange, small to medium, none, clear, none;

•Excremental Pedofeatures (% abundance, colour PPL, size (small <100µm, medium 100-500µm, large >500µm), angularity, size of clasts(e.g.CZS): 2, medium, brownish-yellow/ isotropic, SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section: Spores visible but no sclerotia visible in this micro-unit.

IIIB. Point counting: raw data

C1 controls

	715		741		620		623		599	
Categories	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
t,r,m 0,1	41	6.327	89	10.471	42	5.392	57	6.843	68	8.095
t 2	41	6.327	42	4.941	7	0.899	38	4.562	50	5.952
t 3,4 bo	11	1.698	13	1.529	4	0.513	10	1.2	49	5.833
t 3,4 Fe	0	0	1	0.118	0	0	0	0	0	0
fine	290	44.753	224	26.353	221	28.37	266	31.933	401	47.738
voids	135	20.833	325	38.235	193	24.775	190	22.809	173	20.595
nod & coat	26	4.012	108	12.706	9	1.155	47	5.642	16	1.905
OM	54	8.333	30	3.529	5	0.642	17	2.041	80	9.524
other	50	7.716	18	2.118	298	38.254	208	24.97	3	0.357

Grave 114

	727		680		734s1		734s2		734s3		734s4		745s5		734s6		849		713s1	
Categories	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
t,r,m 0,1	51	5.478	21	2.763	1	0.083	1	0.16	5	0.55	19	2.513	25	2.671	8	0.658	27	2.632	2	0.33
t 2	55	5.908	57	7.5	208	17.348	89	14.263	143	15.732	100	13.228	150	16.026	134	11.029	37	3.606	19	3.135
t 3,4 bo	31	3.33	49	6.447	73	6.088	39	6.25	103	11.331	33	4.365	43	4.594	48	3.951	85	8.285	52	8.581
t 3,4 Fe	2	0.215	1	0.132	3	0.25	5	0.801	2	0.22	4	0.529	0	0	2	0.165	1	0.097	0	0
fine	333	35.768	325	42.763	467	38.949	242	38.782	264	29.043	284	37.566	279	29.808	477	39.259	282	27.485	87	14.356
voids	240	25.779	163	21.447	177	14.762	140	22.436	169	18.592	136	17.989	179	19.124	254	20.905	239	23.294	210	34.653
nod & coat	68	7.304	26	3.421	29	2.419	13	2.083	40	4.4	38	5.026	46	4.915	50	4.115	18	1.754	46	7.591
OM	44	4.726	91	11.974	145	12.093	41	6.571	143	15.732	91	12.037	141	15.064	207	17.037	276	26.901	105	17.327
other	107	11.493	27	3.553	96	8.007	54	8.654	40	4.4	51	6.746	73	7.799	35	2.881	61	5.945	85	14.026

713s2		713s3		713s4		713s5		713s6		729		843s1		843s2		843s3		843s4		843s5	
count	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
6	0.99	5	0.737	15	2.381	6	0.917	20	2.315	15	1.786	7	2.244	5	1.202	7	1.62	5	1.157	10	2.451
15	2.475	10	1.475	17	2.698	34	5.199	42	4.861	44	5.238	11	3.526	18	4.327	41	9.491	27	6.25	33	8.088
52	8.581	34	5.015	36	5.714	43	6.575	38	4.398	43	5.119	31	9.936	36	8.654	54	12.5	34	7.87	37	9.069
2	0.33	0	0	1	0.159	5	0.765	0	0	1	0.119	4	1.282	4	0.962	2	0.463	1	0.231	0	0
107	17.657	243	35.841	219	34.762	218	33.333	364	42.13	409	48.69	68	21.795	81	19.471	125	28.935	159	36.806	158	38.725
163	26.898	204	30.088	151	23.968	114	17.431	175	20.255	180	21.429	60	19.231	82	19.712	105	24.306	97	22.454	92	22.549
51	8.416	29	4.277	36	5.714	49	7.492	42	4.861	34	4.048	19	6.09	44	10.577	51	11.806	41	9.491	22	5.392
91	15.017	73	10.767	92	14.603	89	13.609	103	11.921	29	3.452	28	8.974	35	8.413	16	3.704	32	7.407	35	8.578
119	19.637	80	11.799	63	10	96	14.679	80	9.259	85	10.119	84	26.923	111	26.683	31	7.176	36	8.333	21	5.147

	843s6		726	
Categories	**count**	**%**	**count**	**%**
t,r,m 0,1	5	2.381	11	0.935
t 2	12	5.714	137	11.65
t 3,4 bo	18	8.571	49	4.167
t 3,4 Fe	0	0	0	0
fine	78	37.143	413	35.119
voids	47	22.381	386	32.823
nod & coat	10	4.762	71	6.037
OM	21	10	52	4.422
other	19	9.048	57	4.847

Grave 115

	740		841		826		816s1		816s2		816s3		816s4		816s5		816s6		759s1	
Categories	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
t,r,m 0,1	33	3.3	62	5.789	9	1.042	6	1.128	7	1.326	11	1.91	5	1.736	3	0.487	11	1.698	0	0
t 2	61	6.1	84	7.843	54	6.25	28	5.263	47	8.902	42	7.292	28	9.722	52	8.442	30	4.63	19	6.23
t 3,4 bo	49	4.9	50	4.669	82	9.491	17	3.195	32	6.061	35	6.076	15	5.208	18	2.922	36	5.556	13	4.262
t 3,4 Fe	0	0	1	0.093	1	0.116	0	0	0	0	0	0	0	0	0	0	0	0	0	0
fine	272	27.2	209	19.514	413	47.801	95	17.857	149	28.22	189	32.813	93	32.292	233	37.825	209	32.253	24	7.869
voids	251	25.1	355	33.147	227	26.273	150	28.195	165	31.25	189	32.813	87	30.208	160	25.974	200	30.864	205	67.213
nod & coat	138	13.8	109	10.177	35	4.051	40	7.519	60	11.364	27	4.688	13	4.514	27	4.383	29	4.475	18	5.902
OM	62	6.2	139	12.979	27	3.125	41	7.707	30	5.682	48	8.333	24	8.333	47	7.63	36	5.556	11	3.607
other	134	13.4	62	5.789	16	1.852	154	28.947	36	6.818	35	6.076	23	7.986	76	12.338	96	14.815	15	4.918

759s2		759s3		759s4		759s5	
count	**%**	**count**	**%**	**count**	**%**	**count**	**%**
0	0	6	1.5	4	1.096	22	6.667
23	6.667	18	4.5	16	4.384	35	10.606
20	5.797	27	6.75	26	7.123	10	3.03
2	0.58	7	1.75	3	0.822	0	0
24	6.957	83	20.75	86	23.562	84	25.455
142	41.159	163	40.75	130	35.616	145	43.939
27	7.826	27	6.75	49	13.425	18	5.455
100	28.986	52	13	28	7.671	7	2.121
7	2.029	17	4.25	23	6.301	9	2.727

Grave 116

	589		801		760		717s1		717s2		717s3		717s4		717s5		717s6		842	
Categories	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
t,r,m 0,1	20	2.096	18	2.609	17	2.891	1.852	3.472	6	1.316	1	0.231	12	2.778	8	3.704	8	1.961	35	3.119
t 2	54	5.66	28	4.058	23	3.912	6.173	3.241	22	4.825	17	3.935	29	6.713	11	5.093	22	5.392	53	4.724
t 3,4 bo	24	2.516	18	2.609	21	3.571	6.636	9.028	29	6.36	23	5.324	30	6.944	13	6.019	22	5.392	147	13.102
t 3,4 Fe	1	0.105	0	0	2	0.34	0	0.231	0	0	0	0	2	0.463	0	0	0	0	0	0
fine	397	41.614	229	33.188	269	45.748	40.895	40.509	216	47.368	236	54.63	168	38.889	98	45.37	200	49.02	205	18.271
voids	249	26.101	223	32.319	157	26.701	30.556	33.102	113	24.781	100	23.148	121	28.009	52	24.074	103	25.245	422	37.611
nod & coat	37	3.878	51	7.391	17	2.891	5.093	3.704	20	4.386	12	2.778	19	4.398	7	3.241	7	1.716	50	4.456
OM	27	2.83	28	4.058	37	6.293	4.63	1.852	18	3.947	16	3.704	16	3.704	14	6.481	31	7.598	187	16.667
other	145	15.199	95	13.768	45	7.653	4.167	4.861	32	7.018	27	6.25	35	8.102	13	6.019	15	3.676	23	2.05

788s1		788s2		788s3		788s4		788s5		813	
count	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
11	1.209	10	1.149	11	1.264	13	1.576	13	1.677	16	2.381
9	0.989	9	1.034	4	0.46	15	1.818	3	0.387	31	4.613
81	8.901	71	8.161	90	10.345	80	9.697	43	5.548	58	8.631
5	0.549	8	0.92	8	0.92	1	0.121	2	0.258	7	1.042
290	31.868	282	32.414	298	34.253	370	44.848	168	21.677	293	43.601
299	32.857	290	33.333	247	28.391	176	21.333	272	35.097	183	27.232
109	11.978	134	15.402	139	15.977	91	11.03	68	8.774	38	5.655
65	7.143	42	4.828	49	5.632	60	7.273	176	22.71	19	2.827
41	4.505	24	2.759	24	2.759	19	2.303	30	3.871	27	4.018

Grave 117

	621		581		712		711s1		711s2		711s3		711s4		711s5		711s6		725	
Categories	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**s1%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
t,r,m 0,1	28	1.944	25	2.58	8	1.053	9	2.5	3	1.408	8	1.667	9	2.338	5	2.646	8	1.058	19	1.827
t 2	106	7.361	54	5.573	39	5.132	45	12.5	23	10.798	39	8.125	34	8.831	25	13.228	60	7.937	45	4.327
t 3,4 bo	61	4.236	34	3.509	41	5.395	34	9.444	25	11.737	44	9.167	43	11.169	19	10.053	47	6.217	52	5
t 3,4 Fe	3	0.208	1	0.103	1	0.132	0	0	0	0	0	0	0	0	2	1.058	2	0.265	1	0.096
fine	640	44.444	444	45.82	359	47.237	33	9.167	33	15.493	138	28.75	115	29.87	55	29.101	259	34.259	180	17.308
voids	287	19.931	202	20.846	144	18.947	116	32.222	69	32.394	90	18.75	77	20	50	26.455	151	19.974	289	27.788
nod & coat	109	7.569	42	4.334	55	7.237	83	23.056	42	19.718	74	15.417	41	10.649	15	7.937	94	12.434	112	10.769
OM	83	5.764	41	4.231	23	3.026	30	8.333	14	6.573	36	7.5	14	3.636	5	2.646	36	4.762	35	3.365
other	123	8.542	126	13.003	90	11.842	10	2.778	4	1.878	51	10.625	52	13.506	13	6.878	99	13.095	307	29.519

619s1		619s2		619s3		619s4		619s5		619s6		850		724s1		724s2		724s3	
count	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
16	4.651	19	3.48	25	4.579	13	4.221	14	4.667	38	7.103	12	1.908	7	0.972	9	1.184	7	0.875
42	12.209	81	14.835	82	15.018	55	17.857	45	15	95	17.757	32	5.087	24	3.333	19	2.5	25	3.125
50	14.535	70	12.821	46	8.425	19	6.169	22	7.333	27	5.047	51	8.108	43	5.972	48	6.316	44	5.5
0	0	0	0	0	0	0	0	0	0	2	0.374	1	0.159	1	0.139	1	0.132	4	0.5
49	14.244	121	22.161	139	25.458	67	21.753	75	25	124	23.178	222	35.294	290	40.278	275	36.184	315	39.375
95	27.616	133	24.359	131	23.993	71	23.052	60	20	112	20.935	187	29.73	169	23.472	215	28.289	203	25.375
45	13.081	62	11.355	57	10.44	57	18.506	45	15	96	17.944	31	4.928	84	11.667	67	8.816	57	7.125
33	9.593	38	6.96	35	6.41	17	5.519	20	6.667	23	4.299	25	3.975	36	5	34	4.474	46	5.75
14	4.07	22	4.029	31	5.678	9	2.922	19	6.333	18	3.364	68	10.811	66	9.167	92	12.105	99	12.375

	724s4		724s5		724s6	
Categories	**count**	**%**	**count**	**%**	**count**	**%**
t,r,m 0,1	9	1.184	8	1.053	5	0.882
t 2	26	3.421	23	3.026	19	3.351
t 3,4 bo	43	5.658	53	6.974	41	7.231
t 3,4 Fe	3	0.395	4	0.526	1	0.176
fine	252	33.158	296	38.947	234	41.27
voids	217	28.553	222	29.211	161	28.395
nod & coat	73	9.605	64	8.421	38	6.702
OM	44	5.789	23	3.026	21	3.704
other	93	12.237	67	8.816	47	8.289

Pilot data from TS 619, GR 117

	PILOT_619s1		PILOT_619s2		PILOT_619s3		PILOT_619s4	
Categories	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
trm 1 2.5-25	14	12.727	18	17.143	15	16.667	9	7.143
t2 25-50	13	11.818	16	15.238	8	8.889	14	11.111
t3 50-75	6	5.455	11	10.476	1	1.111	18	14.286
t4 75-97.5	1	0.909	1	0.952	4	4.444	6	4.762
opaque material	8	7.273	5	4.762	2	2.222	2	1.587
fine mat coating	16	14.545	20	19.048	19	21.111	26	20.635
fine mat groundmass	20	18.182	5	4.762	12	13.333	11	8.73
voids	27	24.545	26	24.762	22	24.444	34	26.984
other	5	4.545	3	2.857	7	7.778	6	4.762

Grave 118

	733		732	
Categories	**count**	**%**	**count**	**%**
t,r,m 0,1	25	2.685	16	1.961
t 2	51	5.478	92	11.275
t 3,4 bo	32	3.437	27	3.309
t 3,4 Fe	0	0	5	0.613
fine	363	38.99	210	25.735
voids	194	20.838	210	25.735
nod & coat	80	8.593	38	4.657
OM	49	5.263	137	16.789
other	137	14.715	81	9.926

Grave 119

	597		627		758		731s1		731s2		731s3		731s4		731s5		731s6		825	
Categories	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**s1%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
t,r,m 0,1	40	2.635	26	3.009	8	0.893	28	3.799	35	3.411	12	2.4	11	1.455	9	1.786	13	2.579	6	0.638
t 2	210	13.834	96	11.111	46	5.134	16	2.171	30	2.924	34	6.8	33	4.365	26	5.159	26	5.159	29	3.085
t 3,4 bo	73	4.809	53	6.134	54	6.027	100	13.568	127	12.378	45	9	51	6.746	49	9.722	40	7.937	49	5.213
t 3,4 Fe	4	0.264	0	0	4	0.446	2	0.271	1	0.097	2	0.4	2	0.265	1	0.198	1	0.198	2	0.213
fine	659	43.412	302	34.954	288	32.143	272	36.906	334	32.554	241	48.2	407	53.836	258	51.19	237	47.024	534	56.809
voids	295	19.433	226	26.157	308	34.375	231	31.343	375	36.55	96	19.2	142	18.783	105	20.833	119	23.611	174	18.511
nod & coat	72	4.743	56	6.481	132	14.732	48	6.513	73	7.115	36	7.2	53	7.011	34	6.746	33	6.548	14	1.489
OM	79	5.204	38	4.398	23	2.567	23	3.121	24	2.339	22	4.4	35	4.63	13	2.579	21	4.167	109	11.596
other	86	5.665	67	7.755	33	3.683	17	2.307	27	2.632	12	2.4	22	2.91	9	1.786	14	2.778	23	2.447

765s1		765s2		765s3		765s4		765s5		765s6		764		814s1		814s2		814s3		814s4	
count	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**s1%**	**count**	**%**	**count**	**%**	**count**	**%**
0	0	0	0	0	0	0	0	0	0	0	0	13	1.354	1	0.99	7	1.023	6	0.926	3	0.694
25	3.72	12	2.256	11	1.507	25	3.289	35	5.208	25	3.72	44	4.583	1	0.99	4	0.585	24	3.704	14	3.241
36	5.357	18	3.383	53	7.26	51	6.711	31	4.613	35	5.208	79	8.229	11	10.891	55	8.041	47	7.253	32	7.407
0	0	0	0	3	0.411	9	1.184	6	0.893	4	0.595	2	0.208	0	0	5	0.731	0	0	1	0.231
160	23.81	132	24.812	165	22.603	245	32.237	198	29.464	218	32.44	364	37.917	33	32.673	272	39.766	211	32.562	152	35.185
200	29.762	159	29.887	162	22.192	188	24.737	161	23.958	181	26.935	282	29.375	36	35.644	262	38.304	223	34.414	149	34.491
56	8.333	18	3.383	47	6.438	61	8.026	61	9.077	25	3.72	109	11.354	11	10.891	40	5.848	72	11.111	33	7.639
115	17.113	135	25.376	196	26.849	127	16.711	111	16.518	100	14.881	13	1.354	5	4.95	25	3.655	40	6.173	24	5.556
80	11.905	58	10.902	93	12.74	54	7.105	69	10.268	84	12.5	54	5.625	3	2.97	14	2.047	25	3.858	24	5.556

	814s5	
Categories	**count**	**%**
t,r,m 0,1	10	1.479
t 2	27	3.994
t 3,4 bo	53	7.84
t 3,4 Fe	7	1.036
fine	258	38.166
voids	172	25.444
nod & coat	79	11.686
OM	31	4.586
other	39	5.769

Grave 120

	625		800		767		718s1		718s2		718s3		718s4		718s5		718s6		824	
Categories	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**s1%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
t,r,m 0,1	12	1.667	42	2.849	20	1.754	12	2.637	2	0.321	8	1.839	17	2.076	14	1.655	31	3.785	10	1
t 2	83	11.528	83	5.631	46	4.035	44	9.67	8	1.282	27	6.207	26	3.175	61	7.21	35	4.274	27	2.7
t 3,4 bo	19	2.639	65	4.41	72	6.316	67	14.725	66	10.577	46	10.575	63	7.692	46	5.437	45	5.495	76	7.6
t 3,4 Fe	1	0.139	2	0.136	3	0.263	15	3.297	7	1.122	0	0	1	0.122	2	0.236	3	0.366	7	0.7
fine	244	33.889	481	32.632	609	53.421	95	20.879	251	40.224	164	37.701	233	28.449	183	21.631	272	33.211	454	45.4
voids	151	20.972	441	29.919	258	22.632	139	30.549	136	21.795	102	23.448	206	25.153	249	29.433	197	24.054	263	26.3
nod & coat	38	5.278	65	4.41	47	4.123	49	10.769	63	10.096	36	8.276	129	15.751	126	14.894	91	11.111	46	4.6
OM	105	14.583	193	13.094	27	2.368	20	4.396	36	5.769	21	4.828	42	5.128	35	4.137	27	3.297	81	8.1
other	67	9.306	102	6.92	58	5.088	14	3.077	55	8.814	31	7.126	102	12.454	130	15.366	118	14.408	36	3.6

716s1		716s2		716s3		716s4		716s5		716s6		766		739s1		739s2		739s3		739s4	
count	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**	**count**	**%**
7	1.373	4	0.794	8	1.238	6	1.19	4	0.794	5	1.126	9	0.978	3	0.542	21	2.143	32	2.968	12	1.536
23	4.51	18	3.571	25	3.87	19	3.77	21	4.167	21	4.73	33	3.587	19	3.436	56	5.714	57	5.288	25	3.201
43	8.431	39	7.738	74	11.455	47	9.325	61	12.103	61	13.739	60	6.522	78	14.105	35	3.571	71	6.586	76	9.731
1	0.196	0	0	0	0	0	0	0	0	0	0	3	0.326	9	1.627	8	0.816	11	1.02	12	1.536
152	29.804	172	34.127	187	28.947	146	28.968	181	35.913	144	32.432	390	42.391	72	13.02	342	34.898	365	33.859	257	32.907
168	32.941	121	24.008	225	34.83	168	33.333	148	29.365	92	20.721	218	23.696	203	36.709	275	28.061	312	28.942	241	30.858
40	7.843	43	8.532	48	7.43	50	9.921	46	9.127	49	11.036	119	12.935	79	14.286	90	9.184	101	9.369	75	9.603
34	6.667	48	9.524	53	8.204	51	10.119	35	6.944	58	13.063	24	2.609	64	11.573	16	1.633	38	3.525	47	6.018
42	8.235	59	11.706	26	4.025	17	3.373	8	1.587	14	3.153	64	6.957	26	4.702	137	13.98	91	8.442	36	4.609

	739s5		739s6	
Categories	**count**	**%**	**count**	**%**
t,r,m 0,1	16	2.02	22	2.667
t 2	51	6.439	53	6.424
t 3,4 bo	74	9.343	65	7.879
t 3,4 Fe	7	0.884	5	0.606
fine	328	41.414	332	40.242
voids	212	26.768	225	27.273
nod & coat	28	3.535	46	5.576
OM	40	5.051	36	4.364
other	36	4.545	41	4.97

Appendix IV: Al Khiday

IVA. Micromorphology raw data: thin section description sheets

Control

Thin Section Description Recording Sheet NB: no sample orientations for this site

TS: 376 Site code: 16D4'11

Micro-unit: 1 of 1 Gr.: C1

Sample ID: block name: KHI2 Sk & fills: C1, 30cm deep

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 98,2

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): monic

Sorting: (unsorted, poorly, well, perfectly) well sorted

Micromass

Colour (x5 objective, PPL/XPL) : colourless/ 1st order greys and yellowish white

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 10%, sm to lr, n/a, n/a;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form extent and degree of weathering)

- Tectosilicates: 80% quartz, colourless/1st order greys, sm to vv lr, SR, 1, pellicular and irregular linear; 1% microcline, colourless/ 1st order greys, m-lr to lr, SR, 1 complex

(pellicular speckled and linear);

- Inosilicates: <1% Amphiboles, colourless- pale blue pleochroic/ lower 2nd order pinks, v sm, SR, 1, pellicular;
- Nesosilicates: none
- Phyllosilicates: <1% chlorite, blue pleochroic/ anomalous blues, v sm, SR with diffuse boundaries, 0, n/a;
- Other (e.g. rocks, carbonates, sulfates, ash): carbonates (calcium-magnesium): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. excrement, fungal remains): 1% bone, sm, pale yellow/ isotropic, irregular and SR, fair, random basic distribution, n/a;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: 2%, sm, intramineral quartz grain fractures, orange/ orange;
- Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) : none

Impregnative: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, basic distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] 2% anorthic, n/a, strongly clustered, v sm to sm, orange/ orange, none, sharp, none; 2% anorthic, n/a, weakly clustered, sm to med, opaque/opaque, none, sharp, none,
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): N/A

Other notes and comments on the description of the sample as seen in thin section: Sediment is mainly comprised of rounded sand sized quartz grains

Samples (thin sections listed in numerical order)

Thin Section Description Recording Sheet NB: no sample orientations for this site

TS: 382 Site code: 16d4'11

Micro-unit: 1 of 1 Gr.: 150

Sample ID: Sk & fills: GR 150, Sample 4

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50µm limit): 80:20

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): linked and coated (/gefuric)

Sorting: (unsorted, poorly, well, perfectly): poorly sorted

Micromass

Colour (x5 objective, PPL/XPL) : pale gray/ 4th order interference colours

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid (transparent)

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 15%, vsm & sm & m, n/a;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form extent and degree of weathering)

- Tectosilicates: 80% quartz, colourless/1st order grays, 70-3000µm, SR to R, 1-2, complex

(pellicular and irregular linear and “patchy” Delvigne 1998: 116).

- Inosilicates:
- Nesosilicates:
- Phyllosilicates:
- Other (e.g. rocks, carbonates, sulfates, ash):

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form or rounding, degree of preservation (excellent, good, fair, or poor), basic distribution, orientation :

•Amorphous: none

•Plant: none

•Other (e.g. excrement, fungal remains): bone, 5%, sm & m & lr, yellow/ 1st order grays, SA, good to fair, random, n/a.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: 2%, 5µm, quartz grain intramineral fractures, orange/ orange-red;

•Matrix:

Hypo-coatings (related, touching a surface) : 15% carbonate hypo-coatings, 10-150µm thick, mineral grains and bone fragments, pale gray/ 4th order interference colours;

Quasi-coatings (not touching) : none

Impregnative: none

Pedofeatures not related to voids, grains or aggregates

•Nodules: [% abundance, orientation, basic distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] 2% anorthic, n/a, random, 200µm, orange-red/red, non-laminated, sharp, non-fragmented; 1% orthic, n/a, clustered, 250µm, gray/ 4th order interference colours, non-laminated, clear, non-fragmented;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section:

Sand sized quartz grains with calcium carbonate groundmass (linked and coated). Some bone fragments and accompanying minerals.

Thin Section Description Recording Sheet NB: no sample orientations for this site

TS: 386 Site code: 16D4'11

Micro-unit: 1 of 1 Gr.: GR149

Sample ID: KHI 4 Sk & fills: GR149, left knee (sample area 11)

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 75, 25

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting: (unsorted, poorly, well, perfectly) well sorted

Micromass

Colour (x5 objective, PPL/XPL) : colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 10% v sm to m
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form extent and degree of weathering)

- Tectosilicates: 60% quartz, colourless/1st greys, sm to vvlr (50-2000), SR to SA, 1 to 2, random, unoriented;
- Inosilicates: Amphiboles (sodic-calcic and hornblendes), 2%, pale blue-green to mid blue-

green pleochroism/ upper 1st order and yellow-brown to dark brown pleochroism/ mid brown respectively, sm (100-200) subhedral, 1 linear, weakly clustered basic, unoriented;

- Nesosilicates: Olivine group, 1%, colourless/mid to upper 2nd order, vsm to sm (30 to 150), R, 3, pellicular, weakly clustered basic, unoriented;
- Phyllosilicates: 5% chlorites, colourless to dark blue pleochroism/ anomalous blue interference colours, vsm to s m (50 -200)
- Other (e.g. rocks, carbonates, sulfates, ash): carbonates (calcium-magnesium),

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: <1%, sm (30-40), quartz intramineral fractures, orange/yellow.
- Matrix:

Hypo-coatings (related, touching a surface) : 15% , v sm (10-3), quartz grains, colourless/4th order

Quasi-coatings (not touching) : none

Impregnative: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, weak basic distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] 2-5%, opaque/opaque, unoriented, weakly clustered basic, sm to m (30-60), none, sharp, none; 2% dark red/red, unoriented, random, m to vvlr (100->2000), none, clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): N/A

Other notes and comments on the description of the sample as seen in thin section: Sediment is mainly comprised of rounded sand sized quartz grains

Thin Section Description Recording Sheet

TS: 389 NB: no orientations given on sample so no orientations exist for the TS. Site code: 16d4'11

Micro-unit: 1 of 1 Gr.: 142

Sample ID: Sk & fills: GR142, sample A1

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50μm limit): 40: 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate (/enaulic)

Sorting: (unsorted, poorly, well, perfectly) unsorted

Micromass

Colour (x5 objective, PPL/XPL) : colourless/ 4th order interference colours

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid (transparent)

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within μ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w)

- Vesicles: none
- Channels: 2%, vsm, n/a
- Chambers: none
- Vughs: 1%, vsm, n/a
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form or roundness, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form extent and degree of weathering)

- Tectosilicates: 55% quartz, colourless/1st order grays, R, 1-2 extents, complex (pellicular

and irregular linear);

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: 1% chlorite, 70µm, greenish blue to dark blue pleochroic/ anomalous blue interference colours, A, 2 extent, parallel linear along cleavage planes;
- Other (e.g. rocks, carbonates, sulfates, ash): carbonate groundmass with a few (5%) poorly formed rhombs of coarse grained (i.e. >50µm) carbonate grains, colourless/4th order, 50-80µm, SR, 2, pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. excrement, fungal remains) none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : 2%, 5µm, quartz grains intra-mineral fractures, red/dark red; 5%, 10µm, quartz grain surfaces, opaque/ opaque;

Quasi-coatings (not touching) : none

Impregnative: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, basic distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] 5%, anorthic, random, 100µm, dark red/ opaque, non-laminated, non-fragmented.
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): apedal

Other notes and comments on the description of the sample as seen in thin section:

Sand sized quartz grains in an intergrain aggregate groundmass of calcium carbonate. The sample material on the thin section is in three segments, but this is due to damage during transport and manufacture of sample material and not evidence of *in situ* structural organization.

Thin Section Description Recording Sheet NB: no sample orientations for this site

TS: 391 Site code: 16D4'11

Micro-unit: 1 of 1 Gr.: GR 150

Sample ID: block name: KHI 5 Sk & fills: GR 150, skull (position 1)

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 75, 25

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): coated

Sorting: (unsorted, poorly, well, perfectly) well sorted

Micromass

Colour (x5 objective, PPL/XPL) : colourless/ 1st order yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 10%, sm to lr, n/a, n/a;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form extent and degree of weathering)

- Tectosilicates: 70% quartz, colourless/ 1st order greys, sm-m to v lr, R, 1 to 2, complex (pellicular, irregular linear and speckled);
- Inosilicates: <1% amphiboles, colourless/ mid 2nd order with decreasing order thick rims, v

sm, SR, 2 pellicular;

- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): carbonates: <1%, sm, colourless/ 4th order greens and pinks, SR rhombohedral form, 2 pellicular and speckled (with magnetite deposits on grain surface);

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. excrement, fungal remains): 5% bone, sm to lr, pale yellow/1st greys ropey and orange/ orange and orangey-grey/ isotropic, irregular and SA form, good to poor, random basic, n/a;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: none
- Matrix:

Hypo-coatings (related, touching a surface) : 2%, sm, mineral grains, pale brown/ 1st yellows;

Quasi-coatings (not touching) : none

Impregnative: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, basic distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation], <1%, anorthic, n/a, random, orange/orangey-red, none, clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): N/A

Other notes and comments on the description of the sample as seen in thin section: : Sediment is mainly comprised of rounded sand sized quartz grains

Thin Section Description Recording Sheet NB: no sample orientations for this site

TS: 419 Site code: 16D4'11

Micro-unit: 1 of 1 Gr.: GR 147

Sample ID: KHI Sk & fills: GR147, 2Z

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 70, 30

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): linked and coated

Sorting: (unsorted, poorly, well, perfectly) well sorted

Micromass

Colour (x5 objective, PPL/XPL) : colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 5%, sm to v lr, n/a
- Chambers: 2%, sm to lr, n/a
- Vughs: none
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form extent and degree of weathering)

- Tectosilicates: 50% quartz, colourless/1st order greys, sm to med, SA to SR, 1 to 2, irregular linear and pellicular;
- Inosilicates: 2-5% amphiboles, colourless and pale blue green pleochroic/ mid 2nd order

with decreasing rims, v sm (10-20µm), anhedral, 2 to 3, complex (pellicular, linear, and speckled);

- Nesosilicates: none
- Phyllosilicates: 5% glauconite, green/speckled 2nd order greens and yellows; med, R to SR, 0 to 1 pellicular; 1% chlorite, blue pleochroic/ anomalous blues, sm to v sm, SR with diffuse boundaries, 0, n/a;
- Other (e.g. rocks, carbonates, sulfates, ash): carbonates (calcium-magnesium): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr >1000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 10%, v sm, brown/ isotropic, irregular, poor, moderately clustered basic distribution, n/a;
- Plant: 1% charcoal, v lr, opaque/opaque, SA, fair, n/a, n/a; 2% roots, lr to v v lr, reddish-brown/ isotropic with colourless/anisotropic internal colours, elliptical, good to fair, n/a, n/a;
- Other (e.g. excrement, fungal remains): 5% bone, pale yellow/ isotropic, sm to vv lr, irregular and R, fair to poor, n/a, n/a;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: 2%, v sm, quartz, orange/red;
- Matrix:

Hypo-coatings (related, touching a surface) : 5%, sm, mineral grains, brownish-red/ isotropic;

Quasi-coatings (not touching) : none

Impregnative: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, basic distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] <1% anorthic, n/a, random, sm (30-50µm), red/red, none, sharp, none; 2% anorthic, n/a, weakly clustered, sm (30-50µm), opaque/opaque, none, clear, none; <1% anorthic, n/a, random, lr, pale pink/high order, none, clear, none;
- Excremental Pedofeatures (% abundance, colour (PPL/XPL), size, angularity, size of clasts (e.g.CZS) : 2%, orange/orangey-red, med (500-1000µm), SR, CZS;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): N/A

Other notes and comments on the description of the sample as seen in thin section: Sediment is mainly comprised of rounded sand sized quartz grains

Thin Section Description Recording Sheet *NB: no sample orientations for this site*

TS: 437 Site code: 16D4'11

Micro-unit: 1 of 1 Gr.: GR148

Sample ID: KHI 6 Sk & fills: GR148, sample area 2

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 80, 20

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting: (unsorted, poorly, well, perfectly) moderately sorted

Micromass

Colour (x5 objective, PPL/XPL) : colourless/ first order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 15%, m to vvlr
- Chambers: none
- Vughs: 10%, v sm to lr
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form extent and degree of weathering)

- Tectosilicates: 70% quartz, colourless/1st greys, m to vvlr, R to SR, irregular linear 2,

random, unoriented;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: 1% chlorite, blue to colourless/ anomalous blue, vsm, SA to SR, phyllo form, 1, weak related distribution to voids, unoriented;
- Other (e.g. rocks, carbonates, sulfates, ash): carbonates (calcium-magnesium) 2-5%, colourless/4th order, euhedral, n/a, 0, strong clustered basic, unoriented;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. excrement, fungal remains): bone, 5%, sm to lr, orange/orange and yellow/1st greys and pale yellow/1st greys, irregular and linear forms, poor, random, unoriented;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: none
- Matrix:

Hypo-coatings (related, touching a surface) : 10%, quartz grains and bone fragments, colourless/ 1st order yellows and greys;

Quasi-coatings (not touching) : none

Impregnative: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, basic distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] 2%, unoriented, clustered basic, 500-1000, colourless/ 4th order, none, sharp, none. <1% unoriented, random, 50-100, opaque/ dark red, none, clear, none.
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): N/A

Other notes and comments on the description of the sample as seen in thin section: Sediment is mainly comprised of rounded sand sized quartz grains

Thin Section Description Recording Sheet NB: no sample orientations for this site

TS: 438 Site code: 16D4'11

Micro-unit: 1 of 1 Gr.: GR148

Sample ID: KHI6 Sk & fills: GR148, pelvic area (sample area 2)

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 80, 20

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting: (unsorted, poorly, well, perfectly) well sorted

Micromass

Colour (x5 objective, PPL/XPL) : colourless/ 1st greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 10%, lr to vv lr
- Chambers: none
- Vughs: 15%, v sm to m
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form extent and degree of weathering)

- Tectosilicates: 70%, quartz, colourless/1st order greys, m to v lr, SR to SA, 2 irregular

linear;

- Inosilicates: 2% Amphiboles, colourless to mid blue-green/ upper1st order pinks, typical amphibole cleavage, 2 pellicular and linear, weakly clustered basic, unoriented;
- Nesosilicates: none
- Phyllosilicates: 1% chlorites, blue to colourless/ anomalous blues, phyllo form, n/a, 0, moderate referred distribution to voids, unoriented;
- Other (e.g. rocks, carbonates, sulfates, ash): carbonates (calcium-magnesium), 1-2%, colourless/4th order, euhedral, n/a, 0, strongly referred to bone, unoriented;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. excrement, fungal remains): bone, 5-10%, sm to vv lr, orange/orange and yellow/1st order greys and pale yellow/1st greys and colourless/1st greys, linear and elliptical and irregular, fair to poor, moderately clustered basic, unoriented;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: 1%, sm (10-20) quartz grains, orange/orange
- Matrix:

Hypo-coatings (related, touching a surface) : 1%, sm (30-40), quartz, colourless/1st yellows; 5%, lr to vlr (50-200), bone, colourless/4th order;

Quasi-coatings (not touching) : none

Impregnative: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, basic distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] 5%, unoriented, weakly clustered basic, medium to large (100-200), none, clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): N/A

Other notes and comments on the description of the sample as seen in thin section: Sediment is mainly comprised of rounded sand sized quartz grains

Appendix V: Tel Qarassa

VA. Micromorphology raw data: thin section description sheets

Controls (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 959 Site code: QZ2

Micro-unit: 1 of 1 Gr.: n/a (control sample)

Sampling position: C1 Sk & fills: n/a (control sample)

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 15: 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric respectively): embedded

Sorting: (unsorted, poorly, well, perfectly) unsorted

Micromass

Colour (x5 objective, PPL/XPL) : pale orange-brown; 1st yellows;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 10%, m, lr, vlr, and vvlr, moderate referred orientation parallel to ground surface, weakly linear basic distribution;
- Chambers: 1%, sm and m, random and unoriented;
- Vughs: 5%, m and lr and vv lr, random and unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates: 1% plagioclase (multiple twinning), colourless/first order greys, sm and sm-

m and m, A, 1 pellicular

- Inosilicates: none
- Nesosilicates: 1% olivine, orange red/ bright red, sm and sm-m, SA, 3 complex to iddingsite.
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): 1% carbonate lenses, v lr (1.5mm x15mm), pale grey/ high order white, elliptical form, clear and irregular boundary. 1% shell, greyish yellow/ high order white, lr (330 x 2000), linear form, 2 pellicular (weathering to rhombohedral calcite)

  5% basaltic clasts, sm to v lr size ranges, A-SR, 1 differential weathering between phenocryst type.

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: 5% opaque plant remains, sm &m & lr &vlr, opaque/opaque, SA-SR, good to poor, weakly clustered basic, unoriented. 1% pseudomorphic plant remains, m, pale grey/ high order white, SA, good, random, unoriented.

- Other (e.g. bone, excrement, fungal remains) : 2% bone, lr and v lr, pale greyish yellow/ isotropic, SA-SR and elliptical form, fair, random, unoriented.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

Intrusive: Coatings: 1%, 50, rock, dark red/dark red. 2%, 140, bone, pale greyish yellow/ high order white

- Matrix:

Hypo-coatings (related, touching a surface) : 2%, 20, rocks, medium brown/ 1st yellows; 1%, 50 bone, medium brown/1st yellows.

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]

2%, unoriented, random, 200, orange exterior with dark red interior/ orange exterior with dark purplish red interior, laminated (<30), clear upper with diffuse lower (relative to Up direction/ground surface), slight fragmentation.

10% unoriented, weakly clustered basic, 210, pale grey/ high order white, not laminated, clear boundary (but spherical shape makes it appear diffuse in photos, just needs live image with alternate foci to prove clear boundary), not fragmented.

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) :

2%, medium brown and isotropic, 1300, SA-SR, ZS.

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed granular, v sm to sm.

Other notes and comments on the description of the sample as seen in thin section: Carbonates appear to be of note in this thin section, with carbonates replacing both bones and plant remains as pseudomorphs. Bioturbation evidenced from prevalence of channels and excremental pedofeatures. Charcoal and bone fragments are not unexpected as this is from the upper levels of a Tel type site (where materials are re-used and moved).

Thin Section Description Recording Sheet

TS: 1113 (NB: no body orientation on sample) Site code: QZ2

Micro-unit: 1 of 1 Gr.: n/a (control sample)

Sampling position: C3 Sk & fills: n/a (control sample)

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) poorly

Micromass

Colour (x5 objective, PPL/XPL) : pale greyish yellow/ 1st yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 2%, v sm, unoriented, n/a
- Chambers: 2%, v sm and sm, unoriented, n/a.
- Vughs: 5%, v sm and sm, unoriented, n/a.
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and degree of weathering)

- Tectosilicates: 5% quartz, colourless/1st order greys, sm and sm-m, SR-SA, 1 pellicular. 1% plagioclase, multiple twinning, colourless/1st order grey, sm-m, A, 1, irregular linear (i.e.

not normal to twinning planes)

- Inosilicates: 2% PX, colourless/2nd yellows with red/red altered areas, sm and sm-to m, A, 2 to 3, iso-alteromorph to ferralitic secondary product with retention of original cleavage planes.

- Nesosilicates: 1%, OV, colourless/low third order colours, sm-m with some sm, SA, 1 to 2, pellicular.

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash): 2% calcic rich carbonates, m and m-lr, R, ovate to elliptical, 0, n/a.

  15% basaltic rock clasts, dark red/opaque or red/ dark red with phenocrysts (75%), phenocrysts are 50% lr to vlr multiple simple twinned PG colourless/1st order greys 1 irregular linear and cross linear relative to twinning planes resultant in a "fish-bone" (i.e. acanthomorphic) alteration pattern (Delvigne 1998).

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: 1% opaque plant remains, sm and m size ranges, opaque/opaque, irregular, SR, poor, weakly clustered basic, unoriented.

•Other (e.g. bone, excrement, fungal remains) : 1% bone, lr, yellow/1st greys, elliptical R form, fair, random, unoriented.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 5% cappings, medium (50-100µm) and thick (>100, i.e. max. 1770), large basaltic clasts, pale grey/ high order white. 2% pendants, medium (50-100), large basaltic clasts, red/orange. 1% coatings, medium (50-100), bone, pale grey/high order white.

•Matrix:

Hypo-coatings (related, touching a surface) : 1%, medium (50-100 µm), anorthic nodules, pale greyish yellow/1st yellows. 1%, medium (50-100), carbonate nodules, medium brown and isotropic.

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules: [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] 2%, anorthic nodules, unoriented, random, v lr (>500µm), orange red/ bright red, non-lam, sharp, weakly fragmented, CZS texture. 1% anorthic nodules, unoriented, random, med (100-200µm), reddish orange/ bright orange, lam (>5 lam and <30µm thick), clear, weakly fragmented, ZS texture. 1% orthic nodules, unoriented, random, lr (200-300µm), pale greyish yellow/ 1st yellows (discernible from Micromass by change in b-fabric and

thin calcitic coating), non-lam, clear, non-frag, ZS texture. 5% anorthic nodules, unoriented, moderate basic clustered distribution, sm (50-100µm) and med (100-200µm), brownish red/ v dark red, non-lam, diffuse, non-frag, ZS texture.

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS): 1%, medium brown and isotropic, m-lr (300-500) and lr (500-1000), SR, CZS.

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : very weakly developed granular, v sm.

Other notes and comments on the description of the sample as seen in thin section: a more compact (less porous) soil than the C1 sample. Also differs from the C1 sample in less developed microstructure and voids in the C3 are dominated by vughs whereas voids in the C1 are dominated by channels.

Thin Section Description Recording Sheet

TS: 1239 (NB: no body orientation on sample) Site code: QZ2

Micro-unit: 1 of 1 Gr.: n/a (control sample)

Sampling position: C3b (contemporaneous burial control) Sk & fills: n/a (control sample)

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 20 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) unsorted

Micromass

Colour (x5 objective, PPL/XPL) : medium orange brown/ dark brown

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 5%, sm and m, moderately clustered referred distribution to "up" direction, moderately parallel referred orientation relative to ground surface.
- Chambers: 10%, m and lr, unoriented, random.
- Vughs: 2%, m and lr, unoriented, random.
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and degree of weathering)

- Tectosilicates: 2% plagioclase (multiple twinning), colourless/1st greys, sm and sm-m, A, 1

linear.

- Inosilicates: 1% PX, colourless and high 2nd to low 3rd order, sm and sm-m, A, 2 complex.
- Nesosilicates: 1% OV, colourless and 2nd order (where unaltered to iddingsite, as where altered colours are red/red), sm-m, A, 2 complex.
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  10% basaltic clasts, m to v lr sizes, colours dependent on phenocryst weathering but opaque at x1, irregular and A form, extent 2 and pattern complex as dependent upon phenocryst.

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: 5% opaque plant remains, sm to m sizes, opaque/opaque, elliptical form, R, poor, random, unoriented.
- Other (e.g. excrement, fungal remains): 10% bone, sm to vvlr sizes, variety of colours (pale yellow/1st greys and pale yellow/isotropic and orange yellow/ orange yellow and grey with yellow/ grey with yellow), irregular, A-SR, good to fair.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 1% coating, medium (50-100), bone, colourless/ high order white.
- Matrix:

  Hypo-coatings (related, touching a surface): 1%, medium (50-100), rocks, medium brown/dark brown.

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: 2% nodules, unoriented, random, large (200-300), red/ dark red, not laminated, diffuse and irregular, fragmented.
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) :

1%, medium brown/ dark brown, SR, CZS.

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed

granular, v sm.

Other notes and comments on the description of the sample as seen in thin section: Even when sections are held and viewed at x1 there is a discernible difference between the C3 and the C3b samples. One very large bone fragment in the middle of theTS which appears altered from pale yellow/1st greys to yellow and grey/yellow and grey from the outside in, and also appears to have post-depositionally altered by nonstoichiometric dissolution (as the interpretation of the "coating" on the bones is that this is not a true coating but rather a diffuse boundary resulting from differential weathering of the mineral and protein components of the bone material).

Samples (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 954 (NB: no body orientation on sample) Site code: QZ2

Micro-unit: 1 of 1 Gr.: SK3

Sampling position: 1 Sk & fills: SK3

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 35/65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) unsorted

Micromass

Colour (x5 objective, PPL/XPL) : medium yellowish orange brown/ 1st order yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1%, vv sm, unoriented, random;
- Channels: 2%, sm and m, weak perpendicular referred oriented to plane of ground surface, random distribution;
- Chambers: 1%, sm, unoriented, random;
- Vughs: 15%, sm and m and lr and vlr, unoriented, random;
- Cracks: none.

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and degree of weathering)

- Tectosilicates: 5% quartz, colourless/ 1st order greys, sm and sm-m, SA-SR, 1 pellicular; 1% plagioclase (multiple twinning), colourless/ 1st order greys, m and m-lr, A (fragmented

laths), 1-2 pellicular and linear;

- Inosilicates: 2% Px, orange red/ orange, sm-m and m, A, 2-3;
- Nesosilicates: 2% Ov, red/red, sm-m and m, A, 3-4 complex.
- Phyllosilicates: <1% chlorite, blue pleochoric/ isotropic, sm, rounded amorphous and diffuse, n/a;
- Other (e.g. rocks, carbonates, sulfates, ash):

  2% carbonate rich pseudomorphs of bone, colourless/ fourth order pinks and greens, vlr (max. 1500x1000), irregular, n/a;

  5% basaltic clasts, colour dependent upon weathering extent and pathways of phenocrysts, m-lr and lr and v lr (max. 2000x1200), irregular to elliptical SR forms, 2 to 3/4 complex;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr >2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: 2% opaque plant remains, m and lr, opaque/opaque, linear, fair to poor, strong clustered basic distribution, unoriented; 1% brown plant remains, vvlr, dark brown/ very dark brown, linear, poor, distribution and orientation patterns not observable as only one large fragment was observed so distinguishing patterns is not possible.

•Other (e.g. bone, excrement, fungal remains): 5% bone, lr and v lr and vv lr (max. 3500 x 1500), pale yellow/1st order greys (with one fragment observed anomalous to this as with orange/orange colours), good to fair, random, unoriented.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 1%, thick (>100) (max. 150), bone, pale grey/high order white; 1%, thin (<50) (max. 40), rock, red/red;

•Matrix:

Hypo-coatings (related, touching a surface): 2%, thick (>100) (max.200), rock, medium yellow orange brown/ isotropic; 1%, thick (>100) (max. 500), brown plant remains, yellow brown/isotropic.

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: 2% nodules (anorthic), unoriented, weakly clustered basic distribution, m (250-500) and lr (>500) (max. 550), red/ dark red, not laminated, clear, not fragmented, CZS sized composition; 2% nodules (orthic), unoriented, random, yellow brown/ dark orange brown, not laminated, diffuse, not fragmented, CZS sized composition; 1% nodules (anorthic), lr (>500)

(max. 580), pale grey/ high order white, 1 lamination (>30), clear, not fragmented;

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) :

none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : moderately developed granular, vsm and sm sizes.

Other notes and comments on the description of the sample as seen in thin section: Description of c/f related distribution is embedded but there are some regions where it borders on linked and coated.

Thin Section Description Recording Sheet

TS: 956 (NB: no body orientation on sample) Site code: QZ2

Micro-unit: 1 of 1 Gr.: SK 5

Sampling position: 1 Sk & fills: SK 5

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 30/70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) unsorted

Micromass

Colour (x5 objective, PPL/XPL) : medium yellow brown/ 1st order yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1%, sm and m, unoriented, random;
- Channels: 10% m and lr and v lr, weak parallel referred orientation to plane of ground surface, weak parallel basic distribution;
- Chambers: 1%, m, unoriented, random;
- Vughs: 10, m and lr and v lr, unoriented, random;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and degree of weathering)

- Tectosilicates: 5% quartz, colourless/1st order greys, sm and sm-m, SR-SA, 1 pellicular;

  2% plagioclase (multiple twinning), colourless/ 1st order greys, sm-m and m, A-SA, 1-2 pellicular and linear;

- Inosilicates:

  <1% amphibole, pale grey pleochroic/ first order pinks, m-lr and lr, A, 1-2 linear and pellicular;

  1% OPX, colourless/ 1st order oranges, m-lr, A, 1-2 linear (along cleavage planes) and pellicular;

  1% CPX, colourless/ low 3rd order blues, lr, SA, 1-2 complex;

  (see Section "Other" below)

- Nesosilicates:

  (see Section "Other" below)

- Phyllosilicates: <1% mica, colourless/high 2nd order, linear form with strongly delineated single parallel cleavage, 1-2 parallel linear along cleavage planes to meso-alteromorph.

- Other (e.g. rocks, carbonates, sulfates, ash):

  5% Basaltic clasts, colours dependent upon extent of weathering and type of alteration products produced from the phenocrysts (plagioclase, amphiboles, pyroxenes and olivines), m and m-lr and lr and v lr (max. 2800x 2100), SR-SA, extent 2-3 complex;

  2% alteromorphs of either pyroxenes or olivines, red/red and orange red/orange, sm-m and m and m-lr, SA, 3/4 complex;

  <1% shell, very pale grey/ high order white with 4th order pinks and greens, v lr (max. 1500x600), 1, pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr >1000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: 2% opaque plant remains, lr and v lr, opaque/opaque, linear and elliptical, fair to poor, weak clustered basic distribution, unoriented;

- Other (e.g. bone, excrement, fungal remains): 5% bone, v lr and vvlr (max. 3000x 1000), pale yellow/ 1st order greys (with one anomalous to these colours as with grey/ isotropic), irregular and linear, fair to poor, random, unoriented;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: <1% coatings on external surfaces and internal pores of bone fragments, med (50-100), bone, pale grey/ high order white.

- Matrix:

Hypo-coatings (related, touching a surface) : 2%, medium (50-100) and thick (>100) (max. 300), bone and rock, medium yellow brown/ 1st order yellows.

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules: [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary (diffuse, clear or sharp), fragmentation (slightly, moderately, or highly)]

2% nodules (anorthic), unoriented, weak clustered basic distribution, m (250-500) and lr (>500) (max. 570), brownish orange/ orange speckled, not laminated, clear boundary, not fragmented, CZS size composition;

1% nodules (orthic), unoriented, random, lr (>500) (max. 650), pale greyish brown/ 1st order greys, not laminated, sharp boundary, highly fragmented;

2% nodules (anorthic), unoriented, moderate clustered basic distribution, lr (>500) (max. 1500x800), pale grey/ high order white, not laminated, clear boundary, not fragmented;

<1% nodules (anorthic), unoriented, random, m (250-500), orange brown/red orange, 3 laminations (>30), sharp boundary, slightly fragmented;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) :

1%, orange brown/ 1st order greys, large (>500) (max 600x400), SR elliptical, CZS.

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): very weakly developed granular, sm and m

Other notes and comments on the description of the sample as seen in thin section: Basaltic clasts moderately weathered. Smaller pyroxenes and olivine grains embedded in groundmass have been highly weathered to iron-rich alteromorphs, whilst the (fewer) larger grains are less weathered and are still colourless in PPL.

Thin Section Description Recording Sheet

TS: 965 (NB: no body orientation on sample) Site code: QZ2

Micro-unit: 1 of 1 Gr.: SK1

Sampling position: 1 Sk & fills: SK1

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) unsorted

Micromass

Colour (x5 objective, PPL/XPL) : yellowish brown/ 1st yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 10, m to v v lr, moderate parallel referred orientation related to plane of ground surface, weakly clustered basic distribution.
- Chambers: 5, m to lr, unoriented, random.
- Vughs: 5, sm to lr, unoriented, weakly clustered basic distribution.
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and degree of weathering)

- Tectosilicates: 5% quartz, colourless/1st order greys, sm to sm-m, SR, 1 pellicular; 1

plagioclase (multiple twinning), colourless/1st order greys, sm-m, 1 linear;

- Inosilicates: 1 OPX, colourless / mid 1st order (altering to orange red/red following zoning and/or exploited cleavage planes), sm, SA, 2-3 complex; 1 CPX, colourless/ high2nd-low 3rd order, m, 2 pellicular and linear; 1 amphibole, purplish grey with weak pleochroism/mid 1st order orange-yellows, sm-m, tabular/euhedral form, 1 pellicular;

- Nesosilicates: 2 Ov, colourless/ 2nd order (altering to red/red, except in one case at top of TS where altered to yellow/yellow saponite pseudomorph later fragmented by cracks), sm-m, SA, 2-3 complex;

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash):

  5% basaltic clasts, colour dependent upon phenocryst alteration extent and type of alteromorph, lr, SR-SA, 2-3 complex;

  <1% shell, lr (300x900), linear and SA, 1 pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr >2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: 2% opaque plant remains, m to lr, opaque/opaque, linear to elliptical and SR-SA, poor, random, unoriented;

- Other (e.g. bone, excrement, fungal remains): 2% bone, v lr to vvlr (max. 3100x700), yellow/1st order greys, irregular and linear and A-SR forms, good to fair, random, unoriented.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

Hypo-coatings (related, touching a surface): 1, thin (<50), rocks and bones, yellow brown/isotropic.

Quasi-coatings (not touching):none

Infillings: 10, thick (6500), void (chamber), yellow brown/isotropic.

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] :

1, unoriented, random, lr (500), v dark red/ dark red, not laminated, clear, not fragmented;

1, unoriented, random, lr (500), red/orange red, not laminated, clear, not fragmented;

1, unoriented, random, v lr (1000), pale yellow/ high order white, not laminated, clear, not fragmented;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) :

1, unoriented, weakly clustered basic, yellow brown/isotropic, v lr (1000-2000), SR-R, CZS.

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : what was once weakly developed sm granular peds which were then under later processes which resulted in the early stages of sub-angular blocky microstructure.

Other notes and comments on the description of the sample as seen in thin section: At the top of the TS is a void with a 6mm infilling, the contents of this infilling (nodules, minerals, etc.) have not been counted as part of the Micromass of the micro-unit here described, rather they have been ascribed as components of the pedofeature (the infilling). This is an important decision in describing mineral weathering extents as in this respect the sediment of the infilled deposit is noticeably less weathered than the sediment of the micro-unit described here.

Thin Section Description Recording Sheet

TS: 1001 (NB: no body orientation on sample) Site code: QZ2

Micro-unit: 1 of 1 Gr.: SK 2

Sampling position: 1 Sk & fills: SK 2

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 10:90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) poorly sorted

Micromass

Colour (x5 objective, PPL/XPL) : yellow-gray brown/ dark grey with first yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 5%, sm and m, weak parallel referred oriented to plane of ground surface, n/a.
- Chambers: 2%, v sm and sm, unoriented, n/a.
- Vughs: 10%, sm, m and lr, unoriented, n/a.
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and degree of weathering)

- Tectosilicates: 2% quartz, colourless/ first greys, sm and sm-m, SA-SR, 0, n/a, unoriented, random. 1% plagioclases, colourless/first greys, sm-m and m and m-lr, A, 1 to 2, irregular

linear, unoriented, random.

- Inosilicates: <1% CPX, colourless/3rd blues, sm, SR/anhedral, 2 pellicular.
- Nesosilicates: none
- Phyllosilicates: none.
- Other (e.g. rocks, carbonates, sulfates, ash):

  Carbonates: 1% sparry calcite concretions, pale grey/fourth pinks, m, SR morphology of concretions (with A/euhedral forms composing the internal structure), elliptical, 0, n/a, random, unoriented.

  Rock fragments: 2% basaltic clasts, v lr (most 1-2x1-2mm with max observed as 2.5x3mm), opaque with colourless phenocrysts/ opaque with coloured phenocrysts, phenocrysts are 50-75% by volume and are dominated by plagioclase (sm-m and m, at 1 to 2 complex) with few (2-5%) clinopyroxenes (most sm with max observed sm-m, at 2 pellicular and linear).

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: 1% charred plant materials, opaque/opaque, sm and m, irregular to linear, poor, random, unoriented.
- Other (e.g.bone, excrement, fungal remains) : 2% bone, lr and vlr and vvlr sizes (max. 1500x700), pale yellow/1st order greys, irregular and linear forms, good to fair, random, unoriented.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 1%, medium (50-100µm), chamber voids, grey/ fourth order pinks.
- Matrix:

Hypo-coatings (related, touching a surface) : 2%, thin (30-50µm), large basalt clasts, pisoliths and bone fragments, yellow-gray brown/ dark grey with first yellows (CZ sized materials, non-lam).

Quasi-coatings (not touching) : none

Infillings: none.

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: 1% pisoliths (containing (CZ sized materials), unoriented, random, dark red brown/ dark red, >20 lam all micro lam (i.e. <30µm), clear, non-frag, (coated in hypo-coatings, see hypocoatings section for details). 1% nodules (anorthic), unoriented, random, 80-130µm, dark brown red/ dark red orange, non-lam, clear, non-frag, (CZ sized materials). <1% nodules

(anorthic), unoriented, random, lr (500), pale grey/ high order white, not laminated, clear, not fragmented, coated in medium (50-100) Micromass hypocoating of yellowish brown colour;

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) :

5%, medium brown, m-lr (max. 1000x800µm), R, elliptical, CZS.

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000): moderately developed granular (sm to m to lr) peds.

Other notes and comments on the description of the sample as seen in thin section: Evidence for past bioturbation. Basaltic clasts moderately weathered.

Thin Section Description Recording Sheet

TS: 1009 (NB: no body orientation on sample) Site code: QZ2

Micro-unit: 1 of 1 Gr.: SK 4

Sample position: 1 Sk & fills: SK 4

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 25/75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) unsorted

Micromass

Colour (x5 objective, PPL/XPL) : medium orange brown/ dark orange brown

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 2%, v sm and m, perpendicular orientation referred to ground surface, n/a;
- Chambers: 5%, v sm, random, n/a;
- Vughs: 10%, v sm, sm and m, random, n/a;
- Cracks: none.

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and degree of weathering)

- Tectosilicates: 5% quartz, colourless/1st order greys, sm and sm-m, SR-SA, 1 pellicular; 2%

plagioclase (multiple twinning), colourless/ 1st order greys, SA, 2 linear and pellicular;

- Inosilicates: 1% Px, colourless/ 1st order oranges, sm-m, A-SA, 2 complex;
- Nesosilicates: 1% Ov, colourless/ high 2nd to low 3rd order, sm-m, SR, 2 complex.
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  2% Basaltic rock clasts, opaque fine material with colourless phenocrysts/ opaque fine material with 1st order greys and strong yellows phenocrysts (feldspars and orthopyroxenes, without clinopyroxenes or nesosilicates), lr and v lr, SR to SA, 1 to 3, complex patterns producing multi-phase genetic alteromorphs;

2%, calcium carbonate pseudomorphs of prismatic oxlate crystals (some possibly pseudomorphs of bone by retention of irregular form and size and shape of internal pore spaces others more likely of either bone or plant remains via retention of elliptical to linear form without internal pore spaces), grey/ 4th order pinks and greens, lr and v lr (max. 2000x1400), SR, elliptical, n/a;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: 1% plant remains, sm and m, dark brown/ isotropic, circular, poor, random, unoriented.
- Other (e.g. bone, excrement, fungal remains) 5% bone, sm, m, lr and v large, colourless to pale yellow/ 1st order greys to isotropic, irregular and SR, fair to poor, random, unoriented, secondary mineral deposits of carbonate both on external surfaces and infilling internal pores.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 1% coatings of external surfaces and of pore spaces of bone canals, m (50-100), bone, colourless and pale grey/ high order pinks and greens.

- Matrix:

Hypo-coatings (related, touching a surface) : 5%, m and lr (50-100 and 100-150 respectively), bone, grey/ 4th order pinks;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules: [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] 10%, impregnative nodules, unoriented, random, med (50-100) large 100-200) and very large (>200), medium orange brown/ dark brownish orange, non-

laminated, clear, none;

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts (e.g.CZS) :

1%, medium brown, sm (50-10), SR, CZ, moderate linear basic distribution and orientation.

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) :weakly developed granular microstructure, v sm

Other notes and comments on the description of the sample as seen in thin section: both ferralitic and carbonatitic weathering pathways observable as operating in this sediment.

Thin Section Description Recording Sheet

TS: 1112 (NB: no body orientation on sample) Site code: QZ2

Micro-unit: 1 of 1 Gr.: SK8

Sampling position: 1 Sk & fills: SK8

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL) : yellow-grayish brown/ 1st order yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 2% m and lr, unoriented, weak clustered referred distribution to top of the section.
- Chambers: none
- Vughs: 10%, v sm and sm and m, unoriented, random;
- Cracks: 1%, v sm, unoriented,

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and degree of weathering)

- Tectosilicates:
  2% quartz, colourless/ 1st order greys, sm and sm-m, SA-SR, 1 pellicular;
  1% plagioclase, colourless/ 1st order greys, sm-m, A-SA, 1 pellicular and linear;

- Inosilicates:

  1% CPX, colourless/ high 2nd order pinks, m-lr, A, 2 linear (exploitation of cleavage planes) and pellicular;

  1% OPX, colourless/ mid 2nd order yellows and oranges, m and m-lr, A, 2 linear (exploitation of cleavage planes) and pellicular;

- Nesosilicates: 2%, Ov, orange red/ bright red, sm-m and m and m-lr, SA (holo-alteromorphs but not pseudomorphic), 2-3 complex;

- Phyllosilicates: none.

- Other (e.g. rocks, carbonates, sulfates, ash):

  5% basaltic clasts, colours dependent upon weathering extent of and alteration products from phenocrysts (plagioclase, pyroxenes, amphiboles, olivine), m-lr and lr and vlr (max. 2500x1500), SA, 2 complex;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: 1% opaque plant remains, m and lr, opaque/opaque, linear, poor, random, unoriented; <1% brown plant remains, lr, dark brown/isotropic, poor, random, unoriented;

•Other (e.g. bone, excrement, fungal remains): 2% bone, lr and v lr, pale yellow/1st order greys and orange/ orange and grey/ isotropic, irregular, fair to poor, random, unoriented;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (sm <50, m 50-100, lr >100 µm) (max. µm), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface): 1% coating, lr (max. 450), carbonate rich nodules, yellow grayish brown/ 1st order yellows; 1% coating, m, rock and bone, yellow grayish brown/ 1st order yellows.

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (sm <50, m 50-100, lr >100) (µm, max.), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slight, moderate, highly)]:

2% nodule (anorthic), unoriented, weak clustered basic distribution, lr (max. 3000x2500), brownish orange/ speckled orange, not laminated, sharp boundary, highly fragmented;

1% nodule (anorthic), unoriented, random, lr (max. 500x400), pale grey/ high order white, not laminated, clear, not fragmented, some with brownish red/dark red staining;

<1% (anorthic), unoriented, random, lr (max. 750), brownish red/ dark red, not laminated, diffuse boundary, not fragmented, extremely porous (c.50%).

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500µm), angularity, size of clasts (e.g.CZS) :

2%, orange brown/ 1st order greys, m (250-500)and lr (>500), SR, CZS, strong linear basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed granular, sm and m;

Other notes and comments on the description of the sample as seen in thin section: basaltic clasts moderately weathered, including the plagioclases within the rock fragments, unlike some of the other thin sections from this skull cache where the plagioclases are only slightly weathered despite the advanced weathering state of their adjacent minerals (pyroxenes, amphiboles and olivine).

Unabridged version symbolic version of micromorphological observation table

sample	TS	#µ-units	colour	b-fabric	c/f ratio	RD of c/f	sorting	Voids					Pedofeatures related to					Pedofeatures not related to		
								Ve	Ch	Cb	Vu	Cr	Intrusive		Matrix			Nodules		Excr.
													Fe-rich	CaCO3-rich	Hypo	Quasi	Infil	Fe-rich	CaCO3-rich	
C1	959	1	p. or br	c	15, 85	e	un	_	***	*	**	_	*	*	*	_	_	*	***	*
C3	1113	1	p. grey ye	c	30, 70	e	po	_	*	*	**	_	*	**	*	_	_	**	*	*
C3b	1239	1	m. or br	c	20, 80	e	un	_	**	***	*	_	_	*	*	_	_	*	_	*
Sk 1	965	1	ye br	c	30, 70	e	un	_	***	**	**	_	_	_	*	_	***	*	*	*
Sk 2	1001	1	ye grey br	c	10, 90	e	un	_	**	*	***	_	_	*	*	_	_	*	*	**
Sk 3	954	1	m. ye or br	c	35, 65	e	un		*	*	****	_	_	*	**	_	_	**	*	_
Sk 4	1009	1	m. or br	c	25, 75	e	un	_	*	**	***	_	_	*	**	_	_	***	_	*
Sk 5	956	1	m. ye br	c	30, 70	e	un	*	***	*	***	_	_	_	*	_	_	**	*	*
Sk 8	1112	1	ye gray br	c	25, 75	e	un	_	*	_	***	*	_	_	*	_	_	*	*	*

sample	TS	#µ-units	Inorganics								Organics			Peds		
			Minerals					Rock	Other		AMO	Plant	Other	develop.	type	sizes
			Tecto	Inos	Neso	Phyllo	Other	Basalt	CO3 pseu	shell		(opaque)	(bone)			
C1	959	1	*	*	*	_	_	**	*	*	_	**	*	w	g	vsm, sm
C3	1113	1	**	*	*	_	_	****	*	_	_	*	*	v w	g	vsm
C3b	1239	1	*	*	*	_	_	***	_	_	_	**	***	w	g	vsm
Sk 1	965	1	**	*	*	_	_	**	_	*	_	*	*	w	g	sm
Sk 2	1001	1	**	_	_	_	*	*	_	_	_	*	*	m	g	sm, m, lr
Sk 3	954	1	***	*	*	_	_	**	*	_	_	**	**	m	g	vsm, sm
Sk 4	1009	1	***	*	*	_	_	*	*	_	_	*	**	w	g	v sm
Sk 5	956	1	***	*-?	?	_	*	**	_	_	_	*	**	v w	g	sm, m
Sk 8	1112	1	**	*	*	_	_	**	_	_	_	*	*	w	g	sm, m

Appendix VI: Sala Vastmaal

VIA. Micromorphology raw data: thin section descriptions

Controls (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 874 Site code: RAA51

Micro-unit: 1 (area covers approx. 1/5 of the total area of the TS) Gr.: n/a

Sample positioning: C1A Sk & fills: n/a

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and wavy

Groundmass

c/f ratio (50µm limit): 2, 98

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) : perfectly

Micromass

Colour (x5 objective, PPL/XPL): grey-brown/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: 2, medium, unoriented;
- Chambers: 2, very small, unoriented;
- Vughs: 2, very small and small, unoriented;
- Cracks: 5, medium, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: 1, colourless/ 1st order greys, small and small-medium, S-A, 1

pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: 2, random, unoriented, small and medium, orange-red/ red, none, clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Sample is the control from the top of the C1 profile. The micro-units 1-3 repeat in sequence through TS 874 (C1 A control).

Thin Section Description Recording Sheet

TS: 874 Site code: RAA51

Micro-unit: 2 (area covers approx. 1/4 of the total area of the TS) Gr.: n/a

Sample positioning: C1A Sk & fills: n/a

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and wavy

Groundmass

c/f ratio (50µm limit): 2, 98

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) : perfectly

Micromass

Colour (x5 objective, PPL/XPL): brown-orange/ yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: 5, small and medium, unoriented;
- Chambers: 2, very small, unoriented;
- Vughs: 1, very small, unoriented;
- Cracks: 5, very small and small, weak parallel referred orientation to ground surface;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: <1, colourless/ 1st order greys, small, S-A, 1 pellicular;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: root: 1, small, colourless/ 4 th order, S-R, elliptical form, strong clustered referred distribution to voids;
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 5, small and medium, cracks, orange-red/ red;

Type B: 1, small and medium, voids, opaque/opaque;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 5, weak linear basic distribution, weak parallel orientation to ground surface, small and medium, orange-red/ red, none, diffuse, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):1, light brown/ isotropic, small-medium, S-R, CZ;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Sample is the control from the top of the C1 profile. The micro-units 1-3 repeat in sequence through TS 874 (C1 A control).

Thin Section Description Recording Sheet

TS: 874 Site code: RAA51

Micro-unit: 3 (area covers approx. 1/10 of the total area of the TS) Gr.: n/a

Sample positioning: C1A Sk & fills: n/a

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and smooth

Groundmass

c/f ratio (50µm limit): 2, 98

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) : perfectly

Micromass

Colour (x5 objective, PPL/XPL): brown-grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: none
- Chambers: 1, very small, weak clustered referred distribution to lower boundary, weak parallel referred orientation to ground surface;
- Vughs: none
- Cracks: 2, small and medium, weak parallel referred orientation to ground surface;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: <1, colourless/ 1st order greys, very small, S-A, 1 pellicular;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 5, weak parallel referred orientation to ground surface, random, small and medium, orange-red/ red, none, diffuse, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Sample is the control from the top of the C1 profile. The micro-units 1-3 repeat in sequence through TS 874 (C1 A control).

Thin Section Description Recording Sheet

TS: 976 Site code: RAA51

Micro-unit: 1 (area covers approx. 1/3 of the total area of the TS) Gr.: n/a

Sample positioning: C1 C Sk & fills: n/a

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and smooth

Groundmass

c/f ratio (50µm limit): 2, 98

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) : perfectly

Micromass

Colour (x5 objective, PPL/XPL): grey-brown/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: 2, large, strong parallel referred orientation to “up”;
- Chambers: none
- Vughs: none
- Cracks: 2, small, weak parallel referred orientation to ground surface;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: <1, colourless/ 1st order greys, very small, S-A, 1 pellicular;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 2, medium, channels, orange-brown/ yellow;
- Matrix:

Hypo-coatings (related, touching a surface) : 5, small and medium, voids, orange-red/ red;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 5, weak linear basic distribution, unoriented, small and medium, none, diffuse, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Area is 1/3 of the total area of the thin section (TS), followed by a thin micro-unit 2, and then this sequence repeats (x2 repetitions).

Thin Section Description Recording Sheet

TS: 976 Site code: RAA51

Micro-unit: 2 (area covers approx. 1/10 of the total area of the TS) Gr.: n/a

Sample positioning: C1 C Sk & fills: n/a

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and smooth

Groundmass

c/f ratio (50µm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): orange-greyish brown/ grey and orange;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 2, medium, weak parallel orientation to "up";
- Chambers: <1, very small, unoriented;
- Vughs: 1, small, unoriented;
- Cracks: 2, small, weak parallel referred orientation to ground surface;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: 10, colourless/ 1st order greys, very small and small, S-A to S-R, 1

pellicular, moderate linear basic distribution;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings:

Type A: 10, medium, voids, grey-brown/ grey;

Type B: 10, medium, channels, pale brown/ strong 1st order yellows;

- Matrix:

Hypo-coatings (related, touching a surface) : 1, medium, mineral grains, orange/orange;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 5, strong linear basic distribution, unoriented, small, 3 laminations (<30), clear fragmented;

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 1 covers the majority of the area of the thin section (TS) (descending from the top of the TS), followed by micro-unit 2 (a much thinner deposit), this cycle then repeats (x2 repetitions).

Therefore, for the whole thin section, micro-unit 1 covers about 9/10of the area whilst micro-unit 2 about 1/10 of the total area.

Grave 5914 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 861 Site code: RAA51

Micro-unit: 1 (area covers approx. 2/5 of the total area of the TS) (located at the left hand side and the right hand side of the thin section, when "up" is positioned the top) Gr.: GR 5914

Sample positioning: C3 Sk & fills: GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and smooth

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): orange-grey/ orange-grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: none
- Chambers: none
- Vughs: 5, small, unoriented;
- Cracks: 10, very very small and medium, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 2, colourless/ 1st

order greys, very small and small, S-R to S-A, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 5, small and medium, cracks, orange-red/ red;

Type B: 2, small, cracks, dark red/ opaque;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: none
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : well developed, platy, small

Other notes and comments on the description of the sample as seen in thin section: A well developed play microstructure but note that that of micro-unit 1 on the left hand side of the thin section has been turned 90 degrees from the position of formation (but preceding the formation

of the hypocoatings which surround it). The boundary is not a lower boundary but a vertical boundary which separates micro-unit 1 from micro-unit 2 in this TS (TS 861).

Thin Section Description Recording Sheet

TS: 861 Site code: RAA51

Micro-unit: 2 (area covers approx. 3/5 of the total area of the TS) Gr.: GR 5914

Sample positioning: C3 Sk & fills: GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see sheet for TS 861 micro-unit 1)

Groundmass

c/f ratio (50µm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): yellow-grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: 5, medium and large, moderate referred orientation parallel to “up”;
- Chambers: 5, very small and small and medium, unoriented;
- Vughs: 1, very small, unoriented;
- Cracks: 2, small and medium, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st order greys, very small, S-A, assessment of weathering not possible due to limits of microscopy on fragments of these small sizes and magnification levels available (x400

magnification max.);

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): rock fragments: <1, small-medium, colourless and grey/ low 1st nad high 2nd order interference colours, 1 pellicular and speckled;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: root remains: 1, colourless/ high order interference colours, circular to elliptical forms, poor preservation, strong referred distribution to chamber voids;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) :

Type A (intrapedal and interpedal): 5, small and medium, voids (cracks, channels and chambers), dark red/ opaque, moderate clustered basic distribution;

Type B (intrapedal): 5, small, intrapedal cracks, orange-red/ red;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A (intrapedal): 2, weak basic clustered distribution, unoriented, medium an dmedium-large, orange-red/ red, 2 laminations (>30µm), diffuse, none;

Type B, anorthic: <1, small, unoriented, random, orange-yellow/ orange, not laminated but made of overlapping radiating crystal structures, sharp, not fragmented;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, small and small-medium, weakly to moderately developed;

Other notes and comments on the description of the sample as seen in thin section: Clay rich peds with redox hypocoatings.

Thin Section Description Recording Sheet

TS: 867 Site code: RAA51

Micro-unit: 1 (1 of 1) Gr.: GR 5914

Sample positioning: 1 (TS oriented perpendicular to skeleton) Sk & fills: GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50µm limit): 50, 50

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): brown-grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 5, medium and large, unoriented;
- Chambers: 5, small and medium and very large, unoriented;
- Vughs: 2, medium and large, strong basic clustered distribution, strong clustered referred distribution to “up”;
- Cracks: 20, very very large, strong referred orientation parallel to “up”;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st

order greys, very small and small and small-medium, S-A to S-R, 1 pellicular;

- Inosilicates: other: 1, pale greenish-blue to colourless pleochroism/ mid to high 2nd order, small and small-medium and medium, 2 linear;
- Nesosilicates: none
- Phyllosilicates:

  mica (muscovite): 2, colourless/ high 2nd order, small, 1 pellicular

  Mica (biotite): 1, brownish yellow to brown pleochroism/ mid to high 2nd order, small-medium, 2 parallel linear (kata-poro-alteromorphs through expanded interlayers);

  Chlorite: <1, very small, blue pleochroic/ anomalous blue interference colours, clear edges, well rounded to linear forms, weathering not identifiable;

- Other (e.g. rocks, carbonates, sulfates, ash):

  carbonates: 1, small, colourless/ 4th order, form masked by speckling weathering, 2 pellicular and speckled;

  Rock fragment type A: 1, medium and medium-large, orange-grey /isotropic with micas with opaque speckling, S-R, 2 complex, random, unoriented;

  Rock fragment type B (tectosilicate and carbonate composition): <1, medium, S-R, 1 speckled and pellicular, random, unoriented;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 2, orange/isotropic, medium-large, linear form, clear edges, fair preservation, random, unoriented;
- Plant:

Type A: 5, small and small-medium and large, linear form, poor to fair preservation, random, unoriented;

Type B: 2, orange/isotropic, small and small-medium, poorpresrvation, irregular form, clear edges, random, unoriented;

- Other (e.g. bone, excrement, fungal remains) :

fungal remains: 5, dusty pink/isotropic, spores with size very small and circular form and good preservation or slcerotia with medium-large size and irregular form and fragmented and poor preservation, weak clustered basic distribution, unoriented;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings:

Type A: <1, small, large charcoal fragments, brownish orange/ orange-yellow

Type B: 2, small and medium, voids (channels), opaque/opaque;

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (μm, max.), colour, laminations (</>30μm), boundary, fragmentation]: 10, moderate basic clustered distribution, small and medium and large, orange-red/red, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (massive)

Other notes and comments on the description of the sample as seen in thin section:
heterogeneous

Thin Section Description Recording Sheet

TS: 907 Site code: RAA51

Micro-unit: 1 (1 of 1) Gr.: GR 5914

Sample positioning: 3/4 (perpendicular oriented TS, forms a transect from let foot to right foot)
Sk & fills:
GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50μm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) :well

Micromass

Colour (x5 objective, PPL/XPL): greyish-orange/ orange and grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within μ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 5, very very small and small, unoriented;
- Channels: 1, medium, moderate referred orientation perpendicular to “up”;
- Chambers: 2, very small and small, unoriented;
- Vughs: 2, very small, unoriented;
- Cracks: 10, very very small (intrapedal and strong referred orientation perpendicular to “up”, and small and small-medium weakly referred orientation perpendicular to “up”;

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 2 colourless/ 1st

order greys, very small and small, colourless/ 1t order greys, S-A to S-R, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 10, medium and large, cracks, yellow/2nd order pinks, strong referred distribution to skeletal remains of right foot;
- Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 5, small and medium, voids (cracks, channels and chambers), orange-red/ red;

Type B: 2, small, voids (cracks and channels), opaque/opaque;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic, 1, unoriented, weak clustered basic distribution, small, opaque/opaque, irregular form, none, diffuse, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed, sub-angular-blocky, medium and large (increasingly developed towards “up”).

Other notes and comments on the description of the sample as seen in thin section: Very similar to left foot tangential thin section (TS 936).

Thin Section Description Recording Sheet

TS: 919 Site code: RAA51

Micro-unit: 1 (area covers approx. 2/3 of the total area of the TS) Gr.: GR 5914

Sample positioning: A2 Sk & fills: GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.):diffuse and wavy

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): grey-brown/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled (almost undifferentiated)

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 2, very small and small, moderate perpendicular referred orientation to “up”;
- Chambers: 5, very small and small, unoriented;
- Vughs: 10, very small and small, unoriented;
- Cracks: 5, very very large, strong perpendicular referred orientation to “up”;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st order greys, very small and small and small-medium, S-R to S-A, 1 pellicular and irregular

linear;

- Inosilicates: other: 2, pale green-blue to colourless pleochroism/ mid to hgh 2nd, small and small-medium, 2 linear and pellicular;

- Nesosilicates: olivine: <1, small and small-medium, colourless/ 3rd order blues with lower order rims, SA, 2 pellicular and speckled;

- Phyllosilicates: mica (muscovite): 2, colourless (some with blue pleochroic interlayers and tops and bottoms)/ high 2nd order pinks, small and small-medium, phyllosilicate form, 2 pellicular an dparallel inear (to meso-alteromoprh and kata-alteromorphs), strong perpendicular referred orientation to "up";

- Other (e.g. rocks, carbonates, sulfates, ash):

  Rock fragments (composed of tectosilicates and carbonates): 2, very large and large and medium-large, colourless/ 1st greys and high 4th order colours, S-R, 2 pellicular and speckled (some with red/red speckled staining in centres);

  Glass: <1, pale brown/ isotropic, medium-large, S-A, vesicular, 1 pellicular;

  Rock fragment (tectosilicates and micas): 2, medium and medium-large, colourless/ 4th order and 1st greys and isotropic (some with MgOH speckled stainings), 2 to 3 complex (holo and poro-alteromorphs), unoriented, random;

  Carbonate: <1, small-medium, colourless/ 4th order, nporphyric (not rhombohedral), 2 pellicular and speckled;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 5, opaque/opaque, very small and small, linear to irregular forms, and clear to diffuse edges, poor preservation, random, unoriented;

- Plant:

Type A: 10, orange/isotropic, small-medium and medium and medium-large, linear forms, poor preservation, strong perpendicular referred orientation to "up", weak basic distribution;

Type B: 5, opaque/opaque, medium and medium-large, linear form, poor preservation, strong perpendicular referred orientation to "up", random;

- Other (e.g. bone, excrement, fungal remains) : fungal remains: 2, medium-large, dusty pink/ isotropic, circular, irregular forms and highly fragments, poor preservation, unoriented, random;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface) : none

  Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (μm, max.), colour, laminations (</>30μm), boundary, fragmentation]:

Type A, anorthic: 1, unoriented, random, small, red/ dark red, none, sharp, none;

Type B, anorthic: 2, unoriented, random, medium and large, none, sharp and irregular, heavily (composed of very small angular polygonal forms separated by vughs);

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):2, orange-red/ isotropic, elliptical to linear, poor, diffuse, moderate perpendicular referred orientation to "up", weakly clustered basic distribution;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: This dark micro-unit (micro-unit 1) is plant and amorphous organic material rich with coarse materials, all of which are well oriented horizontally. Chloritization of micas and redox affecting carbonate litho-relics were observed. Is the brown isotropic tectosilicate a fragment of brown glass of an anthropogenic origin?

Thin Section Description Recording Sheet

TS: 919 Site code: RAA51

Micro-unit: 2 (area covers approx. lower 1/3 of the total area of the TS) Gr.: GR 5914

Sample positioning: A2 Sk & fills: GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see TS 919 micro-unit 1)

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): grey-orange/ orange and grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: none
- Chambers: 5, very small, unoriented;
- Vughs: 2, very small and small , unoriented;
- Cracks: 5, very small, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st

order greys, very small and small, S-A to S-R, 1 pellicular, random, unoriented;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : 5, small, cracks, orange/ red-orange;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic, 1, unoriented, random, small, dark red/ opaque, none, diffuse, fragmented;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed, sub-angular-blocky, medium;

Other notes and comments on the description of the sample as seen in thin section: Apart from the diffuse boundary (upper/ to micro-unit 1) area, this micro-unit (micro-unit 2) seems largely disconnected and unaffected by h processes occurring in micro-unit 1.

Thin Section Description Recording Sheet

TS: 936 Site code: RAA51

Micro-unit: 1 (1 of 1) Gr.: GR 5914

Sample positioning: 3/4 (left foot tangential oriented thin section) Sk & fills: GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) : perfectly

Micromass

Colour (x5 objective, PPL/XPL): greyish-orangey brown/ grey and orange

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): strongly striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 5, very small and small, unoriented;
- Channels: 2, medium and large, weakly perpendicular referred orientation to “up”;
- Chambers: 2, very small and small, unoriented;
- Vughs: 2, small, unoriented;
- Cracks: 5, small and medium and (intrapedal only) very very small, moderate perpendicular orientation referred to “up”;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 2, colourless/ 1st

order greys, very small and small, S-A to S-R, 1 pellicular, random, unoriented;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: none

Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) :

depletion hypocoatings: 10, small and medium, cracks and channels, grey/grey;

impregnative hypocoatings: 5, small, voids (cracks, channels and chambers), orange-red/ red;

impregnative hypocoating: 1, medium and large, vesicles, opaque/opaque;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic, 2, unorientd, random, medium and small, dark red/ opaque, none, diffuse, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, moderate, medium and large and very large

Other notes and comments on the description of the sample as seen in thin section: Clay rich peds with redox pedofeatures

Thin Section Description Recording Sheet

TS: 995 Site code: RAA51

Micro-unit: 1 (1 of 1) Gr.: GR 5914

Sample positioning: 1 (TS oriented tangential to skeleton) Sk & fills: GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): greyish brown/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 5, medium and large, unoriented;
- Chambers: 5, very small and small, unoriented;
- Vughs: 5, small and medium and large, moderate clustered basic distribution, unoriented;
- Cracks: 1, very small and small, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple twinning): 2, colourless/ 1st order greys, very small land small and small-medium and medium, S-A to S-R, 1 pellicular;
  microcline: 2, colourless/ 1st order greys, small and small-medium, S-A to S-R, 2 complex;

- Inosilicates: other: <1, very small and small, pale blue-green to colourless pleochroism/ mid 2nd order with lower order rims, 2 linear and pellicular;

- Nesosilicates: olivine: 1, medium, colourless/ low 3rd order blues, 2 pellicular and speckled, strong clustered referred distribution to rock fragment;

- Phyllosilicates: mica (biotite): 5, small and small-medium, yellow to brown with blue areas/ masked interference colours (to yellows with anomalous blue interference colour areas), 2 parallel linear (meso-alteromorph);

- Other (e.g. rocks, carbonates, sulfates, ash):

  Rock fragment A, (carbonate): 2, medium, colourless/ 4th order, 1 pellicular an dirregular linear;

  Rock fragment B (volcanic silicate with mica): 2, medium, pale brown/ grey and colourless/ isotropic and mid-2nd order, 2 complex;

  Rock fragment C (vermiculite): <1, medium, S-R, yellow/ 2nd order yellows;

  Rock fragment D (other): <1, small-meidum, re/red, porous;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 1, orange/ isotropic, very small and small, moderate clustered basic distribution, unoriented;

•Plant:

Wood remains: 5, orange/ isotropic, small-medium and medium, linear form, good to poor preservation, random, unoriented;

Charred plant remains: 5, small and small-medium, opaque/opaque, linear form, good to poor preservation, random, unoriented;

•Other (e.g. bone, excrement, fungal remains) : bone: 5, yellow/ 1st order greys, small and small-medium and medium and medium-large, S-A to S-R, moderate clustered referred distribution to edges of the TS;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 5, small, voids, pale brown/ yellow and grey;

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm),

boundary, fragmentation]:

Type A, orthic: 2, weakly clustered basic distribution, unoriented, small land medium, red/ dark red interior and orange/dark red exterior, 2 laminations (>30µm), diffuse, none;

Type B, anorthic: 1, unoriented, random, small, bright orange/ orange, none, clear, none;

Type C, anorthic: <1, random, unoriented, small, yellow/yellow, none, clear to sharp, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: none

Thin Section Description Recording Sheet

TS: 997 Site code: RAA51

Micro-unit: 1 (area covers approx. ½ of the total area of the TS) Gr.: GR 5914

Sample positioning: 2 (TS oriented perpendicular to the skeleton) Sk & fills: GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and irregular

Groundmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): dark greyish brown/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 2, medium, weak perpendicular referred orientation to “up”;
- Chambers: 5, very small, unoriented;
- Vughs: 2, very small and large, unoriented;
- Cracks: 1, very small, weak perpendicular referred orientation to “up”;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st order greys, very small and small, S-A to S-R, 1 pellicular and irregular linear;

microcline: 5, colourless/ 1st order greys, small and small-medium, S-A, 1 pellicular;

- Inosilicates:

  OPX: 1, colourless/ 1st order yellow, small, S-A, 1 linear, weak clustered referred distribution to “up”;

  Other: 1, blue to pale green pleochroism/ 2nd order yellows, very small, 1 linear;

- Nesosilicates: none

- Phyllosilicates: chlorite: 1, blue/ anomalous blue interference colours, very small, S-A, amorphous structure, clear edges, irregular form, weathering unidentifiable, strong clustered referred distributionto fungal remains;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 1, bright ornage/ isotropic, small, linear form, poor preservation, clar edges, random, unoriented;

•Plant: 10, very small and small and small-medium and large and very large, dark red and opaque/ opaque, linear to irregular forms, clear edges poor to fair preservation, moderate fan-like referred distribution to skeleton;

•Other (e.g. bone, excrement, fungal remains) :

Fungal remains: 2, dusty pink/ isotropic, very small, good preservations, circular and irregular forms, clear edges, random, unoriented;

Bone: <1, pale yellow/ isotropic, small land small-medium, S-R, irregular forms, clear edges, fair preservation, strong clustered referred distribution to voids;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : 1, small and medium, plant and bone fragments (in voids), greyish brown/ grey, strong parallel referred orientation to “up” and strong clustered referred distribution to voids;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A, anorthic: 5, random, unoriented, small, orange/ orange, none, diffuse, none;

Type B, anorthic: 1, random, unoriented, small, red/ bright red, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):1, orange-brown/ isotropic, medium, S-R, CZ;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Typical characteristics of a dumped deposit, rich in charred material. A little bone is present, but it is coated in sediment and in a vertically oriented void, suggesting it has fallen down into this micro-unit from a layer which had been above. Similar when compared to micro-unit 1 of TS 996.

Thin Section Description Recording Sheet

TS: 997 Site code: RAA51

Micro-unit: 2 (area covers approx. ½ of the total area of the TS) Gr.: GR 5914

Sample positioning: 2 (TS oriented perpendicular to the skeleton) Sk & fills: GR 5914

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see Ts sheet of TS 997 micro-unit 1)

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): pale yellow-grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 5, very small, unoriented;
- Channels: 1, small, unoriented;
- Chambers: none
- Vughs: 2, very small land medium, unoriented;
- Cracks: 5, very small, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinning): 1, colourless/ 1st order greys, very

small and small, S-R, 1 pellicular;

- Inosilicates: other: <1, pale green to blue pleochroism/ 2nd order yellow, very small, S-A, 1 linear;
- Nesosilicates: none
- Phyllosilicates:

  mica: <1, very small, yellow/ 2nd order blues, 2 pellicular, strong clustered referred distribution to voids;

  chlorite: <1, very small, blue/ anomalous blue interference colours, S-A, clear edges, strong clustered referred distribution to voids;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: 2, very small and small-medium, dark red and opaque/ opaque, linear form, fair to poor preservation, random, unoriented;
- Other (e.g. bone, excrement, fungal remains) : fungal remains (spores): <1, very small, dusty pink/ isotropic, circular form, weak clustered referred distribution to "up";

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 1, small and medium, cracks, pale yellow/ grey;
- Matrix:

  Hypo-coatings (related, touching a surface) :

Type A: <1, small, plant remains, orange-red/ orange-red;

Type B: <1, small, voids, orange-red/ orange, strong negative clustered referred distribution to skeleton;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A, orthic: 2, weakly clustered basic distribution, moderaterate clustered referred distribution to skeleton, small and medium, orange-red/ red, none, diffuse, none;

Type B: 2, moderate negative clustered referred distribution to "up", small and medium, pale yellow/ isotropic, none, sharp, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Micro-unit is apedal but there are two peds on the right hand side of the TS which appear anomalous to the sediment of the TS. Irregular and interrupted upper boundary could be suggestive of post-depositional mixing.

Grave 5926 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 862 Site code: RAA51

Micro-unit: 1 (1 of 1) Gr.: GR 5926

Sample positioning: 2 (TS oriented perpendicular to the skeleton) Sk & fills: GR 5926

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): greyish orangey brown/ yellow and grey;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: none
- Chambers: 2, very small and small and large, weakly clustered basic distribution;
- Vughs: 2, very small and small and medium , weakly clustered referred distribution to “up”;
- Cracks: 10, very small and small and large, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: 10, colourless/ 1st order greys, very small and small and small-medium, S-A to S-R, 1 pellicular, (small-medium sized in strong linear referred distribution

to skeleton);

- Inosilicates: other:<1, green-blue to colourless pleochroism/ mid to high 2nd order, very small, 1 irregular linear and pellicular, strong fan-like referred distribution to skeleton;
- Nesosilicates: none
- Phyllosilicates: mica (muscovite): <1, colourless/ mid to high 2nd order interference colours, linear form with phyllosilicate cleavage, 1 pellicular and parallel linear to 3 pellicular and parallel linear to chlorite and masked to blue colours (PPL) and lower order edges with isotropic (XPL) areas along phyllosilicate cleavage planes (through interlayer spaces explansion and alterations) (iso-alteromorph), strong fan-like referred distribution to skeleton;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant:

Type A: 2, opaque/opaque, very small, linear form, poor preservation, S-A to S-R, strong clustered referred distribution to skeleton;

Type B: <1, dark red/ opaque, linear (polygonal), S-A, small-medium and medium, fair preservation, strong clustered referred distribution to skeleton;

- Other (e.g. bone, excrement, fungal remains) : bone: 10, very large, pale yellow/ 1st order greys, linear form, fair preserfvation, strong parallel referred orientation to "up" and strong clustered referred distribution to skeleton;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: <1, small, cracks and bone, red/ bright red;
- Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 5, small and medium, cracks, yellow-orange/ orange;

Type B: 5, cracks, small and medium, pale greyish yellow/ orange;

Type C: 1, small, mineral grains, opaque/ opaque;

Depletion hypocoatings: 5, medium, voids, grey/ grey (speckled b-fabric), moderate referred distribution to skeleton;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (μm, max.), colour, laminations (</>30μm), boundary, fragmentation]:

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : poorly to well developed sub-angular-blocky peds, large to small size ranges;

Other notes and comments on the description of the sample as seen in thin section: Very large bone fragment appears in good condition at x1 magnification and when viewed in the impregnated micromorphology sample block, but when at higher magnification levels in thin section (x50 magnification) the bone appears heavily degraded and likely would not have survived lifting if the bone had been lifted from the grave instead of collected in situ in a micromorphology soil sample.

Thin Section Description Recording Sheet

TS: 877 Site code: RAA51

Micro-unit: 1 (1 of 1) Gr.: GR 5926

Sample positioning: 2 (TS oriented tangential to skeleton) Sk & fills: GR 5926

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): greyish orange/ yellow-orange and grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1, very very small and very small, unoriented;
- Channels: none
- Chambers: 1, very small and medium, unoriented;
- Vughs: 5, very small and small and large, unoriented;
- Cracks: 10, very small and small and medium, moderate perpendicular referred orientation to skeleton;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: 10 colourless/ 1st order greys, very small and small and small-medium, S-A to S-R, 1 pellicular, weakly clustered referred distribution to cracks and

weakly referred distribution to skeleton;

- Inosilicates: other: 1, small and small-medium, blue to green pleochroism/ 2nd order yellows, 1 irregular linear and pellicular, strongly referred distribution to skeleton;
- Nesosilicates: none
- Phyllosilicates: chlorite: <1, very small and small, clear edges, poor preservation S-A, linear to irregular forms, weathering unidentifiable, strong referred distribution to skeleton;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: 2, opaque/opaque, very small and small, clear edges, poor preservation, linear to irregular forms, S-A to S-R, strong referred distribution to skeleton;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 2, small, cracks, orange-red/ red, weakly linear basic distribution;

Type B: 2, small, voids, opaque/ opaque;

Depletion hypocoating: 10, small and medium, cracks, grey/ grey (speckled b-fabric and increased coarse to fine ratio);

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: orthic: <1, strongly referred distribution to intrapedal sediments, small, orange-red/ red, none, diffuse, none;

Type B: 1, unoriented, random, small and medium, opaque/ opaque, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):1, small and medium, orange-brown/ isotropic, S-R, elliptical form, moderate referred distribution to

skeleton;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : moderately developed, small and small-medium and medium and medium-large, sub-angular-blocky peds (increasing in size towards the skeleton).

Other notes and comments on the description of the sample as seen in thin section: Depletion hypocoatings not only have a different colour in PPL and XPL (compared to the rest of the micro-unit) but also a different b-fabric (speckled rather than striated) and greater abundance of coarse materials (more tectosilicates in the depletion hypocoatings). These differences, couple with the thickness of the depletion hypocoatings (up to medium sized, *i.e.* 200-500 µm) makes it almost look at first glance like they are a whole different micro-unit when TS is observed at x1 magnification in hand view.

Thin Section Description Recording Sheet

TS: 978 Site code: RAA51

Micro-unit: 1 (located in upper quarter of the thin section) Gr.: GR 5926

Sample positioning: 4Y Sk & fills: GR 5926

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear, smooth

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) poorly

Micromass

Colour (x5 objective, PPL/XPL): yellow-brown/ yellow grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 1, small, unoriented;
- Chambers: 1, small , weakly clustered basic distribution, unoriented;
- Vughs: 2, small and very small, unoriented;
- Cracks: 5, medium and large, moderate orientation perpendicular related to up and parallel relaed to the body; weak parallel basic distribution

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and simple twinned plagioclase: 5, colourless/ 1st order greys, very

small and small, angular, 1 pellicular and speckled;

- Inosilicates: pyroxenes: 2, very small and small, colourless/ 1st order yellows and pinks, S-R, 2 pellicular and irregular linear;
- Nesosilicates: none
- Phyllosilicates: chlorite: 1, very small, pale blue and colourless (pleochroic)/ masked 1st yellows, S-R, 1 parallel linear;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: roots: 2, medium and large, colourless/ highly birefringent, circular and elliptical, excellent, strongly oriented related to voids;
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :none

Quasi-coatings (not touching) :none

Infillings: 5, small-medium, voids, yellow and red/ orange and red;

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: 5, strong clustered basic distribution, small –medium, dark red/ opaque, no laminations, diffuse, not fragmented;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal with 5-10% included allogenic angular blocky peds of medium size.

Other notes and comments on the description of the sample as seen in thin section: micro-unit is located in the top ¼ of the thin section (relative to the "up" orientation)

Thin Section Description Recording Sheet

TS: 978 Site code: RAA51

Micro-unit: 2 (the thin, ≤5mm, band of material) Gr.: GR 5926

Sample positioning: 4Y Sk & fills: GR 5926

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and wavy

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting: (unsorted, poorly, well, perfectly) unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: none
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz, 40, colourless/ 1st order greys, very small and small, S-A, 1

pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: none

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules: [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation] none

• Excremental Pedofeatures(% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: a thin band (horizontal related to the "up" orientation) of fine (less than 50µm mostly) quartz material which is repeated at the base of thin section after micro-unit 3. However, the upper and lower boundaries of micro-unit 2 differ, as between micro-unit 1 and micro-unit 3 there is a clear boundary whereas between micro-unit 2 and micro-unit 3 (at the base of micro-unit 3) the boundary is diffuse (see TS 920 for the 10µm thick representation of this sediment from this sample).

Thin Section Description Recording Sheet

TS: 978 Site code: RAA51

Micro-unit: 3 (area covers 2/3 of the thin section area) Gr.: GR 5926

Sample positioning: 4Y Sk & fills: GR 5926

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and wavy

Groundmass

c/f ratio (50µm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) well

Micromass

Colour (x5 objective, PPL/XPL): yellow-brown/ yellow-grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented, moderate basic clustered distribution
- Channels: 1, small and medium, unoriented;
- Chambers: 2, small, unoriented
- Vughs: 2, very small and small, unoriented
- Cracks: 10, medium, strong perpendicular orientation related to up and parallel related to the body, moderate parallel basic distribution;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: 2, very small and small, colourless/ 1st order greys, S-A, 1 speckled;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: 1, small, orange/isotropic, irregular and fibrous, poor, random, unoriented;
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: 5,small, yellow-orange/ orange, none, clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : poorly developed sub-angular blocky, medium;

Other notes and comments on the description of the sample as seen in thin section: the thin section when viewed macroscopically looks like if the peds had formed they would have been platy or lenticular peds as the cracks as perpendicular to the up direction, but at x50 magnification the sub-angular blocky pedostructure can be seen to have begun to develop through the identification of smaller cracks (almost perpendicular to the larger cracks) and also by the changed in fine material colours (from interior to exterior of the peds) delineating edges of the peds.

Thin Section Description Recording Sheet

TS: 996 Site code: RAA51

Micro-unit: 1 (area covers approx. ¾ of the total area of the TS) Gr.: GR 5926

Sample positioning: 2 (TS oriented perpendicular to the skeleton) Sk & fills: GR 5926

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and wavy

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): greyish brown/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1, very small, unoriented;
- Channels: 1, small, unoriented;
- Chambers: 2, very small, unoriented;
- Vughs: 5, small and very large, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinning): 5, colourless/ 1st order greys, very small and small and small-medium and medium, S-A to S-R, 1 pellicular;
- Inosilicates: other: <1, blue-green to colourless pleochroism/ 2nd order yellows, very small,

1 linear, weak clustered referred distribution to “up”;

- Nesosilicates: none
- Phyllosilicates: chlorite: <1, very small, blue/ anomalous blue interference colours, phyllosilicate form, clear edges, strong clustered referred distribution to orthic nodules (listed as Type B above) and to charcoal fragments;
- Other (e.g. rocks, carbonates, sulfates, ash): rock fragments (carbonates): <1, very small, S-R, colourless/ 4th order, 1 pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: 10, opaque/ opaque, very small and small and small-medium and medium, linear to irregular forms, A to R, fair to poor preservation, unoriented, random;
- Other (e.g. bone, excrement, fungal remains) :

Bone: 1, pale yellow/ 1st order greys, small-medium, fair preservation, irregular forms, hsarp edges, unoriented, random;

Pollen: <1, red/ isotropic, very small, R, strong clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A, anorthic: 2, random, unoriented, small and medium, orange/ orange speckled, none, clear, none;

Type B, orthic, : 1, random, unoriented, small and medium, orange-red/ red, 2 laminations (>30µm), diffuse, none, CZS texture;

Type C, orthic: <1, moderate clustered referred distribution to “up”, unoriented, medium, red/ bright red, 3 laminations (>30µm), clear to sharp, none;

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):2, orange-brown/ isotropic, small-medium and medium, S-R, CZ, strong linear basic distribution, moderate clustered referred distribution to “up”, elliptical to irregular forms, clear to diffuse

edges, strong parallel referred orientation to ground surface;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Brown sediment with charcoal throughout the micro-unit.

Thin Section Description Recording Sheet

TS: 996 Site code: RAA51

Micro-unit: 2 (area covers approx. 1/4of the total area of the TS) Gr.: GR 5926

Sample positioning: 2 (TS oriented perpendicular to the skeleton) Sk & fills: GR 5926

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see TS sheet of TS 996 micro-unit 1)

Groundmass

c/f ratio (50µm limit): 2, 98

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) : perfectly

Micromass

Colour (x5 objective, PPL/XPL): yellow-grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1, very small, unoriented;
- Channels: <1, very small, unoriented;
- Chambers: none
- Vughs: 2, very small, unoriented;
- Cracks: 2, very small and small, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: 1, colourless/ 1st order greys, very small and small, S-A to S-R, 1

pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: 1, very small, opaque/opaque, linear form, S-R, poor preservation, strong clustered referred distribution to excremental pedofeatures;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : 5, small, voids, pale orange-yellow/ yellow;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

orthic: 2, random, unoriented, small, orange-red/ dark red, none, diffuse, none;

anorthic,: 1, random, unoriented, small and medium, pale yellow/ yellow speckled, non, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):1, orange-brown/ isotropic, small and medium, SR, elliptical form, clear edges, CZ, strong clustered referred distribution to “up”/ micro-unit 1;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed, small, sub-angular-blocky;

Other notes and comments on the description of the sample as seen in thin section: This is a very small micro-unit. The TS 996 is small and this is only the bottom quarter of TS 996.

Grave 7464 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 876 Site code: RAA51

Micro-unit: 1 (area covers approx. 1/3 of the total area of the TS) Gr.: GR 7464

Sample positioning: 4 Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and wavy

Groundmass

c/f ratio (50µm limit): 70, 30

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): grey-brown/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1, very small and small, unoriented;
- Channels: 5, medium and large and very large, unoriented;
- Chambers: 1, very small, unoriented;
- Vughs: 5, small, unoriented;
- Cracks: 2, very very small and small-medium and very very large, moderate perpendicular referred orientation to “up”;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st

order greys, very small and small and small-medium, S-A to S-R, 1 pellicular;

- Inosilicates: other: <1, very small, pale blue to colourless pleochroic/ high 1st order, linear form, diffuse edges, weathering not identifiable;
- Nesosilicates: none
- Phyllosilicates:

  mica: 1, small-medium, grey and colorless/ low 2nd, 2 parallel linear (kata-alteromorphs through parallel expansion of interlayer spacings);

  Chlorite: 1, small, medium blue to dark blue/ anomalous blue interference colours, phyllosilicate form with opaque interlayer spaces;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 15, orange/isotropic, circular forms with clear edges or irregular forms with diffuse edges, very small and small and small-medium, poor, strong referred distribution to plant and voids;

•Plant: 30, dark orange/isotropic, medium and medium-large and large, good preservation, moderate perpendicular referred orientation to "up";

•Other (e.g. bone, excrement, fungal remains) :

fungal remains: 2, dusty pink/ isotropic, very small, linear form, fair preservation;

bone: 25%, medium and medium large and large and very large, pale yellow/ 1st order greys, irregular forms with clear edges, fair preservation, strong referred orientation perpendicular to "up", moderate linear basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : 5, small and medium, bone canals, grey-brown/ grey and yellow;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 5, unoriented, random, orange-red/red, small, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of

clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, moderate, medium/

Other notes and comments on the description of the sample as seen in thin section: micro-unit 1 appears at macroscopic observation level (*i.e.* x1 magnification) to be composed of a bone layer, then a wood layer, but even at low level observations using a microscope (*i.e.* x10 magnification) peds can start to be seen, also it may be worthwhile investigating what he lack of granular peds and low abundance of chamber voids means as relating/ used as evidence of a lack of bioturbation and the maintenance/preservation of woody fragments in large pieces with fair to good preservation of internal structure and orientation of deposition;

Thin Section Description Recording Sheet

TS: 876 Site code: RAA51

Micro-unit: 2 (area covers approx. 2/3 of the total area of the TS) Gr.: GR 7464

Sample positioning: 4 Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see sheet for TS 876 micro-unit 1)

Groundmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): grey-orange/ grey and strong 1st yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1, small, strong negatively clustered referred distribution to “up”;
- Channels: 2, small and medium, unoriented;
- Chambers: 5, very small, unoriented;
- Vughs: 2, very small, unoriented;
- Cracks: 10, very very small and very small, weak perpendicular referred orientation to “up”;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple and multiple twinned): 15, colourless/ 1st order greys, very small and small and small-medium and medium, S-A to S-R, 1 pellicular, moderate linear basic distribution;
  microcline: 1, colourless/ 1st order greys, small, S-R, 1 pellicular, moderate referred distribution to channels;

- Inosilicates:

  Other: <1, pale blue to colourless/ mid 1st order yellows, small, 1 irregular linear;

- Nesosilicates: none

- Phyllosilicates: chlorites: 2, very small, blue pleochroic/ anomalous blue interference colours, S-R, clear edges, weathering unidentifiable;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface) :

depletion hypocoatings: 10, interpedal cracks, medium and large, brownish grey/ grey;

impregnative hypocoatings: 2, small, intrapedal cracks, orange-red/ red;

  Quasi-coatings (not touching) : none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: anorthic: 1, unoriented, strong basic clustered distribution, orange-red/ red, none, clear, none;

Type B: anorthic: 1, unoriented, random, opaque/opaque, laminations not visible, diffuse, none;

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of

clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, small-medium and medium and medium-large, weakly developed;

Other notes and comments on the description of the sample as seen in thin section: Compared to other foot adjacent thin sections (*e.g.* TS 981) this is a mix of micro-unit 2 and micro-unit 3 of TS 981 into one micro-unit (micro-unit 2 in TS 876), and could suggest increased mixing in the sediments in TS 876 compared to the sediments in TS 981.

Thin Section Description Recording Sheet

TS: 935 Site code: RAA51

Micro-unit: 1(covers approx. ½ of the total area of the TS) Gr.: GR 7464

Sample positioning: 1 (perpendicular orientated TS) Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear, smooth;

Groundmass

c/f ratio (50µm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): well

Micromass

Colour (x5 objective, PPL/XPL): yellow-greyish orange/ orange;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: 1, very small, unoriented;
- Channels: none
- Chambers: none
- Vughs: none
- Cracks: 5, very very small and very small and small, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned): 2, colourless/ 1st greys, S-A to S-R,

1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: none
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular blocky, moderately well developed, small and small-medium and medium and medium-large;

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 1 and micro-unit 2 are all mixed up throughout and across the whole of the thin section (TS). There is no logical reason for the labelling as to why the micro-unit described above is labelled as micro-unit 1 rather than micro-unit 2 (the numbers do not reflect interpretations of sequence of deposition); the numbering in these cases is arbitrary. Micro-unit 1 is the orange clay peds. Micro-unit 2 is he grey clays with the greater amount and variety of coarse materials.

Thin Section Description Recording Sheet

TS: 935 Site code: RAA51

Micro-unit: 2 (covers approx. 12 of the total area of the TS) Gr.: GR 7464

Sample positioning: 1 (skull perpendicular oriented TS) Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clar and irregular

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): orange-grey/ grey and strong 1st yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: 2, very small, moderate clustered basic distribution;
- Channels: 2, medium-large and very very large, strong parallel referred orientation to skull and perpendicular to "up";
- Chambers: 5, very small and small,unoriented;
- Vughs: 2, small and medium, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned): 30, colourless/ 1st greys,very small and small and medium and large, 1 pellicular and 2 complex (where near wood and fungal

remains);

- Inosilicates:

  OPX: 1, colourless/ 1st yellow, small and very small, S-A to S-R, 1 pellicular;

  CPX: 1, very small, colourless/ 2nd order pinks with lower rims, 1 pellicular;

  Other: 1, pale green to colourless pleochroism/ mid to high 2nd order, small and small-medium, 2 pellicular and linear (with well define cleavage visible);

- Nesosilicates: none

- Phyllosilicates:

  mica (muscovite): 1, colourless/ high 2nd pinks, very small, 1 pellicular, strong negative referred distribution to skeleton;

  chlorite: 5, light blue to strong blue pleochroism/ isotropic, very small and small, irregular form and diffuse edges;

- Other (e.g. rocks, carbonates, sulfates, ash): carbonate (calcite or dolomite): 2, small-medium and medium-large, colourless/ high 4th order interference colours, 1 linear with some red-/red depositing staining along the exterior surfaces and intra-mineral fractures;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 5, small and small-medium, orange/isotropic, circular to irregular form, clear to diffuse edges, strong referred distribution to voids and woody remains;

- Plant: wood remains: 5, orange/ isotropic, small-medium and medium and medium-large, irregular form, good to poor preservation, strong referred distribution to “up”, strong parallel basic distribution, strong linear referred orientation to skeleton and perpendicular to “up”;

- Other (e.g. bone, excrement, fungal remains) : fungal remains: 5, dark dusty pink/ isotropic, slcearotia and spores and hyphae, circular and columnar/ linear forms, goo d preservations, strong clustered referred distribution to wood;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface) :

Type A: 2, small and medium, orange-red/ red, related to mineral grains;

Type B: 2, orange re/red, small, related to fungal remains;

Type C: 2 dark red/ dark red, small and small-medium, related to voids (chambers);

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (μm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30μm), boundary, fragmentation]:

Type A: nucleic: 2, large, dark red/ opaque, sharp edges, strong referred distribution to pyroxene and carbonate containing rock fragments;

Type B: 1, very small, opaque/ opaque, strong clustered basicdistribution, circular to irregular form, diffuse edges, strong referred distribution to vesicles;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (seems to be infill material that fills in between the sub-angular-blocky peds of micro-unit 1).

Other notes and comments on the description of the sample as seen in thin section: Fungal remains oddly only good rather excellent preservation as could have been expected compared to level of preservation of fungi in other TS from this site.

Thin Section Description Recording Sheet

TS: 981 Site code: RAA51

Micro-unit: 1 (area covers approx. 1/3 of the total area of the TS; located at the top of the TS)
Gr.: GR 7464

Sample positioning: 4 (tangential oriented TS) Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): sharp and smooth

Groundmass

c/f ratio (50μm limit): 50, 50

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): brown-orange/ 1st yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within μ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1, very small, unoriented;
- Channels: 5, medium and large, strong perpendicular referred orientation to “up”;
- Chambers: 5, very small and small , unoriented;
- Vughs: 10, very small and small and medium, unoriented;
- Cracks: 10, medium nd large and very large and very very large, strong perpendicular referred orientation to “up”;

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple and multiple twinning): 5, colourless/ 1st order greys, very small and small and small-medium, colourless/ 1st greys, S-A, 1 pellicular and speckled; microcline: 1, small-medium, colourless/ 1st greys (with heavy staining of re/red deposits) S-A, 2 complex;

- Inosilicates: 2, small-medium and medium, pale green to colourless pleochroism/ mid to high 2nd order interference colours, 1 linear and pellicular;

- Nesosilicates: none

- Phyllosilicates:
  mica: 1, very small, colourless/ high 2nd order, phyllosilicate structure, 1 pellicular and parallel linear;

  Chlorite: 2, very small and small, blue to dark blue pleochroism/ anomalous blue interference colours, irregular forms, clear to diffuse edges, strong referred distribution to amorphous organic matter;

- Other (e.g. rocks, carbonates, sulfates, ash): carbonates (calcite/dolomite): <1, small and small-medium, colourless/ high 4th order, rhombohedral form, 1 linear;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 10, very small and small and small-medium, circular to irregular, clear to diffuse edges, orange/isotropic, poor preservation, strong referred distribution to voids;

•Plant:

Type A: 30, small-medium and medium and medium-large and large and very large, orange/isotropic, linear, fair to poo, parallel basic distribution, moderate perpendicular referred orientation to “up”;

Type B: 2 , small and very small, opaque/ opaque, poor preservation, random, unoriented;

•Other (e.g. bone, excrement, fungal remains):

fungal remains: 2, dusty pink/ isotropic, very small, circular (sclerotia) and linear (hyphae), poor preservation, moderate clustered referred distribution to amorphous organic material at boundary to plant materials.

Bone: 15, pale yellow/ 1st greys, irregular forms, clear edges, fair preservation, weak perpendicular referred orientation to “up”

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 10, small, bone canals, brown-gray/ pale 1st yellows;

•Matrix:

Hypo-coatings (related, touching a surface) : 2, medium, meinerals grains, orange-red/ isotropic;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: 1, small, dark orange-red/ dark red, irregular form, diffuse edges, strong clustered basic distribution, not laminated, not fragmented;

Type B: 5, opaque/opaque, irregular form, diffuse edges, small and very small, moderate clustered basic distribution, laminations not visible, not fragmented;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):2, orange/isotropic, S-R, small-medium and medium, unoriented, random;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (this is not a proper soil or sediment but a degraded coffin wood layer, so pedality is not pehaps an applicable descriptive characteristic to apply in this case)

Other notes and comments on the description of the sample as seen in thin section: A coffin wood layer with a fair amount of bone on top of the woody materials. The boundary is clarified by a very large crack between the two micro-units.

Thin Section Description Recording Sheet

TS: 981 Site code: RAA51

Micro-unit: 2(area covers approx. 1/3 of the total area of the TS)Gr.: GR 7464

Sample positioning: 4 (tangential oriented TS) Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and wavy

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) :poorly

Micromass

Colour (x5 objective, PPL/XPL): brownish orange/ yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small and small , unoriented;
- Channels: none
- Chambers: 1, small, (intrapedal);
- Vughs: none
- Cracks: 10, very very small and very small , strong parallel basic distribution;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned) : 5, colourless/ 1st

order greys, very small and small, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 2, small , intrapedal cracks, red-orange/ orange;
- Matrix:

Hypo-coatings (related, touching a surface) : 5, medium, ped exterior surfaces, grey/ grey;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 5, dark red/ .opaque, weakly clustered distribution, not laminated, not fragmented, diffuse edges;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky microstructure weakly to moderately developed (more developed towards “up” direction and micro-unit 1), small and small-medium;

Other notes and comments on the description of the sample as seen in thin section: Loosely grouped to below the very large crack void separating micro-unit 1 from micro-unit 2. The boundary described is not the lower boundary but the boundary separating micro-unit 2 peds from micro-unit 3.

Thin Section Description Recording Sheet

TS: 981 Site code: RAA51

Micro-unit: 3 (area covers approx. 1/3 of the total area of the TS)

Gr.: GR 7464

Sample positioning: 4 (tangential oriented TS) Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and irregular

Groundmass

c/f ratio (50µm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting: (unsorted, poorly, well, perfectly) :unsorted

Micromass

Colour (x5 objective, PPL/XPL): grey-orange/ grey and orange

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limipid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 5, very small, unoriented;
- Channels: none
- Chambers: none
- Vughs: 2, small, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 20, colourless/ 1st

order greys, very small and small, 1 pellicular and speckled;

- Inosilicates:

  Other: 2, pale green to colourless pleochroism/ mid 2nd order interference colours, S-R, 2 linear and pellicular and speckled with opaque/opaque very small speckles;

- Nesosilicates: none

- Phyllosilicates:

  mica (biotite): 1, brown-orange/ high 1st order, S-R to S-A, 1 parallel linear, strong referred distribution to plagioclase;

  chlorites: 1, very small, blue pleochroism/ anomalous blue interference colours, irregular forms, and clear edges;

- Other (e.g. rocks, carbonates, sulfates, ash): carbonates (calcite/ dolomite): 1, colourless/ high 4th order, rhombohedral form, 1 linear;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: 1, very small, linear clear, opaque/opaque, poor;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 2, medium, mineral grains, grey/ isotropic;

Type B: 5, medium, mineral grains, orange-red/ red;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: 1, unoriented, random, small, opaque/opaque, laminations not visible, diffuse, none.

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of

clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (a coarse, quartz-rich infill material between the sub-angular-blocky peds of micro-unit 2)

Other notes and comments on the description of the sample as seen in thin section: none

Thin Section Description Recording Sheet

TS: 982 Site code: RAA51

Micro-unit: 1(covers approx. 1/3 of the total area of the TS) Gr.: GR 7464

Sample positioning: 1Y (tangential oriented TS) Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): clear and irregular

Groundmass

c/f ratio (50μm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): well

Micromass

Colour (x5 objective, PPL/XPL): grey-orange/ orange

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within μ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: none
- Chambers: 2, very small, unoriented;
- Vughs: none
- Cracks: 5, very very small and very small and small, unoriented;

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned): 2, colourless/ 1st greys, very small,

weathering not identifiable due to small size and limits of mangnification (x400);

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 15, small and medium, intra-pedal voids (cracks), orange-red/ red;
- Matrix:

Hypo-coatings (related, touching a surface) : depletion hypocoatings, 2, medium, voids, grey/ grey;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]:

impregnative: 5, irregular form and diffuse edges, orange-red/ red, small and medium;

anorthic: 1, very small, spherical opaque/opaque, moderate clustered referred distribution to edge of peds;

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular- blocky, moderately well developed, small-medium and medium

Other notes and comments on the description of the sample as seen in thin section: micro-unit 1 and micro-unit 2 for TS 982 are comparable to micro-unit 1 and micro-unit 2 for TS 935 (*i.e.* the

other skull orientation TS for GR 7464). The boundary is not a a lower boundary but an edge of ped boundary to micro-unit 2 which is the coarse material that infills between the fine-grained peds composed of micro-unit 1.

Thin Section Description Recording Sheet

TS: 935 Site code: RAA51

Micro-unit: 2 (cover approx. ¼ of the total area of the TS) Gr.: GR 7464

Sample positioning: 1Y (tangential oriented TS) Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and wavy

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): brown-grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: 5, small and medium, unoriented;
- Chambers: 5, very small and small, unoriented;
- Vughs: none
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple and multiple twinning): 30, colourless/ 1st greys, very small and small and small-medium and medium, 1 pellicular;

microcline: <1, colourless/ 1st order greys, S-A, small, 1 complex (some 2 complex were observed close to wood remains);
other (crystalline tectosilicate): 1, colourless/ 1st order greys, S-A, small, 1 speckled,;

- Inosilicates: 2, pale green to colourless pleochroism/ mid to high 2nd order interference colours, cleavage clearly visitble, small and small-medium, 1 linear;

- Nesosilicates: none

- Phyllosilicates:

  Mica (biotite): 1, dark blue to yell-brown/ 1st yellows, small and small-medium, phyllosilicate structure, 2 complex (with chloritized interlayer and opaque edges at tops and bottoms) (meso-alteromorphs), strong referred distribution to rock fragments;

  chlorite: 5, very small and small and small-medium (small-medium strong referred distribution to rick fragments), blue to dark blue pleochroism/ isotropic or anomalous blue interference colours, irregular forms and diffuse edges (apart from the small-medium sized grains associated spatially with the rock fragments);

- Other (e.g. rocks, carbonates, sulfates, ash):

  rock fragment (porphyric, quartz /plagioclase-rich with biotite and chlorite): 10, large and very large, for colours see mineral composition, S-R, 2 complex;

  other: <1, pink/ pink, small-medium, R, 1 pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 2, orange/ isotropic, very small and small, circular and irregular forms, clear and diffuse edge, poor preservations;

- Plant:

charcoal: 1, opaque/opaque, large, polygonal forms, A, good preservation;

wood remains: 5, orange/ isotropic, small and small-medium, linear form, poor, strong referred distribution to boundary between micro-unit 2 and micro-unit 3, moderate perpendicular referred orientation to “up”;

- Other (e.g. bone, excrement, fungal remains) : fungal remains: 2, spores and hyphae, circular and linear forms, clear edges, dusty pink/ isotropic, very small and small, strong referred distribution to woody material;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: <1, small, large mineral grains (intra-mineral cracks), grey/ orange,

- Matrix:

Hypo-coatings (related, touching a surface) : 1, medium, mineral grains, orange-brown/ orange;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (μm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30μm), boundary, fragmentation]: 2, unoriented, random, small, yellow/ orange-yellow, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (this is just a quartz-rich infill material with grey fine material, which infills between the peds of micro-unit 1).

Other notes and comments on the description of the sample as seen in thin section: Comparable to micro-unit 2 of TS 935. Boundary described on this sheet is the boundary between micro-unit 2 and micro-unit 3, this is not a lower boundary but an irregular one which exists around the peds of micro-unit 2.

Thin Section Description Recording Sheet

TS: 982 Site code: RAA51

Micro-unit: 3 (covers approx. 1/3 of the total area of the TS) Gr.: GR 7464

Sample positioning: 1Y (tangential oriented TS) Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see sheet for TS 982 micro-unit 2)

Groundmass

c/f ratio (50µm limit): 80, 20

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels:10, medium and large, strong perpendicular referred orientation to "up", moderate parallel basic distribution;
- Chambers: 5, small and medium, unoriented;
- Vughs: none
- Cracks: 25, medium and large and very large and very very large, moderate parallel basic distribution, strong parallel referred orientation to ground surface;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned): 2, colourless/ 1st greys, very small and small, S-R, 1 pellicular;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 20, orange/ isotropic, circular and irregular forms, diffuse and clear edges, poor preservation, random, unoriented;
- Plant: wood remains: 50, orange/ isotropic, small and medium and small-mediuma nd medium-large and large and very large, linera form, fair to poor preservations, strong parallel basic distribution, strong clustered referred distribution to "up" and strong perpendicular referred orientation to "up";
- Other (e.g. bone, excrement, fungal remains) : fungal remains: 10, dusty pink/ isotropic, very small and small, circular and columnar/linear forms (spores and hyphae), clear edges, good preservation, strong referred distribution to amorphous organic matter.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: none
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : n/a (just a coffin wood layer so pedality not applicable due to lack of clay, silt or sand sediments).

Other notes and comments on the description of the sample as seen in thin section: Coffin wood layer. Micro-unit 3 expands in height towards the right hand side of the TS.

Thin Section Description Recording Sheet

TS: 984 Site code: RAA51

Micro-unit: 1 (area covers approx. ¼ of the total area of the TS) Gr.: GR 7464

Sample positioning: A1 Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.):diffuse and wavy

Groundmass

c/f ratio (50µm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): orange/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: none
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple and multiple twinned): 2, colourless/ 1st order greys, very small, 1 pellicular;
  microcline: 1, colourless/ 1st order greys, medium-large, S-R, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 25, orange/isotropic, small and small-medium and very small, circular to irregular form, clear boundaries, poor, unoriented, random;

•Plant: wood remains: 15, orange/isotropic, small-medium and medium and medium-large, linear forms, fair to poor preservation, clear to diffuse edges, unoriented, random;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: none

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : granular, moderate, small;

Other notes and comments on the description of the sample as seen in thin section: Boundary described is the lower boundary as micro-unit 1 is fairly well horizontally oriented wood remains do do not show marked reservation differential between coffin adjacent (right hand side of the thin section) and skeleton adjacent (left hand side of the thin section) areas.

Thin Section Description Recording Sheet

TS: 984 Site code: RAA51

Micro-unit: 2 (area covers approx. 2/3 of the total area of the TS) Gr.: GR 7464

Sample positioning: A1 Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and irregular

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): yellow-brown/ yellow and grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 5, very small and small, unoriented;
- Channels: 2, medium and large strong referred orientation parallel to “up”;
- Chambers: 2, small, unoriented;
- Vughs: 1, very small, unoriented;
- Cracks: 5, very very small, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple and multiple twinned): 2, colourless/ 1st order greys, very small and small, S-A to S-R, 1 pellicular (few with FeOH and MgOH staining in speckled arrangements);

microcline: 1, small-medium, colourless/ 1st greys, 1 pellicular and speckled;

- Inosilicates:

  OPX: 1, medium, colourless/ 1st yellows, S-A, 1 pellicular and speckled;

  Other (amphibole cleavage): pale green to colourless pleochroism/ mid 2nd yellows (and with opaque/opaque very small speckles), small, columnar habit, 1 linear;

- Nesosilicates: none

- Phyllosilicates:

  mica (muscovite): 1, very small, phyllosilicate structure, colourless/ high 2nd pinks, 1 pellicular, strong clustered referred distribution to carbonates;

  mica (biotite): 2, brown to yellow pleochroism/ mid 2nd yellows, phyllowsilicate structure, small and small-medium, 2 parallel linear (kata-alteromorphs);

  chlorites: <1, very small and small, circular and diffuse and irregular and clear, blue to dark blue pleochroism/ anomalous blue interference colours, strong clustered referred distribution to plant and fungal materials and to cracks;

- Other (e.g. rocks, carbonates, sulfates, ash):

  Carbonates: <1, colourless/ high 4th order, small-medium, 2 pellicular and speckled (some with red/red speckled stains on surfaces of grains);

  Other: 2, pink speckled/ dark pink and high order interference colours, small-medium and medium, polygonal form, clear to diffuse edges, 2 speckled and pellicular and irregular linear, strong clustered basic distribution;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 5, orange/isotropic, circular and irregular, clear and diffuse edges, very small and small and small-medium, strong clustered referred distribution to channel voids and to fungal remains, strong clustered basic distribution;

- Plant: 5, orange/ isotropic, small-medium and medium and large, elliptical, clear, fair, strong clustered basic distribution;

- Other (e.g. bone, excrement, fungal remains) : fungal remains: 10, dusty pink/ isotropic, circular and very small (spores) and circular and small-medium (sclerotia, poorly preserved) and linear and small (hyphae) forms, fair to good preservation of spores and hyphae, poor preservation of sclerotia, moderate referred distribution to amorphous organic matter and plant materials;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : 5, small and medium, voids (cracks), red-orange/ red;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: orthic: 2, unoriented, random, large, opaque/opaque, irregular form, laminations not visible, diffuse edges, not fragmented;

Type B: 5, unoriented, random, very small, opaque/opaque, well rounded form, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):1, orange/ isotropic, large, elliptical form, clear edges, strong referred distribution to chambers, poor preservation, not fragmented;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, moderately developed, small-medium and medium;

Other notes and comments on the description of the sample as seen in thin section: This micro-unit is in the vertical plane above micro-unit 1. The micro-unit (micro-unit 2) seems to have been affected by bioturbation and biotic agents of the soil. The pink speckled material could be weathered (and masked) tectosilicate or carbonate rich rock fragment and could perhaps benefit from further investigation with SEM-EDS.

Thin Section Description Recording Sheet

TS: 984 Site code: RAA51

Micro-unit: 3 (area covers approx. 1/2 of the total area of the TS) Gr.: GR 7464

Sample positioning: A1 Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and irregular

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): well

Micromass

Colour (x5 objective, PPL/XPL): grey-orange/ yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: none
- Chambers: 1, very small, unoriented;
- Vughs: <1, very small, unoriented;
- Cracks: 10, very very small, strong perpendicular referred orientation to "up", moderate parallel basic orientation, (intrapedal);

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 2, colourless/ 1st

order greys, very small, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: none

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 2, small, cracks, opaque/opaque, diffuse edges;

Type B: 5, small, cracks, orange-red/red, diffuse edges;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: orthic: 1, unoriented, random, small, orange-red/red, none, diffuse, none;

Type B: orthic: 1, unoriented, random, small, opaque/opaque, laminations not visible, diffuse, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, well developed, small-medium and medium;

Other notes and comments on the description of the sample as seen in thin section: micro-unit 3 looks like micro-unit 2 before micro-unit 2 got affected by bioturbation and greater variety and quantity of coarse inorganic materials got mixed into micro-unit 2 and more voids into micro-unit 2 than in micro-unit 3.

Thin Section Description Recording Sheet

TS: 984 Site code: RAA51

Micro-unit: 4 (area covers approx. 1/5 of the total area of the TS) Gr.: GR 7464

Sample positioning: A1 Sk & fills: GR 7464

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see sheet for TS 984 micro-unit 3)

Groundmass

c/f ratio (50µm limit): 45 ,55

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): grey-brown/ orange and grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: <1, very small, unoriented;
- Channels: none
- Chambers: none
- Vughs: 5, very small and small, unoriented;
- Cracks: 2, very small, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple and multiple twinned): 10, colourless/ 1st order greys, small and small-medium and medium, S-A to S-R, 1 pellicular and speckled and irregular linear;

microcline: 5, colourless/ 1st greys, small-medium and medium, S-A to S-R, 1 pellicular and speckled and irregular linear;

- Inosilicates:

  OPX: 2, colourless/ 1st yellows, S-A, small-medium and small, 2 pellicular;

  Other (amphibole cleavage): 1, pale green to colourless pleochroism/ mid to low 2nd order, small, 1 linear;

- Nesosilicates: none

- Phyllosilicates:

  mica (biotite/ phlogopite): 5, brown to yellow/ mid to high 2nd order, small and small-medium, 2 parallel linear and pellicular (kata-poro-alteromorphs created through expansion of interlayer spacings to voids and only small alterations to tops and bottoms with darkening/opacity increased in these areas);

- Other (e.g. rocks, carbonates, sulfates, ash):

  Rock fragments (rock composed primarily of quartz plagioclase microcline and biotite): 20, colours as per mineral inclusions, large and very large, 2 pellicular and speckled and irregular linear (chloritization at edges and FeOH deposits in irregular linear fractures);

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface) : none

  Quasi-coatings (not touching) :none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: orthic: 1, unoriented, random, medium, dark red/ opaque, none, diffuse, none;

Type B: orhtic: 2, unoriented, random, small and medium, orange-red/ red, none, diffuse, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (this is a quartz-rich material infill, where the fine material is just intergrain aggregate between the coarse material therefore no peds are developed in micro-unit 4 but are present as micro-unit 3 which micro-unit 4 infills between and around;

Other notes and comments on the description of the sample as seen in thin section: For the boundary between micro-unit 4 and micro-unit 3 see boundary description in TS description sheet for micro-unit 3 of this TS. Sketch of micro-units of TS 984 in lab book.

Grave 7491 (thin sections lited in numerical order)

Thin Section Description Recording Sheet

TS: 968 Site code: RAA51

Micro-unit: 1 (area covers approx. ¼ of the total area of the TS) Gr.: GR 7491

Sample positioning: 3XYZ (TS oriented tangential to the skeleton) Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and smooth

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): linked and coated

Sorting: (unsorted, poorly, well, perfectly) : unsorted

Micromass

Colour (x5 objective, PPL/XPL): orangey brown/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 5, medium, strong perpendicular referred orientation to “up”;
- Chambers: 1, very small, unoriented;
- Vughs: 5, very small and small and medium, unoriented;
- Cracks:10, large and very large, strong parallel referred orientation to ground surface;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: none
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: chlorite: <1, very small, blue/ anomalous blue interference colours, amorphous structure, diffuse edges, S-A, strongly referred distribution to bone fragments;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 50, orange/isotropic, very small and small R to S-R, poor preservation, random, unoriented;

•Plant: 10, orange/ isotropic, small-medium and medium and medium-large, S-R, linear form, poor preservation, strong perpendicular referred orientation to "up";

•Other (e.g. bone, excrement, fungal remains) :

bone: 15, very pale yellow/ isotropic, linear to irregular forms, S-R, clear to diffuse edges, strong clustered basic distribution and strong referred distribution to "up";

fungal remains: 15, circular spores and linear hyphae, very small, dusty pink/ isotropic, weakly clustered basic distribution and strong referred distribution to bone and amorphous organic matter;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 2, medium, bone, opaque/opaque;

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: none

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : small granular weakly developed (at top and left hand side) and changes to very weakly developed and into weakly

developed lenticular (at the lower edge of the micro-unit and right hand side) microstructure.

Other notes and comments on the description of the sample as seen in thin section: Unexpected amount of bone in this thin section compared to other thin sections studied from this site and compared to the poor visibility of bone fragments when the sample was viewed in block form (unlike the other instances of bone fragments in thin section from this site where the bone fragments were large enough to be seen in block form as well as in thin section).

The only mineral grain visible in the micro-unit was a chlorite grain observed on a bone fragment.

Coffin wood is better preserved in the lenticular peds than in the granular peds. Fungal remains and bone fragments arelimited to the more granular peds. Similarities between this micro-unit and micro-unit 1 of TS 979.

Thin Section Description Recording Sheet

TS: 968 Site code: RAA51

Micro-unit: 2 (area covers approx. 3/5 of the total area of the TS) Gr.: GR 7491

Sample positioning: 3XYZ (TS oriented tangential to the skeleton) Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and smooth

Groundmass

c/f ratio (50µm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): greyish-brownish orange/ grey and yellow;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very very small and very small, unoriented;
- Channels: none
- Chambers: 2, very small and medium, unoriented;
- Vughs: none
- Cracks: 10, small and medium, moderate perpendicular referred orientation to “up”;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinning): 10, colourless/ 1st order greys,

very small and small, S-A to S-R, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: chlorite: 2, blue/ isotropic, very small, amorphous structure, clear edges, irregular form, S-A, weathering not identifiable;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 2, orange/ isotropic, well rounded form, strong referred distribution to craks, strong referred distribution to "up";
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :

Impregnative hypocoatings: 5, very small, voids and mineral grains, orange-red/ dark red;

Depletion hypocoatings: 5, large, cracks, grey/grey;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A, orthic: 2, weakly clustered basic distribution, unoriented, small, orange-red/ dark red, none, diffuse, none;

Type B, orthic: <1, strong referred distribution to right hand side of the grave and left hand side of the skeleton, unoriented, medium, opaque/opaque, none, difuse, none, (CZS texture);

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (but of micro-

laminated deposits);

Other notes and comments on the description of the sample as seen in thin section: Composed of micro-laminated deposits. Similar when compared to micro-unit 2 of TS 979.

Thin Section Description Recording Sheet

TS: 968 Site code: RAA51

Micro-unit: 3 (area covers approx. 1/6 of the total area of the TS) Gr.: GR 7491

Sample positioning: 3XYZ (TS oriented tangential to the skeleton) Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see TS sheet for TS 968 micro-unit 2)

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): green-grey brown/ yellow and grey;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: 2, very small, unoriented;
- Vughs: 1, medium, unoriented;
- Cracks: 10, small and medium, moderate perpendicular referred orientation to “up”;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinning): 10, colourless/ 1st order greys, S-A to S-R, very small and small and small-medium, 1 pellicular, (the larger grains, *i.e.* the

small-medium grains have a weakly linear basic distribution);

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates:

  Chlorite: 2, very small, blue/ anomalous blue interference colours and isotropic, irregular forms, S-A, clear to diffuse edges;

  Biotite: <1, yellow to brown pleochroism/ high 1st order, small, 2 complex, moderate clustered referred distribution to chlorite;

- Other (e.g. rocks, carbonates, sulfates, ash): rock fragments: <1, tectosilicate composition, small and small-medium, 1pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface) :

Type A: 5, small, cracks, orange-red/ red, weak linear basic distribution, weakly perpendicular referred orientation to "up";

Type B: 5, small, mineral grains, opaque/ opaque, weakly clustered basic distribution;

Type C: 1, small, mineral grains, orange-red/ bright orange;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 5, weakly clustered basic distribution, unoriented, small, none, sharp, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of

clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : very weakly developed lenticular, medium, (increasing in development towards the right hand side of the TS).

Other notes and comments on the description of the sample as seen in thin section: Similar when compared to micro-unit 3 of TS 979 and micro-unit 4 of TS 977.

Thin Section Description Recording Sheet

TS: 969 Site code: RAA51

Micro-unit: 1 (area covers approx. 1/6 of the total area of the TS) Gr.: GR 7491

Sample positioning: 9XYZ (TS oriented perpendicular to skeleton) Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and wavy

Groundmass

c/f ratio (50µm limit): 70, 30

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): pale brownish grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 2, small, weak parallel referred orientation to ground surface
- Chambers: none
- Vughs: 10, very small and small and small-medium and medium and large, unoriented;
- Cracks: 1, very small to large, moderate parallel referred orientation to ground surface;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st

order greys, very small andn small, S-A, 1 pellicular;

- Inosilicates: CPX: <1, small, colourless/ 1st yellows, S-A, 1 linear;
- Nesosilicates: none
- Phyllosilicates:

  mica (muscovite): 1, small, colourless/ 2nd order pinks, 2 parallel linear;

  chlorite: 1, very small, blue/ anomalous blue interference colours, amorphous structure, clear to diffuse edges, S-R, unoriented, random;

- Other (e.g. rocks, carbonates, sulfates, ash):

  Rock fragment type A: 1, small-medium, tectosilicates and carbonates, 1 pellicular and speckled;

  Rock fragment type B (mica schist): 2, small-medium, pale blue /1st strong oranges to pinks, 2 complex (including change of PPL colours to blue by chloritization and lowering of interference colours in XPL), strong clustered referred distributon to fungal spores where chloritization is more advanced and where chloritization is not more adavaned there is a negative clustered referred distribution to fungal spores and such rock fragments have opaque/opaque speckles;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous:

Type A: 20, very small and small, orange/isotropic, circular to irregular forms, S-R to R, poor preservation, moderate referred distribution to plan remains;

Type B: 5, small, red/ isotropic, S-R, irregular forms, diffuse edges, moderate linear baic distribution, strong referred distribution to orange amorphous organic matter and to left hand side of the TS;

•Plant:

Type A: 15, small-medium to very large sizes, orange/ isotropic, linear form, fair to poor preservation, S-R, strong parallel referred orientation to ground surface;

Type B: 2, very small and small, linear forms, S-R, opaque/opaque, good to fair preservation, unoriented, random;

•Other (e.g. bone, excrement, fungal remains) :

bone: 5 pale yellow/ 1st greys and isotropic, small and small-medium and medium and medium-large, S-A to S-R, strong referred distribution to “up”;

fungal remains (spores): 5, very small, circular forms, dusty pink/ isotropic, moderate referred distribution to orange amorphous organic matter, weak referred distribution to bone and weak referred distribution to chloritized micas and rock fragments;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface) : none

  Quasi-coatings (not touching) :none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 5, unoriented, random, medium and large, red/ dark red, 2 laminations (>30), diffuse, not fragmented, (CZS texture);

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : very weak, granular, small-medium;

Other notes and comments on the description of the sample as seen in thin section: Some of the mica schist rock fragments are weathering through parallel linear weathering patterns, but some others are chloritizing and these are surrounded by very small fungal spores. Why have the bones lost their birefringence in some cases and why aren't the carbonate rich rock fragments more heavily weathered here as they are in the thin sections from GR 5926?

Thin Section Description Recording Sheet

TS: 969 Site code: RAA51

Micro-unit: 2 (area covers approx. 2/3 of the total area of the TS) Gr.: GR 7491

Sample positioning: 9XYZ (TS oriented perpendicular to skeleton) Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and irregular

Groundmass

c/f ratio (50µm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): greyish orange brown/ yellow-orange

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 5, very small, unoriented;
- Channels: 2, small, moderate clustered basic distribution;
- Chambers: 5, very small, unoriented;
- Vughs: none
- Cracks: 5, very small and small (moderately perpendicular referred orientation to “up”) and medium-large (strong parallel referred orientation to “up”);

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinning): 5, colourless/ 1st order greys, very

small and small and small-medium, S-A to S-R, 1 pellicular, weak linear basic distribution;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: chlorite: 2, very small, blue/ anomalous blue interference colours, clear edges, amorphous form;
- Other (e.g. rocks, carbonates, sulfates, ash): rock fragments: 5, very large, composed of quartz and microcline and mica (biotite and chlorite), S-R, 1 pellicular, strong referred distribution to the right hand side of the thin section;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous:

Type A: 2, orange/isotropic, well rounded form, clear, very small, strong clustered basic distribution, weak referred distribution to voids (cracks and chambers);

Type B: 5, very small, S-A, opaque/opaque, linear form, moderate clustered basic distribution, weak referred distribution to quartz;

•Plant: none

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 2, very small and small, intrapedal cracks, orange-red/red;

Type B: 10, small and medium and large, interpedal cracks, brown-grey/ grey and pale first yellows;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A, orthic: 2, unoriented, random, small and medium, none, diffuse, none;

Type B, orthic: 5, medium and large, weakly clustered referred distribtuionto left hand side of the thin section, none, clear, none, (CZS texture);

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : moderately (at left hand side of TS) to poorly (towards right hand side of the TS) developed very large (at left hand side of the TS) to small-medium (at right hand side of the TS) sized sub-angular-blocky peds;

Other notes and comments on the description of the sample as seen in thin section: Compare this micro-unit to micro-unit 3 of TS 977. Coarse (excepting chlorites, rock fragments and organics) materials are often in moderate to weakly linear distributions, occasionally these are related to depletion hypocoatings, rarely to infill from micro-unit 1 via large vertical cracks, but sometimes they suggest perhaps bands of coarse materials that have been mixed into the fine materials.

Thin Section Description Recording Sheet

TS: 969 Site code: RAA51

Micro-unit: 3 (area covers approx. ¼ of the total area of the TS) Gr.: GR 7491

Sample positioning: 9XYZ (TS oriented perpendicular to skeleton) Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): n/a (see TS sheet for TS 969 micro-unit 2)

Groundmass

c/f ratio (50μm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): olive-green grey and orange-yellow/ orange and grey;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): weakly striated

Voids (% abundance within μ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 5, very small and very large, unoriented;
- Channels: 5, small, unoriented;
- Chambers: 2, very small, unoriented;
- Vughs: none
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinning): 5, colourless/ 1st order greys, very small and small and small-medium, S-A, 1 pellicular and speckled, weak linear basic

distribution;

- Inosilicates: other: 1, very small, pale blue to pale yellow pleochroic/ 1st strong yellows, ` linear, moderately clustered referred distribution to quartz;
- Nesosilicates: none
- Phyllosilicates: chlorite: 1, very small, blue/ anomalous blue interference colours, irregular form, S-R, amorphous structure, clear to diffuse edges, weak clustered referred distribution to voids;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: <1, very small, orange/ isotropic, strong clustered basic distribution and strong clustered referred distribution to chamber voids;

•Plant: none

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) :

Impregnative hypocoating: 5, small and medium, voids, red/ dark red;

Depletion hypocoating: 1, small, cracks, grey-orange/ grey and orange, strong referred distribution to “up”;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: orthic, 1, weak basic clustered distribution, unoriented, small, red/ dark red, none, diffuse, none;

Type B: anorthic and concentric, <1, unoriented, random, small and medium, orange-red/ red, 5 laminations (<30µm), clear, none;

Type C, orthic: 2, weak basic clustered distribution, small and medium, opaque/opaque, none, diffuse, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of

clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : very weakly developed platy microstructure, small.

Other notes and comments on the description of the sample as seen in thin section: Orange amorphous organic materials may be heavily decomposed roots due to their strong referred distribution to chamber voids. Very weakly developed platy microstructure inferred through the horizontal cracks separating the early peds and micro-laminations within the micro-unit. Note that this micro-unit has been much more heavily disturbed towards the right hand side of the TS and it does not reach the far right hand side of the mounted area of the sample block due to the sloping of the micro-unit across the slide. Similarities are noted when compared to micro-unit 4 of TS 977 (end of tin opposite sacral area).

Thin Section Description Recording Sheet

TS: 977 Site code: RAA51

Micro-unit: 1(c. top 20-25% of the thin section, at the top of the thin section) Gr.: GR 7491

Sample positioning: 9 XYZ Sk & fills: GR 74941

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse

Groundmass

c/f ratio (50µm limit): 70, 30

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting (unsorted, poorly, well, perfectly): unsorted

Micromass

Colour (x5 objective, PPL/XPL): grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: 2, small and medium, unoriented;
- Chambers: 2, medium and large, unoriented;
- Vughs: 10 medium and large and very large, unoriented;
- Cracks: 5, very small and small, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: 5, colourless/ 1st order greys, very small and small and medium, S-

A, 1 pellicular;

- Inosilicates: CPX: 2, colourless/ high 2nd blues with yellow rims, small, S-R, 2 pellicular and irregular linear;
- Nesosilicates: none
- Phyllosilicates: chlorite: 1, small, blues (pleochroic)/ anomalous blues, phyllosilicate structure and interlayer spacings exploited, 2 meso-alteromorph;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 2 , yellow/isotropic, irregular, poor, diffuse boundary (interpreted as degraded wood), strong clustered referred distribution to large wood fragment,;

•Plant: 40 wood remains, orange-yellow/ isotropic, very small to very large, good to poor, perpendicular referred orientation to up and strong parallel basic distribution.

•Other (e.g. bone, excrement, fungal remains) : one

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 2, small, voids, dark red/ opaque

•Matrix:

Hypo-coatings (related, touching a surface) : 2, small, quartz, dark red/ opaque;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)), colour, laminations (</>30µm), boundary, fragmentation]: 5, large, unoriented, strong clustered basic distribution, dark red/ opaque, none, sharp, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: micro-unit is mostly the coffin wood and the grey clays which surround the rotting bits of wood. No fungal remains seen here and only 1 (anomalous) chlorite grain was observed.

Thin Section Description Recording Sheet

TS: 977 Site code: RAA51

Micro-unit: 2 (left and right sides of the thin section, covers approx. 20% of the area of the thin section) Gr.: GR 7491

Sample positioning: 9XYZ (leg end of the kubiena tin) Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): sharp

Groundmass

c/f ratio (50µm limit): 30, 70

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): grey-orange/ grey and yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: 2, sm and very small, unoriented;
- Vughs: none
- Cracks: 10, small and medium, unoriented, weak basic distribution;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned and cross hatch twinned): 15, colourless/1st order greys, small and small-medium and medium-large and very large, S-A,

1 pellicular and linear;

- Inosilicates: CPX: 2, colourless / 1st greys, small, S-A, 1 irregular linear;
- Nesosilicates: none
- Phyllosilicates: micas (muscovite): 2, small and small-medium, colourless / 2nd yellows2 parallel linear (interlayer spacings expanded and altered to a meso-alteromorph);
- Other (e.g. rocks, carbonates, sulfates, ash): mica schist rock fragment: 1, colourless / high 2nd and low blue 3rd order interference colours, very large, weak perpendicular referred orientation to up and parallel to body, strong clustered referred distribution to large plagioclase grains;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant:

wood: 2, opaque/opaque, very small and small, clar, S-R, poor, random, unoriented;

charcoal: 1, opaque/opaque, medium S-R, poor, random, unoriented;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 2, small, void, orange and red/ dark red and opaque;

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: 5, unoriented, weak clustered basic distribution, small and medium, red/ dark red, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : poorly developed sub-angular blocky, small and small-medium;

Other notes and comments on the description of the sample as seen in thin section: This is a greater variety of materials than in micro-units 1 and 3 from this thin section, and likely is a result of being the intermediary between these two micro-units; micro-unit 2 also has a large amount of minerals grain sin comparison to its bordering micro-units 1 and 3. The boundary described on this sheet is that of micro-unit 2 and micro-unit 3 but it should be noted that this is a vertical boundary. There are some intrapedal FeOH intrusive deposits in micro-unit 2. Opaque wood and opaque charcoal were identified as such using OIL.

Thin Section Description Recording Sheet

TS: 977 Site code: RAA51

Micro-unit: 3 (located in the middle vertical band of the thin section; area is approx. 1/3 of the total area of the thin section) Gr.: GR 7491

Sample positioning: 9XYZ Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): sharp and irregular

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): yellow-brown/ 1st greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: 2, medium, unoriented;
- Chambers: 2, very small and small, unoriented;
- Vughs: none
- Cracks: 5, small and medium, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: 2, colourless/ 1st greys, small and very small, S-R, 1 pellicular;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 5, dark red/ opaque, small and very small, voids (small cracks)
- Matrix:

Hypo-coatings (related, touching a surface) : depletion hypocoatings: 5, small and medium, voids (vertically oriented cracks), pale grey/1st greys, strong referred orientation to up direction and strong clustered basic distribution;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]:2, medium, dark red/opaque, none clear, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : massive /apedal

Other notes and comments on the description of the sample as seen in thin section: Pedality: perhaps if more horizontal cracks had been allowed to continue to form it could have started to delopa platy or lenticular micro-structure but at the moment of sampling it remains massive /apedal with cracks. Very sharp boundary to micro-unit 4 (which is horizontal, *i.e.* parallel to the ground surface).

Thin Section Description Recording Sheet

TS: 977 Site code: RAA51

Micro-unit: 4 (located at the base of the thin section; covers approx. ¼ of the total area of the thin section) Gr.: GR 7491

Sample positioning: 9 XYZ Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see sheet TS 977 micro-unit 3)

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): yellow-greenish grey/ dark orange and grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: 2, small and medium, unoriented, weak clustered basic distribution;
- Vughs: none
- Cracks: 5, small and medium, unoriented, weak clustered basic distribution;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned): 5, small and small-medium, and

medium-arge, colourless/1st greys, S-R, 2 pellicular and linear, random distribution, weak referred orientation parallel to the ground surface;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates:

  Chlorite (type A): 1, very small, blues (mildly pleochroic)/ isotropic, diffuse boundary, weathering unidentifiable;

  Chlorite (type B): 1, very small, blue to light blue (pleochroic)/isotropic, phyllosilicate structure, 2 parallel linear and pellicular (meso-alteromorph from mica form) strong referred distribution to Fe oxidized areas;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 5, very small and small, voids (small cracks), orange and red/ dark red;
- Matrix:

  Hypo-coatings (related, touching a surface) : none

  Quasi-coatings (not touching) : none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: 2, very small, opaque/opaque, none, clear, none, strong clustered basic distribution, moderate referred distribution parallel to surface;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS): 1, small-medium, orange-brown/ isotropic, S-A, strong referred distribution to voids;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : poorly developed platy

small

Other notes and comments on the description of the sample as seen in thin section:
weakly/poorly developed platy micro-structure beginning to develop (as seen by horizontal cracks separating micro-layers within micro-unit 4 which are almost identical (in composition and organisation). Note that chlorite types A and B are arbitrary labels used solely to discriminate between two forms observed in the same micro-unit.

Thin Section Description Recording Sheet

TS: 979 Site code: RAA51

Micro-unit: 1 (area covers approx. 2/5 of the total area of the TS) Gr.: GR 7491

Sample positioning: 3 (TS oriented perpendicular to skeleton) Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and irregular

Groundmass

c/f ratio (50µm limit): 80, 20

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): linked and coated

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): orange/ isotropic

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): undifferentiated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 15, very small and small, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: <1, very small, colourless/ 1st order greys, S-R, 1 pellicular;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 60, orange/ isotropic, S-R, circular to irregular form, clear to diffuse edges, very small and small, poor preservations, random, unoriented;

•Plant: 10, orange/ isotropic, small-medium and medium and medium-large, S-R, linear form, poor preservation, random, unoriented;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: <1, unoriented, random, medium, opaque/opaque, laminations not visible, diffuse, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed, granular, small;

Other notes and comments on the description of the sample as seen in thin section: Degraded coffin wood layer with a diffuse and irregular horizontal lower boundary.

Thin Section Description Recording Sheet

TS: 979 Site code: RAA51

Micro-unit: 2 (area covers approx. 3/5 of the total area of the TS) Gr.: GR 7491

Sample positioning: 3 (TS oriented perpendicular to skeleton) Sk & fills: GR 7491

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see TS sheet for TS 979 micro-unit 1)

Groundmass

c/f ratio (50µm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): greyish-orange brown/ yellow and grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1, very very small, unoriented;
- Channels: none
- Chambers: 2, very small, unoriented;
- Vughs: (star shaped vughs) <1, very small, unoriented;
- Cracks: 5, very small and small and medium, moderate perpendicular referred orientation to "up";

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinning): 5, very small, colourless/ 1st order

greys, S-A to S-R, 1 pellicular;

- Inosilicates: other: <1, small, pale blue and slightly pleochroic/ mid 2nd order blues and greens with lower order rims, 1 pellicular and irregular linear, moderate negative referred distribution to “up” and to skeletal remains;
- Nesosilicates: none
- Phyllosilicates: chlorite: 2, very small, green-blue/ anomalous blue interference colours and isotropic, irregular form, amorphous structure, diffuse edges, moderate referred distribution to voids and hypocoatings;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 5, medium, cracks (medium cracks), orange-brown/ orange;

Typd B: 2, small, cracks (very small cracks), orange-red/ red;

Type C: 1, small, vesicles, orange/orange;

Type D: 1, small, chambers, brownish red/ red;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) :very weakly developed,

lenticular, very large;

Other notes and comments on the description of the sample as seen in thin section: Very weakly developed progression towards a lenticular microstructure had been started her as evidence by horizontal cracks producing peds from the micro-laminated deposits into lenticular shapes (see lab book for sketches). However the micro-laminations slope downwards towards the left hand side of the TS (*i.e.* towards the corner of the coffin). Except for in the area of the diffuse boundary between micro-unit 1 and micro-unit 2, these two micro-units (micro-unit 1 and micro-unit 2) seem to be well separated from each other, both in terms of content and organisation. (NB: Would it be worthwhile making a third TS from this block at the end opposite the body to check for a continuation of the trends as seen along the axis in this TS?)

Grave 7519 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 873 Site code: RAA51

Micro-unit: 1 (area covers approx. 2/5 of the total area of the TS) Gr.: GR 7519

Sample positioning: 1 (TS oriented perpendicular to skeleton) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50µm limit): 2, 98

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single populations

Sorting: (unsorted, poorly, well, perfectly) : perfectly

Micromass

Colour (x5 objective, PPL/XPL): grey-brownish yellow/ yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented
- Channels: none
- Chambers: none
- Vughs: none
- Cracks: 10, very very small (intrapedal and strong parallel basic orientation and strong linear basic distribution), and small and medium (unoriented);

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned): 2, colourless/ 1st order greys, very

small, S-A to S-R, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :

Type A: impregnative hypocoatings: 5, small and very small, voids (cracks and vesicles), orange-red/red;

Type B: 2, small, cracks, dark red/ opaque;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: none
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular blocky, moderately well developed, medium and medium-large;

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 1 of this TS (TS 873) is similar to micro-unit 1 of TS 888 (skull tangential oriented TS from this GR).

The boundary described is not the lower boundary but that between micro-unit 1 and micro-unit 2. Micro-unit 1 and micro-unit 2 are spread through the TS (across its height and width).

Thin Section Description Recording Sheet

TS: 873 Site code: RAA51

Micro-unit: 2 (area covers approx. 3/5 of the total area of the TS) Gr.: GR 7519

Sample positioning: 1 (TS oriented perpendicular to skeleton) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.):n/a (see TS description sheet for TS 873 micro-unit 1)

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) :poorly

Micromass

Colour (x5 objective, PPL/XPL): yellow-grey/ grey and yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: 2, small and medium, unoriented;
- Chambers: 5,very small, unoriented;
- Vughs: 5, very small and small, unoriented;
- Cracks: 2, small and medium, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple twinned): 5, colourless/ 1st order greys, small and small-medium and medium, S-A to S-R, 1 pellicular, weak linear basic distribution;

microcline: 1, small, colourless / 1st order greys, S-R, 1 pellicular, strong referred distribution to quartz;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: none

•Other (e.g. bone, excrement, fungal remains) : fungal remains (spores): 1, dusty pink /isotropic, circular, very small, good preservation, strong clustered basic distribution and strong clustered referred distribution to yellow/yellow nodules;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 2, small, voids, yellow/yellow;

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: nucleic, anorthic: 1, unoriented, random, large, yellow/yellow, 8 concentric laminations (<30), clear, heavily fragmented;

Type B, orthic: 5, unoriented, random, small and medium, orange-red/red, 2 laminations (>30) (orange-red/red diffuse edged outer layer with red/dark red clear edged inner layer), diffuse, none;

Type C, orthic: 1, unoriented, random, medium, dark red/ opaque, none, diffuse, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed, sub-

angular-blocky, small;

Other notes and comments on the description of the sample as seen in thin section: Comparable to micro-unit 2 of TS 888 (skull tangential TS of GR 7519).

Thin Section Description Recording Sheet

TS: 875 Site code: RAA51

Micro-unit: 1 (1 of 1) Gr.: GR 7519

Sample positioning: C3 Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.):n/a

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): grey-orange/ grey and orange

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 5, very small and small, unoriented;
- Channels: 2, medium and large, unoriented;
- Chambers: 2, small, unoriented;
- Vughs: 2, medium and small, unoriented;
- Cracks: 10, very very small and small and medium, moderate perpendicular referred orientation to “up”

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 2, colourless/ 1st

order greys, very small and small, S-A to S-R, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: 1, orange/isotropic, linear form, clear edges, small-medium, fair preservation, moderate perpendicular referred orientation to "up", strong clustered referred distribution to the skeleton;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : 5, small, cracks (intrapedal cracks), orange-red/ red;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A, orthic: 2, unoriented, random, small and medium orange-red/red, none, diffuse, none;

Type B, orthic: 1, small, unriented, random, opaque/opaque, laminations not visible, diffuse, none;

Type C, anorthic: 1, small, unoriented, random, yellow-orange/orange, none, sharp, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) :weakly developed, sub-

angular-blocky, medium;

Other notes and comments on the description of the sample as seen in thin section: Some peds are more developed that in the majority of the thin section, these are made out of micro-laminated deposits.

Thin Section Description Recording Sheet

TS: 888 Site code: RAA51

Micro-unit: 1 (area covers approx. 2/5 of the total area of the TS) Gr.: GR 7519

Sample positioning: 1 (tangential) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): diffuse and irregular

Groundmass

c/f ratio (50μm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) :well

Micromass

Colour (x5 objective, PPL/XPL): grey-orange/orange

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within μ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: none
- Cracks: 10, very very small (intrapedal) with strong parallel basic orientation and strong linear basic distribution, medium sized unoriented and random;

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 2, colourless/ 1st

order greys, very small and small, S-A to S-R, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :

Type A: impregnative hypocoatings: 5, small and medium, very very small intrapedal cracks, orange-red/red;

Type B: depletion hypocoatings: 2, medium, cracks, grey/grey;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: none
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, small-medium and medium and medium-large, moderately well developed;

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 1 is mixed in with micro-unit 2 across the height and width of the thin section (TS). The boundary described on this sheet is the boundary between micro-unit 1 and micro-unit 2 in this TS.

Thin Section Description Recording Sheet

TS: 888 Site code: RAA51

Micro-unit: 2 (area covers approx. 3/5 of the total area of the TS) Gr.: GR 7519

Sample positioning: 1 (tangential oriented TS Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see description sheet for TS 888 micro-unit 1)

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): pale grey-yellow/ grey with yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 5, very small, unoriented;
- Channels: 5, very small and small, moderate parallel referred orientation to “up”;
- Chambers: 2, very small and small, unoriented;
- Vughs: 2, very small and small, unoriented;
- Cracks: 2, medium, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st order greys, very small and small, S-A to S-R, 1 pellicular;

microcline: <1, colourless/ 1st greys, small-medium, 2 pellicular and irregular linear;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates:

  Mica (biotite): 1, yellow-brown to dark yellow brown pleochroic/ high 2nd order, small and small-medium, S-A, phyllosilicate form, 2 parallel linear and pellicular (kata-poro-alteromorph with FeOH staining at tops and bottoms, with interlayer spaces expanded and filled only by blank resin);

  Chlorite: 1, small and very small, blue to dark blue pleochroism/ isotropic, S-R, irregular form, clear edges, weakly clustered referred distribution to voids;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: 1, medium, orange/ high order interference colours, elliptical, poor, strong clustered referred distribution to chamber voids, unoriented;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) :

Type A: impregnative hypocoatings: 2, small and medium, voids, orange-red/red, weakly clustered basic distribution;

Type B: impregnative hypocoatings: 2, small, voids, opaque/opaque;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 5, moderate clustered referred distribution to voids, small and medium and large, dark red/opaque, no laminations, diffuse, fragmented;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of

clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : poorly developed, sub-angular-blocky, small;

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 2 can be distinguished from micro-unit 1 in hand view by micro-unit 2's higher abundance of nodules and impregnative pedofeatures and lack of micro-laminations; also, micro-unit 2 is most clearly distinguished from micro-unit 1 in thin section at the microscopic scale in XPL view (differences in tectosilicate abundance and b-fabric types).

Thin Section Description Recording Sheet

TS: 908 Site code: RAA51

Micro-unit: 1 (area covers approx. 1/10 of the total area of the TS) Gr.: GR 7519

Sample positioning: 13 (femoral head adjacent oriented TS) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and irregular

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): yellow-orange/ yellow and grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 1, very small, unoriented;
- Cracks: 5, small and medium, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned): 2, colourless/ 1st order greys, very

small and small, S-A to S-R, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: none

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) :

Depletion hypocoatings: 1, small, voids (interpedal cracks), grey/grey;

Impregnative hypocoatings: 5, small, voids (intrapedal cracks), orange-red/ red;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: none

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, moderately developed, small-medium and medium;

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 1 is moderately mixed with micro-unit 2 (*i.e.* more so here than at the skull, see TS 873 and TS 888). Boundary described on this sheet is not a lower boundary, but that between micro-unit 1 and micro-unit 2 which are spread throughout the TS.

Thin Section Description Recording Sheet

TS: 908 Site code: RAA51

Micro-unit: 2 (area covers approx. 9/10 of the total area of the TS) Gr.: GR 7519

Sample positioning: 13 (femoral head adjacent oriented TS) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see TS description sheet for TS 908 micro-unit 1)

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): grey-yellow/ grey and yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: 1, small, weak parallel referred orientation to “up”;
- Chambers: 1, very small, unoriented;
- Vughs: 5, small and medium and large and very large, unoriented;
- Cracks: 5, small and medium weak parallel referred orientation to “up”;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st order greys, very small and small and medium, S-A to S-R, 1 pellicular, (weak linear basic distribution for the medium sized fragments);
  Other (porphyric texture): <1, medium colourless/ 1st greys and pale yellows, S-R, 1 pellicular, unoriented, random;

- Inosilicates: none

- Nesosilicates: none

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous:

Type A: 5, small and very small, dark orange-brown/ isotropic, S-R, poor preservation, strong clustered basic distribution and strong clustered referred distribution to "up";

Type B: 2, very small, opaque/opaque, linear form, clear edges, poor preservation, strong linear basic distribution;

•Plant: none

•Other (e.g. bone, excrement, fungal remains) :

bone: 2, medium-large and large, pale yellow/1st greys, A, fair preservation, strong linear basic distribution, strong clustered referred distributon to "up", strong perpendicular referred orientation to "up";

bone: 2, pale yellow/1st greys, very small and small, S-A to S-R, linear to irregular form, fair to poor preservation, strong clustered basic distribution;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings:

Type A: 1, small, cracks, pale brownish grey/ isotropic;

Type B: 5, small and medium, voids, yellow/yellow;

•Matrix:

Hypo-coatings (related, touching a surface) :

2, small and medium, cracks, brown-orange/ orange-yellow

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A, orthic: 5, unoriented, random, medium and large, orange-red/red, none, diffuse, none;

Type B, orthic: 2, unoriented, weak clustered basic distribution, small, opaque/opaque, none, diffuse, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Opaque amorphous organic material could be heavily degraded charcoal or opaque plant material. Bone fragments at the top of the thin section (TS) are large fragments with fair preservations whilst those in the middle of the TS are small and poorly preserved and in a strongly clustered distribution, suggesting that the latter has been reworked by activities associated with soil fauna.

Thin Section Description Recording Sheet

TS: 938 Site code: RAA51

Micro-unit: 1 (area covers approx. 2/5 of the total area of the TS) Gr.: GR 7519

Sample positioning: 13 (transect between soil adjacent to femoral head and the radius and ulna, as arms were crossed at the base of the ribs) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and irregular

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): greyish orange brown/ orange and grey;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: none
- Chambers: none
- Vughs: 1, very small, unoriented;
- Cracks: 10, very very small (intrapedal , strong parallel and linear basic distribution and orientation), and medium (unoriented);

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 2, colourless/ 1st

order greys, very small and medium, S-A to S-R, 1 pellicular and irregular linear;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: Chlorites: 1, very small, blue pleochroism/ anomalous blue interference colours, phyllosilicate form, S-A, unoriented, random;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :

Depletion hypocoatings: 5, small, cracks (interpedal cracks), grey/gre;

Impregnative hypocoatings: 5, small, cracks (intrapedal cracks), orange-red/red;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: none
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, well developed, medium-large and large;

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 1 boundary is not a lower boundary but a boundary separating the peds (composed of micro-unit

1) from the inter –ped infill material (composed of micro-unit 2). Micro-unit 1 similar to micro-unit 1 of TS 908.

Thin Section Description Recording Sheet

TS: 938 Site code: RAA51

Micro-unit: 2 (area covers approx. 3/5 of the total area of the TS) Gr.: GR 7519

Sample positioning: 13 (transect between soil adjacent to femoral head and the radius and ulna, as arms were crossed at the base of the ribs) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): n/a (see TS description sheet for TS 938 micro-unit 1)

Groundmass

c/f ratio (50μm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): pale brownish grey/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): very weakly speckled (almost limpid)

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within μ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: 2, small and medium and large and very large, moderate parallel orientation to “up”;
- Chambers: 5, very small and small, unoriented;
- Vughs: none
- Cracks: 2, small and medium, weak parallel orientation to “up”;

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st

order greys, very very small and very small and small-medium, S-A to S-AR, 1 pellicular;

- Inosilicates: Other: <1, very small, pale bluish green to colourless pleochroism/ 2nd blues and greens, A, linear form, 1 pellicular;
- Nesosilicates: none
- Phyllosilicates: Chlorite: <1, very small, blue/ anomalous blues, S-A, amorphouse structure, sharp edges, unoriented, random;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous:

Type A: 2, very small and small, orange/isotropic S-R to R, poor preservation, strong perpendicular orientation and clustered distribution to "up";

Type B: 1, very small and small, opaque/opaque, S-A to A, linear form, poor preservations strong clustered basic distribution, unoriented;

•Plant: 2, small-medium and medium, opaque/opaque, linear form, S-A to A, poor preservation, random, unoriented;

•Other (e.g. bone, excrement, fungal remains) : fungal remains: 1, dusty pink/ isotropic, hyphae were very small sized and linear form, sclerotia were circular forms and small-medium sized, strong referred distribution to orange/isotropic amorphous organic material and plant materials;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 5, small, cracks, grey-brown/ brown;

•Matrix:

Hypo-coatings (related, touching a surface) :

Type A: impregnative hypocoatings: 2, small, cracks, yellow/ orange and pink;

Type B: impregnative hypocoatings: 2, medium, voids, 2 laminations (>30) a dark red/ opaque inner layer with orange-red/red outer layer;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: orthic: 2, unoriented, weak linear basic distribution, small and medium, orange-red inner lamination with orange/orange outer lamination, 2 (>30), diffuse, none;

Type B: orthic: 2, unoriented, weak clustered basic distribution, small, opaque/opaque, laminations not visible, diffuse, none;

Type C: concentric, biaxial: <1, unoriented, rando, small and medium, yellow/yellow, 5 laminations <30), clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Coffin wood with fungal remains at the top of the TS, which decreases towards femoral adjacent end of this TS. Micro-unit 2 seems to infill around micro-unit 1, but note that micro-unit 1 peds are at odd angles according to their micro-laminations and birefringence striations (also some manufacturing stains visible and resultant from AL2O3 and steel LP50 lapping plate).

Thin Section Description Recording Sheet

TS: 983 (NB: TS 985 for 20µm version) Site code: RAA51

Micro-unit: 1 (area covers approx. 3/20 of the total area of the TS) Gr.: GR 7519

Sample positioning: 4Z (TS oriented perpendicular to skeleton) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and irregular

Groundmass

c/f ratio (50µm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : well

Micromass

Colour (x5 objective, PPL/XPL): grey-yellow/ yellow and grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented;
- Channels: 1, medium, unoriented;
- Chambers: none
- Vughs: none
- Cracks: 10, very very small (intrapedal and strong basic parallel distributon and strong linear basic orientation) and very small (unoriented);

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple twinning): 2, colourless/ 1st order greys, very small and small, S-A to S-R, 1 pellicular

Microcline: <1, small-medium, colourless/ 1st order greys, S-R, 1 pellicular and irregular linear;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :

Type A: 2, small, cracks (intrapedal), orange-red/red;

Tape B: 1, medium, vesicles, yellow/yellow;

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: orthic: 2, small, moderate linear basic distribution, moderate perpendicular referred distribution to "up"/foot, dark red/opaque, none, diffuse, none;

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular-blocky, poorly developed, small-medium and medium;

Other notes and comments on the description of the sample as seen in thin section: The boundary described on this TS sheet is the boundary between micro-unit 1 and micro-unit 2, but

note that this is not a lower boundary. It could be suggested that the peds (which compose micro-unit 1) may have been well developed before and they were dumped here and have since been subjected to mixing by bioturbation.

Thin Section Description Recording Sheet

TS: 983 Site code: RAA51

Micro-unit: 2 (area covers approx. 1/10 of the total area of the TS) Gr.: GR 7519

Sample positioning: 4Z (TS oriented perpendicular to skeleton) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and wavy

Groundmass

c/f ratio (50µm limit): 25, 75

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): pale yellowish brownish grey/ brownish grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 2, very small, unoriented**;**
- Channels: <1, medium, unoriented;
- Chambers: 2, small, unoriented;
- Vughs: 5, small and medium and large, unoriented;
- Cracks: 2, small and medium, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinning): 10, colourless/ 1st order greys, very small-medium and medium and large, S-A to S-R, 2 pellicular and irregular linear,

weak linear basic distribution, weak perpendicular referred distribution to “up”;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: chlorite: 2, very small, blue/ anomalous blues, S-R, weak referred distribution to voids;
- Other (e.g. rocks, carbonates, sulfates, ash): rock fragments: 5, very large, composed of tectosilicates and chlorites and carbonate, 2 pellicular and irregular linear, moderate perpendicular referred orientation to “up”/ foot;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous:

Type A: 1, very small, opaque/opaque, linear to irregular forms, S-A to S-R, poor preservation;

Type B: 2, orange/isotropic, very small and small, circular to irregular forms, S-R to R, weak referred distribution to “up and foot, moderate linear basic distribution;

•Plant: 5, small-medium, orange/isotropic, linear forms, S-A, fair preservation, unoriented, random;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings:

Type A: 2, small and medium, cracks and vughs, pale yellow-brown/ grey;

Type B: 1, medium, vesicles, orange/ brownish orange (laminated, 4 laminations, all <30µm thick);

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) :none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: 1, medium, unoriented, random, orange-red/ dark red, none, diffuse, none;

Type B: 2, unoriented, weak referred distribution to voids, small and medium, opaque/opaque, laminations not visible, diffuse, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of

clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 2 is the infill material between the peds (composed of micro-unit 1). Boundary described on this sheet is the lower boundary between micro-unit 2 and micro-unit 3.

Thin Section Description Recording Sheet

TS: 983 Site code: RAA51

Micro-unit: 3 (area covers approx. ¾ of the total area of the TS) Gr.: GR 7519

Sample positioning: 4Z (TS oriented perpendicular to skeleton) Sk & fills: GR 7519

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see TS sheet for TS 983 micro-unit 2)

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting: (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): greyish brownish orange/ yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w),

- Vesicles: 1, very small, unoriented;
- Channels: none
- Chambers: 1, very small, moderate perpendicular referred orientation to “up”/foot;
- Vughs: nonw
- Cracks: 15, very very small (intrapeda with strong basic parallel orientation and strong perpendicular referred orientation to “up”/ foot, strong linear basic distribution) and small and medium and large and very large (random distribution, strong perpendicular referred orientation to “up”/ foot);

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinning): 10, colourless/ 1st order greys, very small and small, A to S-R, 1 pellicular;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: chlorite: 5, very very small, blue pleochroic/ anomalous blue interference colours, amorphous structure, S-R, clea to sharp edges, moderate referred distribution to voids and quartz grains;
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 5, small and medium, voids (medium and large cracks), pale brown/ grey;
- Matrix:

Hypo-coatings (related, touching a surface) :

Depletion hypocoatings (neoskeletons *sensu* Brewer): 5, medium and large, voids (large and very large cracks), grey/ grey, (70:30 c/f content);

Impregnative hypocoatings:

Type A: 10, small and medium, voids (very very small intrapedal cracks), orange-red/red;

Type B: 2, small, voids (small and very small and very very small intrapedal cracks towards the exteriors of peds), opaque/opaque;

Type C: 1, medium, mineral grains, orange-red/red;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]:

Type A: 2, orthic, small, strong linear basic distribution, weak perpendicular referred distribution to “up”/ foot, orange-red/red, none, dffuse, none;

Type B: 1, unoriented, strong clustered referred distribution to interior of peds, small, opaque/opaque, none, diffuse, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : moderately well developed, lenticular, medium and medium-large;

Other notes and comments on the description of the sample as seen in thin section: First observation of this type of micro-structure (lenticular) from the thin sections of this site (RAA 51).

Grave 7555 (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 821 Site code: RAA51

Micro-unit: 1 (body and up are the same direction this TS; organic-rich top layer; covers approx. 1/20 of the total area of the TS) Gr.: GR 7555

Sample positioning: 2 (perpendicular to the skeletal remains) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and irregular

Groundmass

c/f ratio (50µm limit): 80, 20

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): orange-grey/ yellow

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: 5, large and very large, strong referred orientation perpendicular to "up" and skeleton;
- Chambers: 1, small, unoriented;
- Vughs: 2, small and medium, unoriented;
- Cracks: 1, very small, moderate referred orientation perpendicular to "up" and skeleton;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple twinned): 10, colourless/ 1st greys, small and small-medium, S-A to S-R, 1 pellicular and irregular linear, moderate linear basic distribution; microcline: 2, very small and small, colourless/ 1st greys, S-R, 1 pellicular and irregular linear and speckled, moderate clustered referred distribution to fungal remains;

- Inosilicates: CPX: 1, small and small-medium, colourless/ 1st yellows, 1 pellicular and linear;

- Nesosilicates: none

- Phyllosilicates:

  mica (muscovite): 1, small, colourless (with some slight blue pleochroism)/ mid 2nd interference colours, phyllosilicate form, 2 pellicular and parallel linear (holo-alteromorph with tops and bottoms more heavily weathered than interlayer spaces);

  chlorites: 5, colourless to blue pleochroism/ isotropic (a few with anomalous blue interference colours), very small and small, amorphous form with diffuse edges, strong referred distribution to fungal remains;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: 5, orange/ isotropic irregular form, clear to diffuse edges, strong referred distribution to fungal remains and voids;

- Plant: wood remains: 50, small-medium and medium and medium-large, orange/ isotropic, fair to poor, moderate perpendicular referred orientation to "up" and body; moderate linear basic distribution;

- Other (e.g. bone, excrement, fungal remains) : fungal remains: 10, dark brick pink/ isotropic, spores circular and hyphae columnar/linear forms, excellent preservation, strong clustered basic distribution and strong clustered referred distribution to chlorite microcline and amorphous organic matter;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface) : none

  Quasi-coatings (not touching) : none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100,

large >100)),colour, laminations (</>30μm), boundary, fragmentation]: none

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (not enough fine material here to have pedality, this is just a heavily degraded thin coffin wood layer with fine materials action as intergrain aggregates)

Other notes and comments on the description of the sample as seen in thin section: SEM-EDS of microcline may be worth of processing to assess possibility of relationship between microcline weathering (as measures via elemental loss or gain from original composition or alterations in surface micro-texture) and fungal remains;

Thin Section Description Recording Sheet

TS: 821 Site code: RAA51

Micro-unit: 2 (covers approx. 3/5 of the total area of the TS) Gr.: GR 7555

Sample positioning: 2 (TS perpendicular to skeletal remains) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse, smooth and interrupted;

Groundmass

c/f ratio (50µm limit): 70, 30

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting (unsorted, poorly, well, perfectly): well

Micromass

Colour (x5 objective, PPL/XPL): pale orange and colourless/ 1st greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: 2, small, unoriented;
- Vughs: 2, small, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple twinned): 40, colourless/ 1st greys, very very large to small-medium, S-A to S-R, 1 pellicular and some as 2 pellicular and speckled where also in association with very very small red/opaque circular materials and amorphous chlorites, small and small-medium and medium;
  microcline: 5, small and medium, colourless/ 1st greys, 2 pellicular and speckled, moderate clustered basic distribution to chlorite and FeOH deposits;

- Inosilicates:

  OPX: 5, small-medium and small, colourless/ 1st strong yellows, S-A to S-R, 1 pelicular and linear;

  CPX: 1, small and very small, colourless/ mid to high 2nd order interference colours, S-R, 2 pellicular;

  Other: 2, pale green to colourless pleochroism/ mid to high 2nd order interference colours, 2 linear (and with FeOH stains in inter-mineral cracks);

- Nesosilicates: none

- Phyllosilicates:

  mica (muscovite): 2, small and small-medium, colourless/ high 2nd order with lower order edges, S-R, 2 complex;

  mica (phlogopite): 5, , brown-orange/ bright orange-brown anomalous interference colours, S-A, 2 complex (tops and bottoms pellicular weathered and inter-layer spacing expanded through parallel linear weathering), small and small-medium, strong clustered basic distribution, strong clustered referred distribution to very very large quartz with biotites and chlorites;

  mica (biotite –different from phlogopite described above): 1, brown-yellow/ yellow-brown, small and small-medium, irregular form, 2 parallel linear (meso- to kata-alteromorphs through expansion along interlayer spacings);

  chlorite: 10, pale greenish blue to mid-dark blue pleochroism/ isotropic (with a few with blue anomalous interference colours), very small and small and small-medium, amorphous irregular to linear forms, diffuse edges, (where with opaque/opaque very small spherules on their surfaces such chlorites are associated with more heavily altered quartz grains);

- Other (e.g. rocks, carbonates, sulfates, ash): carbonates (calcite or dolomite): 5, colourless/ high 4th order, 1 linear, small-medium and medium and very large, strong referred distribution to infillings of dark red/ red fine materials;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: none

- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) : none

Infillings: 5, small and medium, , mineral grains (intramineral fractures), dark red/ opaque, strong clustered basic distribution;

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: 2, anorthic, orang/ orange, medium-large, unoriented, random; 2, anorthic, very small, opaque/opaque, strong referred distribution to mineral grains;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (too much coarse quartz for pedality, this is just a layer of quartz grains with some fine material acting as intergrain aggregate)

Other notes and comments on the description of the sample as seen in thin section: Huge variety of blue minerals, but not all are chlorites, the large carbonate and quartz-rich rocks are the most heavily weathered;

Thin Section Description Recording Sheet

TS: 821 Site code: RAA51

Micro-unit: 3 (covers approx. 1/3 of the total area of the thin section) Gr.: GR 7555

Sample positioning: 2 (perpendicular oriented TS) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse, smooth and interrupted;

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): grey-brownish orange/ orange

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: 2, very small and small, unoriented;
- Vughs: none
- Cracks: 5, very small and small and medium, moderate parallel referred orientation to ground surface and skeleton;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st greys, small and very small, 1 pellicular (with one anomalous grain a 2 pellicular and speckled as a poro-alteromorph);
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) :

Quasi-coatings (not touching) : none

Infillings: 5, small and medium, mineral grains (intra-mineral fractures), dark red/ red, moderate parallel referred orientation to ground surface/ skeleton;

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: 5, medium and small, irregular form with diffuse edges, opaque/ opaque, moderate clustered basic distribution;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : moderate developed lenticular peds, medium and medium-large and large and very large sizes (if horizontal axis measured) or small and small-medium and medium sizes (if vertical axis measured);

Other notes and comments on the description of the sample as seen in thin section: Micro-unit 3 is lenses of orange clays which separate the coarse micro-unit 2 into bands either side of it

(micro-unit 3). These two micro-units (micro-unit 2 and micro-unit 3) are repetitive. Micro-unit 3 is more disrupted at the left hand side of the TS (left when TS is held with “up” at the top).

Thin Section Description Recording Sheet

TS: 960 Site code: RAA51

Micro-unit: 1 (1 of 1) Gr.: GR 7555

Sample positioning: 2 tangential (NB: this is a up and pelvic adjacent oriented thin section so no boyd or up orientations or distribtution are possible to list in this thin section description sheet)
Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50µm limit): 70, 30

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): orange-grey/ 1st grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: <1, large, unoriented;
- Channels: 2, large and very large, unoriented;
- Chambers: 5, small and medium, unoriented;
- Vughs: 2, medium and large, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simple twinned): 35, colourless/ 1st greys, small and small-medium and medium, S-R, 1 pellicular and irregular linear;
  microcline: 2, colourless/ 1st order greys, small, S-R, 1 pellicular and irregular linear;

- Inosilicates:

  OPX: 2, medium, colourless/ 1st order yellows, 1 pellicular and speckled;

  CPX: 1, small, pale green / high 2nd pinks 2 pellicular and irregular linear;

  Other: 1, blue to green pleochroic/ mid 2nd order interference colours, pyroxene cleavage planes readily visible, 2 irregular linear;

- Nesosilicates: none

- Phyllosilicates:

  Mica (chloritized muscovite): 1, colourless (and some with very small opaque/opaque speckles)/ mid 2nd order interference colours, small, phyllosilicate structure visible, 2 complex (phyllo-poro-alteromorph to chlorite with chloritization spreading from the interlayer spacings);

  Mica: Biotite (chloritized biotite) : 1, small-medium, brown/ isotropic, (biotite colours masking colours in PPL and chlorite interference colours masking interference colours in XPL), 2 pellicular and parallel linear (phyllo-poro-alteromorph, with blank resin in the expanded inter-layer spacings (scale of observation was x400 magnification));

  Chlorites: 15, selection of pleochroic ranges observed (pale green to blue, medium blue to dark blue)/ with accompanying variety of XPL displayed shades (anomalous blues or isotropic), very small and small and medium, selection of forms (irregular amorphous with diffuse boundaries on the smaller grains and phyllosilicate structural form with clear boundaries (although still with irregular edges at tops and bottoms) on the larger grains), weathering unidentifiable;

  Other (e.g. rocks, carbonates, sulfates, ash):

  Calcite: 1, small, colourless/ high fourth order, rhombohedral form observed, 1 cross-linear, strong clustered basic distribution;

  Dolomite: 1, large, colourless/ high fourth order interference colours, S-R, 1 pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: intrusive hypocoatings: 1, medium, voids (chambers), pale brown/ isotropic;

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) : none

Infillings: 5, large, voids (previous voids), yellow-orange/ strong 1st yellows;

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]:

impregnative: 10, strong linear basic distribution, large and very large, orange / red-orange, none, diffuse boundary, none;

orthic: 2, strong linear basic distribution, unoriented, small, opaque/opaque with dark red/ dark red exteriors, 2 (>30), irregular form with diffuse boundaries, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (too little fine material for peds)

Other notes and comments on the description of the sample as seen in thin section: Possible magnetite deposits on chloritizing micas (muscovite/ biotite) or this could be an impurity from the primary mineral. No fungal remains observed. Calcite and dolomite differentiated by use of alizarin red on a duplicate thin section created for staining test purposes.

Thin Section Description Recording Sheet

TS: 872 Site code: RAA51

Micro-unit: 1 (Includes wood layers) Gr.: GR 7555

Sample positioning: 1 (perpendicular) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and irregular

Groundmass

c/f ratio (50µm limit): 35, 65

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ 1st yellows and greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: 2, large, unoriented, strong clustered basic distribution;
- Channels: 5, medium, weak referred orientation perpendicular to up direction;
- Chambers: 2, small and medium, unoriented;
- Vughs: 5, large and very large, unoriented, strong clustered referred distribution to (highly degraded) wood fragments;
- Cracks: 2, small and medium, weakly referred orientation parallel to up direction;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simply twinned): 5, very small and small and small-medium, colourless/ 1st greys, S-A, 1 pellicular and linear;
  microcline: <1, small, colourless/ 1st order greys (with fine grained red/red material present at the more weathered edges and along exploited intramineral fractures which do not always represent cleavage planes), strong referred distribution to channels and wood remains;

- Inosilicates: CPX: 2, small and small-medium, colourless/ 1st order yellows, S-A, 1 pellicular and linear;

- Nesosilicates: none

- Phyllosilicates:

  mica (muscovite): <1, very small, colourless/ 2nd yellows, 2 pellicular and parallel linear (top and bottom edges irregular as well as decreased interference colors, also interlayer spacings expanded resulting in a meso-alteromorph, unoriented, strong referred distribution to chlorites;

  chlorite: 2, small and small-medium, blue/ isotropic, irregular and phyllosilicate forms, weathering unidentifiable, diffuse to clear boundaries;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: wood remains: 25, brown-orange/ isotropic, very small to large, poor to good, strong parallel basic distribution, strong perpendicular refered orientation to up direction,;

- Other (e.g. bone, excrement, fungal remains) : fungal remains: 10, (spores and hyphae), very small, dusty pink / isotropic, linear and circular forms, excellent to good, unoriented, strong referred distribution to wood remains.

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: 1 very small, voids (cracks), moderate clustered basic distribution, strong referred distribution to cracks;

- Matrix:

Hypo-coatings (related, touching a surface): impregnative hypocoating: 5, small-medium and medium, orange-red/ dark red, mineral grains;

Quasi-coatings (not touching): none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100,

large >100)),colour, laminations (</>30μm), boundary, fragmentation]:1, very small and small, opaque/opaque, strong clustered basic distribution;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular blocky microstructure, small-medium and medium and medium-large;

Other notes and comments on the description of the sample as seen in thin section: Peds seem to be heavily disturbed and allogenic as intrapedal laminations and intrusive redox pedo-features are sometimes at odds with the peds' current orientation related to the "up" direction. Significant amount of fungal activity evident, both in the effect on the woody material (degradation) and on the production of chlorite (weathered from primary micas), and the effect on the microcline grains (biotic weathering).

Also, woody material remains were concentrated into a single band oriented parallel with the surface, was included in this micro-unit (micro-unit 1) and not given its own separate micro-unit because of the way this appear to mix upwards with the majority of micro-unit 1 which is located above (vertically speaking) it.

Thin Section Description Recording Sheet

TS: 872 Site code: RAA51

Micro-unit: 2 (the lower micro-unit in the thin section; covers approx. 1/3 of the total area of the thin section) Gr.: GR 7555

Sample positioning: 1 (perpendicular to skeletal remains) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): clear and wavy

Groundmass

c/f ratio (50μm limit): 5, 95

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): well

Micromass

Colour (x5 objective, PPL/XPL): yellow-grey/ 1st greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within μ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 2, small, unoriented, strong clustered basic distribution;
- Cracks: 10, very small and small, unoriented;

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simplky twinned): 2, very small and small,

colourless/ 1st order greys, S-A, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: chloritized mica: 1, small, pale blue – dark blue (strongly pleochroic)/1st yellows sub-areas with anomalous blue sub-areas, phyllosilicate form, 2 parallel linear (interlay spacings expanded and empty/ meso-poro-alteromorph);
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max. or small (<50), medium (50-100) or thick (>100)), related feature, and colours]

- Intrusive: Coatings: <1, orange/ dark orange, small, voids (cracks), parallel referred orientation to the ground surface.
- Matrix:

Hypo-coatings (related, touching a surface) : impregnative hypocoatings: 2, small, dark red and orange/ dark red and orange, mineral grains, strong clustered basic distribution;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: none
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed platy micro-structure beginning to develop.

Other notes and comments on the description of the sample as seen in thin section: micro-units 2 and 3 are **interlayered** with each other **repeatedly** (minimum 3 cycles of repetition)

Thin Section Description Recording Sheet

TS: 872 Site code: RAA51

Micro-unit: 3 (interlayered repeatedly with micro-unit 2; covers approx. 5% of the total area of the thin section and c. 1-2mm thick) Gr.: GR 7555

Sample positioning: 1 (perpendicular to skeletal remains) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): sharp and smooth

Groundmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly): well

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: none
- Chambers: 2, small-medium, unoriented;
- Vughs: none
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates:
  quartz and plagioclase (simply twinned); 80, colourless/ 1st greys, very small and small, and small-medium, S-A, 1 pellicular;
  microcline: 5, colourless/ 1st greys (with red/red staining), small and small-medium, 2 pellicular and irregular linear;

- Inosilicates:

  CPX:2, colourless/ 1st order yellows, small, S-A, 1 irregular linear;

  OPX: 2, colourless/ high 2nd order blues and pinks, (clearly visible pyroxene cleavage), 1 pellicular and linear (normal to cleavage angles);

- Nesosilicates: none

- Phyllosilicates:

  mica (muscovite): 1, very small, colourless/ high 2nd order colours, phyllosilicate form (but with interlayer spacings beginning to expand at the scale of the light microscope, but still very narrow), 1 parallel linear (early stage meso-alteromorph)

  chlorite: 1, pale blue- dark blue (highly pleochroic)/ isotropic, very small and small, phyllosilicate form, clear boundaries (edges), weathering unidentifiable;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface) : none

  Quasi-coatings (not touching) : none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: none
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of

clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal (not applicable)

Other notes and comments on the description of the sample as seen in thin section: This micro-unit is interpreted as just a (1) mm thick quartz-rich band of coarse material that is interlayered with the micro-unit 2 in cycles of deposition of sedimentary materials (and therefore questions concerning pedality, a pedogenic process, is not understood to be applicable).

Thin Section Description Recording Sheet

TS: 882 Site code: RAA51

Micro-unit: 1 (upper 1/3 of the thin section) Gr.: GR 7555

Sample positioning: 1 (tangential to the skeletal remains) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): diffuse and wavy

Groundmass

c/f ratio (50µm limit): 15, 85

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): well

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ dark reddish-brown

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: 5, large and very large, moderate referred orientation parallel to up direction;
- Chambers: 2, small and medium, unoriented, weakly clustered basic distribution;
- Vughs: 5, medium and large and very large, unoriented;
- Cracks: 2, small and medium, moderate referred orientation parallel to up direction, strong clustered distribution referred to the more developed and larger peds;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simply twinned): 5, small and small-medium,

colourless/ 1st greys, S-A, 1 pellicular and speckled;

- Inosilicates:

  OPX: 2, small-medium and medium, colourless/ 1st yellows, S-A, 1 pellicular and speckled, moderate basic linear distribution;

  CPX: 1, small-medium and small, colourless/ high 2nd order blues, S-R, 2 linear and pellicular, moderate clustered referred to quartz distribution;

- Nesosilicates: none

- Phyllosilicates: mica (chlorties and muscovites): 2, chloritzed muscovite grains, small-medium and small and very small, good to poor, phyllowsilicate form, 2 pellicular (tops and bottoms) when in peds and 3 kata-altermorph (and very small in size) when strongly referred distribution to quartz and plagioclase;

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: 1, orange-yellow/ isotropic, circular, small and small-medium, poor, unoriented, strong referred distribution to voids;

•Plant: none

•Other (e.g. bone, excrement, fungal remains) : fungal remains: 2, (spores and hyphae), dark pink/ isotropic, unoriented, random;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 2, red-orange/ red, small and medium, voids (vertical intrapedal cracks);

•Matrix:

Hypo-coatings (related, touching a surface) : 1, medium, dark red/opaque, voids (chambers);

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: 2, unoriented, strong basic clustered distribution, very small and small and medium, opaque/opaque, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : sub-angular blocky, small-

medium and medium and medium-large and large;

Other notes and comments on the description of the sample as seen in thin section:

The larger peds are on the left hand side of the thin section (when viewed with “up” at the top), which is also where the coffin layer (micro-unit 2) is more disturbed/ more heavily fragmented, compared to the right hand side of the thin section where coffin wood layer is more more compact and intact and peds are smaller. Fungal remains are present throughout this micro-unit (micro-unit 1) but are relatively low in frequency (only c. 2% of the area of the micro-unit).

Observation note: see commonalities with the pedality of TS 980 (foot tangential thin section from this grave).

Thin Section Description Recording Sheet

TS: 882 Site code: RAA51

Micro-unit: 2 (coffin wood layer; covers approx. 1/10 of the total area of the thin section)
Gr.: GR 7555

Sample positioning: 1 (skull tangential thin section) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear and irregular

Groundmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): intergrain aggregate

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): orange-grey/ pale grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): speckled

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: 25, medium and large and very large, strong referred orientation perpendicular to the "up" direction, moderate parallel basic distribution;
- Chambers: none
- Vughs: 5, small and medium, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned): 5, colourless/ 1st greys, small and

small-medium, S-A, 1 pellicular and speckled;

- Inosilicates:

  OPX: 1, colourless/ 1st strong yellows, small-medium, S-A, 1 pellicular and linear;

  CPX: 1, colourless/ mid 2nd order yellows, small, S-R, 2 irregular linear;

- Nesosilicates: none

- Phyllosilicates: chloritized micas: 5, pale green to dark blue (pleochroic) (with opaque speckles)/ isotropic to pale 1st yellows (sub-areas with differeing colours), small-medium and medium and very small, diffuse edges of grains, 2 complex (kata-alteromorphs);

- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous:

Type A: 10, opaque/ isotropic, small, irregular forms, poor, random, unoriented;

Type B: 5, orange/ isotropic, small irregular forms, poor, random, unoriented;

•Plant: wood remains: 70, medium and medium-large and large and very large, fair to poor, strong referred orientation parallel to ground surface, strong linear basic distribution;

•Other (e.g. bone, excrement, fungal remains) : fungal remains: 10, (hyphae), dark pink/ isotropic, very small, strong clustered distribution referred to amorphous organic material and chlortized micas;

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: none

•Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]: none

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Fine material in this micro-unit is just an infilled (*i.e.* post coarse material deposition intergrain aggregate) between the coarse (wood and minerals) materials, so an assessment of the soil characteristic of pedality is not understood as applicable in this instance of a description of deposited sediments.

Thin Section Description Recording Sheet

TS: 882 Site code: RAA51

Micro-unit: 3 (covers approx. ¼ of the total area of the thin section)

Gr.: GR 7555

Sample positioning: 1 (skull tangential thin section) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see description sheet for TS 882 micro-unit 2)

Groundmass

c/f ratio (50µm limit): 65, 35

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): grey-brown/ grey and 1st yellows

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: 1, medium, unoriented;
- Channels: 2, large and very large, weakly parallel referred orientation to "up" direction;
- Chambers: 2, very small, unoriented;
- Vughs: 5, very small, unoriented;
- Cracks: 5, very small and small, strong parallel referred orientation to surface , weakly parallel basic distribution;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple twinned and broad lamellae): 5, colourless/ 1st greys, small and very small, S-A, 1 pellicular, strong linear basic distribution;
- Inosilicates: CPX: 1, very small, colourless/ 2nd order, S-A, 1 pellicular, strong perpendicular referred distribution to up direction and moderat referred orientation perpendicular to up direction;
- Nesosilicates: none
- Phyllosilicates: chlroties: 2, colourless to blue pleochroic/ isotropic and pale green to colourless pleochroic/ isotropic, very small and small, amorphous and irregular forms (*i.e.* no phyllosilicate structure visible), moderate clustered basic distribution and moderate clustered referred distribution to voids, 2 complex (meso-holo-alteromporphs)
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none (see comments below)
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none (see comments below)

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings:
- Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]:

intrapedal Fe oxide nodules: 5, strong referred orientation to peds, and weakly clustered referred to the right hand side of the htin section, moderater clustered basic distribution, orange-red/ red, small, none, clear to diffuse, none;

irregular Fe-Mn oxide, 2, medium, dark red/ opaque, strong clustered basic distribution, unorited, fragmented by cracks (empty)

- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of

clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : moderate developed sub-angular-blocky, medium, oriented with the long-axis parallel to ground surface;

Other notes and comments on the description of the sample as seen in thin section: This micro-unit has a small amount of fungal (1%) remains and amorphous organic matter materials but only in cracks wshere this has fallen down the micro-unit 2 and so is not listed in this micro-units thin section as it is not judged to be a part of this micro-unit.

Thin Section Description Recording Sheet

TS: 905 Site code: RAA51

Micro-unit: 1 (1 of 1) Gr.: GR 7555

Sample positioning: 3 (tangential to left foot) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a

Groundmass

c/f ratio (50µm limit): 20, 80

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): pale orange-grey/ 1st order yellows and greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: none
- Channels: 5, medium and large and very large, moderate clustered referred distribution to the skeletal remains;
- Chambers: 5, medium and very large and very very large, weak clustered referred distribution to the skeletal remains;
- Vughs: 10, large and very large, unoriented, strong clustered referred distribution to the skeletal remains;
- Cracks: 2, very small, unoriented, strongly referred distribution to intrapedal;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and plagioclase (simple and multiple twinned): 5, colourless/ 1st greys, small and small-medium, moderate linear basic distribution, 1 pellicular and speckled;

- Inosilicates: none

- Nesosilicates: 1, very pale green/ high 2nd order blues, very small, no cleavage planes visible, 1 pellciular;

- Phyllosilicates: chlorites: 2, colourless to blue pleochroism/ anomalous blue interference colours, very small, amorphous and diffuse, moderate clustered referred distribution to quartz and to the skeletal remains and the ground surface (*i.e.* to the wood at the top of the thin section);

- Other (e.g. rocks, carbonates, sulfates, ash): talc: <1, colourless/ high fourth order interference colours, small, 1 speckled, unoriented, strong basic clustered distribution, strong clustered referred distribution to small opaque nodules;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

•Amorphous: none

•Plant: wood remains: 2, pale orange/ isotropic, small and small-medium, fair to poor, irregular forms, moderate linear basic distribution, strong referred distribution positive to ground surface and strong perpendicular referred distribution to ground surface;

•Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

•Intrusive: Coatings: 1, small, voids (very small intrapedal cracks), orange-red/ red, moderate referred orientation perpendicular to the "up" direction, strong referred distribution to intrapedal sediments;

•Matrix:

Hypo-coatings (related, touching a surface) : impregnative hypocoatings: 2, small, voids (chambers), dark red/ opaque, diffuse , moderate clustered basic distribution;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (µm, max. or small, (<50, medium 50-100, large >100)),colour, laminations (</>30µm), boundary, fragmentation]:

Type A: 1, unoriented, moderate distribution negative to the skeletal remains and positive to the ground surface, medium, yellow-orange (with dark red external limit (thin) and then diffuse yellow exteriors), 3 (>30 except for 3rd), clear, none;

Type B: <1, unoriented, random, small, opaque/ very dark red, none, clear, none;

• Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : weakly developed sub-angular-blocky microstructure, small and small –medium

Other notes and comments on the description of the sample as seen in thin section:

Comments on wood and fungal: woody material was observed as a thin band across the top of the thin section (TS), with no traces of fungal presence observed in association.

Comments on pedality: It appears as if the material in the TS is composed of what once was sub-angular-blocky clay rich peds which had been deposited irregularly into this area and then due to the high levels of pedogensis the material were starting to reform mewly (quthi-) sub-angular-blocky peds.

Comments on quartz rich bands: These are not present in this TS, as they were at the skull (within this same grave, *i.e.* GR 7555) and pelvis adjacent samples (GR 7491). However, these types of materials are present in short linear shaped areas and give the suggestion that although horizontal parallel bandings were once present in this sample (GR 7555, S 3, TS 905) they have since been disturbed due to activities relating to homogenization/ mixing of the sediments.

Thin Section Description Recording Sheet

TS: 980 Site code: RAA51

Micro-unit: 1 Gr.: GR 7555

Sample positioning: 3 (tangential thin section orientation) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): sharp

Groundmass

c/f ratio (50µm limit): 10, 90

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting: (unsorted, poorly, well, perfectly) perfectly

Micromass

Colour (x5 objective, PPL/XPL): orange-brown/ 1st yellows;

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): speckled

B-fabric (undifferentiated, cristallitic, striated, speckled): striated

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation related to "up" (str, m, w), orientation related to the skeletal remains (str, m, w),

- Vesicles: 1, very small, unoriented;
- Channels: none
- Chambers: 2, very small and small, parallel related to the body and perpendicular
- Vughs: none
- Cracks: 10, small and medium, unoriented;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz: 5, colourless/ 1st order greys, S-A, 1 speckled;
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

    Hypo-coatings (related, touching a surface) : none

    Quasi-coatings (not touching) : none

    Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: 5, orange-red/ red, very small and small, none, clear, none.
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : angular-blocky, moderate, medium-large and large;

Other notes and comments on the description of the sample as seen in thin section: Boundary described is not a lower boundary but an irregular boundary in that it separates the two partially intermingled micro-units (micro-unit 1 from micro-unit 2). Micro-unit 1 is interspersed (vertically) with micro-unit 2). Micro-unit 1 is largely constrained to the left side of the thin section when viewed with “up” at the top) but some peds of the micro-unit 1 are also present at the far right hand side of the thin section also (Appendix for mosaic image). The micro-layers with associated micro-cracks in the peds of the micro-unit 1 are at varying angles between the peds of micro-unit

1 are at varying angles between the peds ofmicro-unit 1 suggesting severe disturbance post-dating the burial.

Thin Section Description Recording Sheet

TS: 980 Site code: RAA51

Micro-unit: 2 Gr.: GR 7555

Sample positioning: 3 (tangential) Sk & fills: GR 7555

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): n/a (see micro-unit 1 thin section description sheet)

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly): poorly

Micromass

Colour (x5 objective, PPL/XPL): grey-brown/ grey

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted,(masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), orientation referred to "up" (str, m, w), orientation referred to the skeletal remains (str, m, w),

- Vesicles: 2, very small, strong referred orientation related to vesicles, moderate clustered basic distribution;
- Channels: 2, medium and large, unoriented;
- Chambers: 5, small and medium, unoriented, weak clustered basic distribution;
- Vughs: 5, small and medium, unoriented;
- Cracks: 2, very small, strong referred orientation related to vesicles, moderate clustered basic distribution;

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding (angular, semi-angular, semi-rounded, rounded) or form (external morphology), extent and pattern of weathering)

- Tectosilicates: quartz and simply twinned plagioclase: 10, colourless/ 1st order greys, very small and small and medium-large, A and S-A, 1 speckled and pellicular;
- Inosilicates:

  OPX: 5, colourless/ 1st yellows, very small and small and medium, S-A, 1 pellicular and irregular linear;

  CPX: 1, colourless/ 2nd high pinks, small, S-A, 1 pellicular and irregular linear;
- Nesosilicates: olivine: <1, colourless/ high 2nd- low 3rd order, S-R, 2 complex,
- Phyllosilicates: chlorite: 5, blue-green (pleochroic)/ anomalous blues, small and small-medium, irregular, 1 speckled and parallel linear, strong clustered basic distribution and strong referred distribution related to the top of the thin section
- Other (e.g. rocks, carbonates, sulfates, ash):none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) :none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (µm, max.), related feature, and colours]

- Intrusive: Coatings:5 small, cracks, orange/ orange and pink
- Matrix:

Hypo-coatings (related, touching a surface) : impregnative: 2, voids, dark red and orange/ opaque and red;

Quasi-coatings (not touching) : /

Infillings: /

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (µm, max.), colour, laminations (</>30µm), boundary, fragmentation]: 1, unoriented, random, very small, opaque/ isotropic, none, sharp, none;
- Excremental Pedofeatures (% abundance, colour PPL, size, angularity, size of clasts(e.g.CZS):none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: This micro-unit could perhaps be identified by other observers as a poorly developed granular micro-structure, but it is not listed as such here, as it is viewed here as a coarse (quartz rich with grey and yellow clays) disordered sediment that has infilled between the disturbed large blocky peds (micro-unit 1) and therefore any assumptions of a microstructure inherent to micro-unit 2 would merely be a reflectance from the pedostructure of micro-unit 1. No fungal spores or bones observed. Chlorites are only in the micro-unit 2 (opposed to micro-unit 1 in this thin section) and are close to voids and more densely clustered at the top of the thin section than elsewhere in micro-unit 2 of this thin section.

VIB. Summarised thin section descriptions with interpretations

The size terminology used in this section is listed below. The thin sections described here are not all of the thin sections produced for Sala Vastmaal. The thin sections described here are listed in the table below regarding their distribution across the site.

Terminology used in summarized thin section descriptions to describe estimated abundance value

Term	Estimated value
negligible	c.<1%
very little	c.1%
little	c.2%
few	c.5%
some	c.10>20%
frequent	c.20>30%
common	c.30>40%
dominant	c.>40%

Summary table listing thin section numbers with their orientation within each of the graves.

Sample & Orientation / **Grave Number**	C2	C3	skull tangential	skull perpendicular	pelvic tangential	pelvic perpendicular	foot tangential	foot perpe
5926					877	862	978	978
5914		861	867	867	996	997	936	907
7555			882	872	821	860	905	980
7519		875	888	873	908	938	983	983
7464			982	935			981	876
7491					977	969	968	979

GR 5926

Sample 2, tangential TS

877.1

A gray-orange sediment with moderately developed sub-angular-blocky peds with striated b-fabric and a 20:80 coarse to fine ratio of embedded and poorly sorted related distribution. Most of the voids and cracks (*c.*10%) and vughs (c.5%). Little orange-red impregnative hypocoatings related to cracks, little opaque impregnative hypocoatings related to voids, little nodules, and some (*c.*10%) depletion hypocoatings. Very little (*c.*1%) excremental pedofeatures with moderate distribution related to the pelvis. Some (*c.*10%) tectosilicates at 1 pellicular weathering weakly

distributed related to cracks and to the pelvis. Very little (*c.*1%) inosilicates and negligible (*c.*<1%) chlorites amorphous and strongly distributed related to interpedal hypocoatings. Little (*c.*2%) plant remains.

Interpretations: This micro-unit covers the whole area of the thin section, which is a relatively large thin section, suggesting that there is a higher degree of homogenization in this sample compared to pelvic area samples from the other graves sampled. Depletion hypocoatings have a different colour (PPL and XPL), a different b-fabric (speckled rather than striated) and a greater coarse to fine ratio (a greater tectosilicate abundancy), which coupled with their thickness (up to medium sized, *i.e.* 200-500microns thick), suggest reduced conditions and the removal of clay from the edges of these peds. This is unusual compared to pelvic samples from other graves.

Sample 2, perpendicular TS

862.1

A gray-orange brown sediment of sub-angular blocky microstructure, with striated b-fabric, 20:80 coarse to fine ratio of embedded and unsorted related distribution. Most of the voids are cracks (*c.*10%). Some intrusive hypocoatings (*c.*10%), very little (*c.*1%) impregnative hypocoatings, and few depletion hypocoations with moderate distribution related to the pelvis. Some (*c.*10%) tectosilicates at 1 pellicular weathering in moderate related distribution to the pelvis, negligible (*c.*<1%) inosilicates with strong distribution related to the pelvis, and negligible (*c.*<1%) chloritized muscovite at 3 parallel linear and pellicular (iso-alteromorph) weathering with strong related distribution to the pelvis. Little plant remains of fair to poor preservation with strong distribution related to the pelvis. Some (*c.*10%) bone with fair preservation.

Interpretations: The sub-angular-blocky microstructure ranges from poorly to well developed peds and covers ped size categories ranging from large to small size classes, but there is no discernible distribution to organize these ranges within the thin section, which makes this an anomaly compared to pelvic samples from the other grave. The bone is present as one large (several centimetres) fragment, which looks at x1magnification as if it is in good preservation, but the internal fabric has been severely altered through physical disaggregation, suggesting that the bone was very fragile and probably would have crumbled if lifted and washed if collected as a loose bone at the site. This also suggests that the primary degradative process affecting this bone did not need to alter the surface of the bone to a great extent to reach the interior of the bone.

Sample 4

978.1

Apedal and unsorted sediment of a yellow-brown fine material (15:85), with 5-10% included allogenic angular-blocky peds of medium sized included in the Micromass at irregular orientations. Tectosilicates are 1p&sp and inosilicates are pleochroic (1st yellows and pinks interference colours) at regular linear 1. Chlorite is 1% vsm, pale blue and clear with masked 1st yellow, parallel linear (phyllosilicate structure) at extent 1.

Interpretations: No degraded wood material or fungal remains but 2% roots in voids visible with lignin.

978.2

The brown clays, which appear brown-gray due to a high concentration of fine quartz grains (*c.*40% abundance). Despite the high abundance of quartz grains the coarse fine ratio is 20:80 as most of these are smaller than 50microns, which is repeated at the base of the thin section after micro-unit 3 but the boundaries of the micro-unit where between micro-unit 1 and micro-unit 3 are clear whereas between micro-unit 2 and micro-unit 3 at the base of micro-unit 3 the boundary is diffuse.

Interpretations: Apedal and unsorted as this is a thin band of quartz grains.

978.3

Poorly developed medium sub-angular blocky micro-structure. Yellow-brown fine material (10:90) well sorted and with redox hypocoatings. Very little organic material, only 1% small orange plant materials, irregular and degraded fibrous forms.

Interpretations: At hand specimen level the micro-unit looks like if peds form they will be platy or lenticular peds because the larger cracks are perpendicular to the up direction, but at x50magnification sub-angular-blocky peds seem to be beginning to develop by smaller cracks and also by changes in clay colours to create edges of blocks.

GR 7491

<u>Sample 9, perpendicular TS (from the sacral area towards the foot area along the right side of the skeleton)</u>

969.1

Pale brown-gray sediment in very weakly developed granular microstructure (sm-m) with cristallitic b-fabric, 70:30 coarse to fine ratio of intergrain aggregate and poorly sorted related distribution with a diffuse and wavy lower boundary. A few orthic red medium nodules. A few tectosilicates, very little mica (muscovite) at 2 parallel linear, very little rock fragments (tecosilicates and carbonates) at 1 pellicular and speckled, little rock fragment (mica schist) at 2 complex, and very little chlorite (vsm) with amorphous form. Common (*c.*20%) orange amorphous oraganic matter (AMO), few red AMO in clustered distribution, some (*c.*15%) orange plant remains in parallel orientation to the surface, and little opaque plant remains. Few bone fragments and few fungal spores with moderate distribution related to orange AMO, and weak related distribution to bone and to chloritized micas.

Interpretations: A degraded coffin wood layer across the top of the thin section. The microstructure is weakly developed as it is interrupted and inhibited some of the larger remains of coffin wood which maintain their orientation parallel to the surface. The mica schist rock fragments may have been water laid as they are weakly oriented parallel to the surface, and weathering may has been affected by post-depositional processes, as they are strongly associated by fungal spores and/or amorphous chlorite where they are at 2complex but where they do not have these spatial relationships they have small opaque speckles. The fungal remains were active in the degradation of the bone and coffin wood by their related distributions. Some of the mica schists are expanding by 1parallel linear weathering, but some are chloritizing and these are surrounded by very small fungal spores. The bones have lost their birefringence (only very weak 1st grays visible at highest intensity light and at x200magnification or above), which is in contrast to bones from other graves. The carbonate rich rock fragments are at a lower extent of weathering here than in GR5926, which is likely due to the size of the inhumed individual, but possibly related to the presence of a coffin here.

969.2

Grayish-orange brown coloured sediment in moderately developed sub-angular-blocky peds with speckled limpidity, striated b-fabric, 10:90 coarse to fine ratio of embedded and poorly sorted related distribution with a diffuse and irregular lower boundary. Little orange-red hypocoatings related to intrapedal cracks, some (*c.*10%) brown-gray hypocoatings related to interpedal voids, little opaque diffuse nodules, and few red orthic nodules with weak distribution related to the LHS of the TS. Few tectosilicates at 1pellicular, few rock fragments (quartz, microcline, muscovite, biotite, and chlorites of phyllosilicate form) at 1pellicular, and little chlorites of amorphous form. Little orange AMO weakly distributed related to cracks and chambers and few opaque AMO in moderate basic clustered distribution.

Interpretations: The ped development trends from moderate and vlr size at the left hand side (LHS) of the TS to poorly developed and sm-m sized towards the right hand side (RHS) of the TS. Similarites seen with micro-units 2 and 3 of TS 977. Coarse (excepting chlorites, rock fragments and organics) components are often in moderate to weakly linear distributions, occasionally these are related to depletion hypocoatings, rarely related to infill from micro-unit 1 via large vertical cracks, but sometimes they suggest perhaps bands of coarse materials that have been mixed into the fine materials.

969.3

Olive-green gray and orange-yellow coloured sediment in very weakly developed lenticular microstructure, with cloudy limpidity, weakly striated b-fabric, and a 10:90 coarse of embedded and poorly sorted fine related distribution. Few impregnative red hypocoatings related to voids, and very little gray-orange hypocoations related to cracks with a strong related orientation perpendicular to the surface. Very little red orthic nodules, negligible anorthic orange concentrically laminated nodules, and little opaque diffuse orthic nodules. Few tectiosilicates in weakly linear basic distribution, very little insoilicates pleochroic in moderate related distribution to tectosilicates, and very little chlorites of amorphous form weakly distributed to voids. Negligible orange AMO with strong clustered distribution to chamber voids.

Interpretations: The very weak lenticular microstructure was beginning to develop as seen by horizontal cracks separating the micro-laminations within this micro-unit. There is more disturbance towards the RHS of the TS (/sacral end of TS) and the micro-unit does not reach to far RHS of the TS (/sacral end of the TS) due to sloping of the micro-unit. Comparable to micro-unit 4 of TS 977 (*i.e*. a TS made from the end of the tin opposite the sacral area).

<u>Sample 9, tangential TS (transect from the left to the right side of the skeleton)</u>

977.1

Micro-unit is located at the top and centre of the thin section. It is an unsorted apedal material rich in plant remains (*c.*40% abundance). The fine material is grey and speckled (70:30), with redox hypocoatings and nodules. Very little (*c.*1%) chlorites which are meso-alteromorphs of micas, with phyllosilicate structures displaying interlayer spacings.

Interpretations: Micro-unit 1 is mostly the coffin wood and the grey clays which surround the rotting bits of wood. No fungal seen here and only 1 anomalous chlorite grain observed.

977.2

Micro-unit is located along the LHS and RHS of the thin section (*i.e.* parallel with the sides of the coffin and grave). Poorly developed (sm and sm-m) sub-angular blocky micro-structure of grey-orange colour with speckled fine material (30:70) embedded and poorly sorted with few nodules. Some quartz and plagioclases (*c.*15% abundance) with 1pellicular weathering and few mica (muscovite) of 2parallel linear weathering meso-alteromorphs. Few chlorites (*c.*5% abundance) pale blue pleochroic and isotropic as well as anomalous blue interference colours observed, although consistently with phyllosilicate forms observed, and with strong related distribution to quartz and voids. Little (*c.*2%) wood (charcoal) opaque in colour and poorly preserved.

Interpretations: This is a greater variety of materials than micro-units 1 and 3 and likely is a result of being the intermediary between these two micro-units spatially. Micro-unit 2 also has a large amount of mineral grains in comparison to its bordering micro-units 1 and 3 (either side of micro-unit 2 vertically).

977.3

Located in the middle of the thin section, with sharp and irregular boundaries. A massive apedal micro-structure, yellow-brown limpid colour and speckled fine material (15:85) poorly sorted. Few (*c.*5%) intrusive dark red/opaque hypocoatings related to voids as well as few (*c.*5%) depletion hypocoatings (neoskeletons *sensu* Brewer) grey/grey related to cracks and strong related distribution parallel to up direction. Very sharp boundary to micro-unit 4 which is horizontal (*i.e.* parallel to surface).

Interpretations: Concerning pedality, perhaps if more horizontal cracks had continued to form it could have started to develop a lenticular micro-structure but at the time of sample retrieval it was an apedal sediment with cracks with random orientations.

977.4

Weakly developed small lenticular micro-structure beginning to develop, as observed by horizontal cracks separating micro-layers within micro-unit 4 which are almost identical in composition and organisation. Yellow-green gray sediment cloudy limpidity, striated b-fabric, poorly sorted and embedded 15:85 coarse materials. Few intrusive orange-red hypocoatings, little small opaque nodules and very little small excremental pedofeatures. Few (*c.*5%) quartz and plagioclases but at 2 pellicular and linear weathering. Little (*c.*2%) isotropic chlorites, some amorphous and some of phyllosilicate form suggestive of a meso-alteromorph of mica, which also display a strong related distribution to areas of iron oxide/oxyhydroxide depositions.

Interpretations: This sediment colour is unusual for this site, it is limited to within this grave in the samples analysed, the lenticular microstructure is also uncommon. However, lenticular peds are also visible in the lowest micro-unit of TS from the foot sample of GR 7491.

Sample 3, tangential TS (transect from the left to the right side of the grave)

979.1

Orange isotropic materials in a poorly developed granular microstructure with cloudy limpidity, undifferentiated b-fabric, an 80:20 coarse to fine ratio in linked and coated and poorly sorted related distribution. Some (*c.*15%) vughs, negligible opaque nodules, negligible quartz, dominant (*c.*60%) orange AMO, and some (*c.*10%) orange linear plant remains.

Interpretations: A heavily degraded coffin wood layer with a diffuse and irregular horizontal lower boundary. The degraded coffin wood has become orange S-R (semi-rounded) AMO which in turn has been organised into groups creating a small granular microstructure.

979.2

Grayish-orangey brown sediment of poorly developed lenticular microstructure with cloudy limpidity, striated b-fabric, and a 10:90 coarse to fine ratio of embedded well sorted related distribution. Few orange-brown intrusive hypocoatings related to m cracks, little orange-red impregnative hypocoatings related to (vsm) cracks, very little orange anisotropic intrusive hypocoatings related to vesicles and very little bright red anisotropic intrusive hypocoatings related to chambers. Few tectosilicates at 1 pellicular, negligible pleochroic inosilictes at 1 linear with moderate distribution negatively related to the body, and little chlorites (amorphous) in related distribution to voids and hypocoatings.

Interpretations: The microstructure is poorly developed but of very large sized peds. The very poorly developed lenticular microstructure was progressing as evidenced by horizontal cracks producing peds from the micro-laminated deposits in lens shapes, but sloped microlaminations downwards towards the corner of the coffin (*i.e.* the LHS of the TS). Except for in the area of the diffuse boundary between micro-unit 1 and 2, these 2 micro-units seem to be well separated from each other both in terms of contents and organisation. The inosilicates related distribution negative to the body may suggest that it is only in this area that they have not been weathered beyond recognition (either physically into very very small fragments or chemically by dissolution) due to the effect of the body, or more likely that it is only in this area that they were deposited by infill of the coffin space through the opening cracks at the apexes of the coffin.

Sample 3, perpendicular TS

968.1

Orangey-brown isotropic materials in a granular to lenticular microstructure, with cloudy limpidity, undifferentiated b-fabric and a 40:60 coarse to fine ratio of linked and coated and unsorted related distribution. Channels (*c.*5%) and cracks (*c.*10%) have strong related orientations parallel to the surface. Little opaque diffuse intrusive hypocoatings related to bone. Negligible chlorite amorphous form strongly related in distribution to bone. Dominant (*c.*50%) orange AMO, some (*c.*10%) linear orange plant remains, some (*c.*15%) bone isotropic in strong linear basic distribution, and some (*c.*15%) strong related distribution to bone and AMO.

Interpretations: A granular (small) microstructure developed at the top and LHS of the GR (right side of the skeleton) and this decreases in development and then increases in development of a lenticular (small) microstructure towards the RHS of the GR (left side of the skeleton). The bone abundance was unexpected as this is easily missed at x1mag of the TS and is not visible at all in the impregnated block. The only mineral grain visible in the micro-unit is a chlorite grain on the the bone. Coffin wood is better preserved in the lenticlar microstructure area than in the more granular microstructure area. Fungal remains and bone fragments are limited to the more granular microstructure area. Comparable the the degraded coffin wood layer of the foot adjacent TS from this GR (micro-unit 1 of TS 979).

968.2

Grayish-browney orange micro-laminated deposits with cloudy limpidity, striated b-fabric and 10:90 coarse to fine ratio of emdedded and well sorted distribution. Some cracks (*c.*10%) which moderate parallel orientation related to the surface, as well as little chambers and little vesicles. Few orange-red impregnative hypocoatings related to cracks, few gray depletion hypocoatings related to cracks, little orange-red orthic nodules, and negligible opaque orthic nodules strongly distributed related to the RHS of the GR. Some (*c.*10%) tectosilicates and little amorphous chlorites. Little orange AMO strongly distributed related to cracks and to boundary between micro-units 1 and 2.

Interpretations: Comparable to micro-unit 2 of TS 979 (foot adjacent TS from this GR). The sediment is apedal as it is organised according to its microlaminations but the cracks tend to follow these orientations, so it may have, with further time to develop, become a platy microstructure. The organic content of this micro-unit should not really be considered as part of

this micro-unit as it is solely composed of degraded coffin wood that has fallen down vertical cracks from the upper micro-unit (micro-unit 1).

968.3

Green-gray brown sediment of weakly developed lenticular peds with cloudy limpidity, striated b-fabric, and a 20:80 coarse to fine ratio of embedded and poorly sorted related distribution. Most voids are cracks with moderately orientation parallel to the surface. Few orange-red impregnative hypocoatings related to cracks parallel to the surface. Few opaque hypocoatings related to mineral grains. Very little orange anisotropic intrusive hypocoatings related to mineral grains and few orange-red orthic nodules with sharp boundaries. Some (*c.*10%) tectosilicates with a weakly linear basic distribution, little chlorites amorphous and diffuse, negligible biotite at 2 complex and moderate distribution related to quartz, and negligible rock fragments (tectosilicates) at 1 pellicular.

Interpretations: Comparable to micro-unit 3 of TS 979 (foot area) and micro-unit 4 of 977 (sacral area), in all three TS this micro-unit occurs as the basal micro-unit with a green-gray colour and lenticular peds suggesting that this deposit covered GR7491 at the lower half of the skeleton.

GR 7555

Sample 1, tangential TS

882.1

Sub-angular blocky peds ranging in size (sm-m to lr), orange-brown in colour, striated b-fabric, with well sorted embedded coarse materials (15:85). Red hypocoatings related to vertical cracks and chambers, as well as opaque nodules (vsm to sm-m sizes), little fungal remains (*c.*2%), and moderately linear basic distribution of tectosilicates and pyroxenes. No chlorites observed, but all micas (muscovite, *c.*2%) chloritized to some extent, with weathering differences, in extent and pattern, strongly related to location. Those micas within peds exhibit 2pellicular at the tops and bottoms of grains (sm and sm-m sizes), whilst those extraneous to peds and strongly related in distribution to the quartz and plagioclases, have been weathered to 3 complex kata-alteromorphs.

Interpretations: Larger peds are on the LHS of the TS (*i.e.* towards the cervical vertebrae)which is also where the coffin layer (micro-unit 2) is more disturbed and more heavily fragmented, compared to the RHS of the TS (*i.e.* towards the head plank of the coffin) where coffin wood layer

is more compact and intact and peds are smaller. Weathering of mica through chloritization is present throughout the micro-unit but is more advanced in the bands of quartz rich material extraneous to the peds. Fungal presence throughout the micro-unit (micro-unit 1) is relatively low despite evenly random distribution (*c.*2%). See commonalities with pedality of TS 980, sample 3a from this GR.

882.2

Wood layer micro-unit with clear and irregular boundary, fine material (90:10) is intergrain aggregate, poorly sorted, grey in colour and speckled b-fabric. Tectosilicates are few (*c.*5%) and a little (*c.*2%) pyroxenes, with few (*c.*5%) micas at 2complex weathering to kata-alteromorphs, including diffuse boundaries and (vsm) opaque speckles. Plant remains are high (*c.*70%) with some (*c.*15%) amorphous organics and some (*c.*10%) fungal remains.

Interpretations: Fine material is just a later deposit which has infilled between the coffin wood remains as intergrain aggregate. The amorphous organic material is degraded coffin wood and the fungal remains are largely composed of hyphae rather than sclerotia and only very little spores visible. The fungal remains have a very strong related distribution to the degraded coffin wood and to the chloritized muscovite and may be an active agent in the processes responsible for the weathering of these two materials through these pathways. Wood layer is comparable to 977.1 (GR7491, 9t).

882.3

Moderately developed medium sub-angular blocky peds oriented long axis parallel to surface. Micro-unit is grayish-orange brown in colour with striated b-fabric and embedded poorly sorted coarse materials (65:35). Few (*c.*5%) impregnative diffuse intrapedal orange-red (vsm) nodules at the RHS of the TS and little (*c.*2%) clear and fragmented opaque (vsm) nodules in clusters. Few (*c.*5%) tectosilicates in a strong basic linear distribution oriented parallel to the surface. Little (2%) chlorites of amorphous forms and blue-green/isotropic moderately distribution related to voids.

Interpretations: Very little (*c.*1%) fungal and little (*c.*2%) amorphous organic materials but only in vertical cracks where this has fallen down from the micro-unit above (micro-unit 2). Chlorites in this micro-unit are amorphous and irregular in form and shape, and are spatially related to voids, compared to the phyllosilicate forms of the chloritized micas in the micro-unit stratigraphically above which have a related distribution to tectosilicates, suggestive of a higher degree of weathering along with transportation into the lower micro-unit.

Sample 1, perpendicular TS

872.1

This micro-unit includes most of the thin section (3/5), including the wood layers in perpendicular orientation to the up direction. Diffuse and irregular boundary, orange-brown colour, cloudy limpidity and cristallitic b-fabric, with embedded poorly sorted (35:65) coarse materials and sub-angular blocky micro-structure. Opaque as well as orange-red hypocoatings and very little small opaque nodules. Wide variety of minerals including, quartz, simple and multiple twinned plagioclase, microcline, CPX and phyllosilicates. Negligible mica (*c.*<1%) (muscovite) at 2 parallel linear and pellicular by top and bottom edges weathered in addition to interlayer spaces expansions resulting in meso-alteromorphs and with a strong related distribution to chlorites. Little (*c.*2%) chlorites with irregular and with phyllosilicate forms observed. Common wood remains (brown-orange isotropic) horizontal at the top of the thin section and some (10%) fungal remains (spores and hyphae) in strong related distribution to the woody materials.

Interpretations:

Peds seem to be heavily disturbed and allogenic as intra-pedal laminations and intrusive redox pedofeatures are sometimes at odds with the peds current orientation of up. Significant amount of fungal activity visible, both in the effect on the woody material and on the production of chlorite and effect on microcline grains. Also, woody materials concentrated into a single band oriented parallel with the surface, was included in this micro-unit (micro-unit 1) and not given its own separate micro-unit because of the way that this appears to mix upwards with the majority of micro-unit 1 which is located above (stratigraphically) it.

872.2

A clear and wavy lower boundary, yellow-gray colour, striated b-fabric, well sorted coarse materials (5:95) and weakly developed platy micro-structure. Negligible (*c.*<1%) intrusive orange hypocoatings on cracks parallel in orientation to surface and little (*c.*2%) impregnative dark red impregnative hypocoatings on mineral grains. Very little (*c.*1%) mica (muscovite) at 3 parallel linear weathering.

Interpreations: Located below micro-unit 1. Very little mica, but heavily chloritized (3 complex) with expanded interlayer spaces and creating phyllo-poro-alteromorphs. Micro-unit 2 has a clear and wavy lower boundary is interlaryered with micro-unit 3 repeatedly (minimum of 3 cycles of repetition).

872.3

Single population and well sorted (90:10), with high (*c.*80%) tectosilicate (quartz, single and multiple twinned plagioclase, and microcline) with few pyroxenes (2% OPX, 2%CPX), and little phyllosilicates. Very little (*c.*1%) mica (muscovite) at 1 parallel linear weathering, as only very slight expansion of interlayer spaces, and very little chlorite (*c.*1%).

Interpretations: This is a ≤1mm thick quartz-rich band of coarse material that is interlayered with micro-unit 2, therefore a micro-structure has not developed, and there is a sharp and smooth lower boundary.

Sample 2, tangential TS

860.1

Orange-grey in colour, cloudy limpidity, cristallitic b-fabric, coarse rich sediment (70:30) with poor sorting and intergrain aggregate related distribution. Voids are mainly chambers and channels. Some (*c.*10%) impregnative anorthic orange-red hypocoatings, as well as few (*c.*5%) yellow-orange infillings both related to voids. Common (*c.*35%) quartz and simple and multiple twinned plagioclases, with little (*c.*2%) microcline, little (*c.*2%) pyroxenes, and very little (*c.*1%) pleochroic inosilicates, all of which, except quartz and simple and multiple twinned plagioclases are at weathering extent 2. Very little (*c.*1%) mica (muscovite) as phyllo-poro-alteromorphs, by 2 parallel linear weathering, with chlorites in some of the interlayer spaces and some very small opaque speckles. Very little (*c.*1%) brown mica (biotite) also as phyllo-poro-alteromorphs, by 2 pellicular and parallel linear weathering, with empty interlayer spaces (at x400magnification). Some (*c.*15%) chlorites in a variety of blue to green colours (PPL) and either isotropic or anomolous blue interference colours, with amorphous and diffuse forms limited to the very small grains and larger with phyllosilicate structures, and some with opaque very small speckles. Very little (*c.*1%) carbonate (calcite/dolomite) present.

Interpretations: Possible magnetite deposits on chloritizing micas (muscovite) which is retained in the fully altered alteromorph (chlorite with phyllosilicate forms). No fungal or plant remains observed, but rhombohedral carbonate grains may be related to the weathering process of the micas and chlorites here. Weathering of minerals moderately well developed in this micro-unit, as all except tectosilicates and OPX were at extent 2 or greater.

Sample 2, perpendicular TS

821.1

An organic rich top layer constituting a very small proportion of the TS with a diffuse and irregular lower boundary. Largely coarse material (80:20) with fine material present as poorly sorted intergrain aggregate. Some (*c.*12%) tectosilicates, including microcline, and very little (*c.*1%) mica (muscovite) at 2 pellicular weathering. Few (*c.*5%) chlorites, amorphous and diffuse in form and in strongly related distribution to fungal remains. Some (10%) fungal remains in moderate basic clustered distribution and strongly distributed related to chlorites, microcline, and amorphous organic matter (*c.*5%).

Interpretation: Not enough fine material here to have pedality, this is just a heavily degraded thin coffin wood layer with fine materials acting as intergrain aggregate. SEM-EDX of microcline to assess microcline deviation in composition from the normal range of microcline to assess possibility of relationship between microcline and fungal remains. Muscovites have pellicular weathering with tops and bottoms more heavily weathered than interlayer space expansion. As the chlorites are in strong positive related distribution and the muscovite in strong negative related distribution to the fungal remains, there could be a link between fungal activities and the production of authigenic chlorite.

821.2

Pale orange in colour, limpid limpidity, cristallitic b-fabric, 70:30 coarse to fine ratio, well sorted and intergrain aggregate distribution, with a diffuse smooth and interrupted boundary. Few (*c.*5%) dark red/opaque infillings related to intra-mineral cracks and speckled areas on quartz and carbonate mineral grains. Common (*c.*40%) quartz and simple and multiple twinned plagioclases in addition to few (*c.*5%) microcline at 2pellicular and speckled. Few (*c.*5%) OPX at 1pellicular and linear, very little (*c.*1%) CPX at 2pellicular, and little (*c.*2%) pale green pleochroic inosilicate at 2 linear with red stains in intra mineral cracks. Little (*c.*2%) mica (muscovite) at 2 complex with lower order edges, few (*c.*5%) mica (phlogopite) at 2 complex, very little (*c.*1%) mica (biotite) at 2 parallel linear, and some (*c.*10%) chlorites. Also few (*c.*5%) carbonates (calcite/dolomite) in strong related distribution to infillings of dark red fine materials.

Interpretations: A huge variety of blue (PPL) minerals, including phyllosilicates and inosilicates, with those in the larger carbonate and quartz rich rocks the most heavily weathered. No organic materials observed. The micas have differences in weathering patterns with the muscovites with lower order edges and mostly pellicular weathering, the phlogopites in complex patterns including tops and bottoms altered by pellicular weathering and interlayer spaces expansions by parallel linear weathering, and the biotites as meso-alteromorphs by 2 parallel linear expansions

along interlayer spaces. The chlorites range from amorphous diffuse and small to medium phyllosilicate forms and clear boundaries, although where associated with heavily degraded quartz and carbonates they have opaque very small speckles. All of which is suggestive of the micas weathering process being affected by the sediment in which they are currently situated, *i.e. in-situ* weathering, and perhaps some affect by magnetite and talc.

821.3

Greyish-brown orange sediment of cloudy limpidity, striated b-fabric, 15:85 coarse fine ratio, embedded and poorly sorted, and with a diffuse smooth and interrupted boundary. Some impregnative hypocoatings and nodules, both with diffuse boundaries and few (*c.*5%) tectosilicates.

Interpretations: Apedal, but with weakly stratified micro-laminated deposits. Micro-unit 3 is lenses/bands of orange clays which separate the coarse micro-unit 2 into bands either side. These two micro-units (2 and 3) are repetitive. Micro-unit 3 is more disturbed at the LHS of the TS.

<u>Sample 3, perpendicular TS</u>

980.1

Medium-large and large moderately developed allogenic angular-blocky peds of orange-brown striated fine material (5:95) perfectly sorted. A sharp boundary which is irregular in that it is not a lower boundary but an all-around boundary as micro-unit 1 is mixed up with micro-unit 2.

Interpretations: Micro-unit 1 is largely constrained to the left side of the thin section but some peds of micro-unit 1 present at the far right hand side of the thin section also. The micro-layers with associated micro-cracks in the peds of the micro-unit 1 are at varying angles between the peds of the micro-unit 1 suggesting severe disturbance.

980.2

Apedal gray-brown fine material (40:60) with redox hypocoatings. Little (5%) chlorite abundance blue-green with anomalous blue interference colours, 1 speckled and parallel linear weathered, and strongly clustered to the top of the thin section. No organics visible, and a wider variety of minerals (quartz, OPX, CPX, and Olivines).

Interpretations: Perhaps at hand specimen level this could be seen as a poorly developed granular micro-structure but at x50magnification this is seen to not be the case. It is a coarse (quartz rich with grey and yellow clays) poorly sorted micro-unit that has infilled between the disturbed large blocky peds (see micro-unit 1). No fungal spores or bones observed. Chlorites are only in micro-unit 2 and are close to voids and more densely at the top of the thin section than elsewhere in micro-unit 2 of the thin section.

Sample 3, tangential TS

905.1

Weakly developed sub-angular blocky micro-structures (sm and sm-m sizes), pale orange-gray colour, limpid limpidity, cristallitic b-fabric and poorly sorted embedded coarse materials (20:80). Voids are mostly vughs, there are some orange-red hypocoatings related to chambers and mineral grains, along with (vsm) impregnative hypocoatings related to vsm intrapedal cracks. Few tectosilicates and very little (*c.*1%) nesosilicates in moderately linear basic distribution. Little (2%) chlorites of amorphous form, strongly distributed related to foot and up directions and very little (*c.*1%) talc in strongly related distribution to opaque nodules. Little (*c.*2%) orange plant material poorly preserved parallel to surface.

Interpretations: Woody material, probably derived from coffin wood, is in a thin band across the top of the thin section, with no traces of fungal presence observed. Regarding pedality, it appears as if the material in the TS was composed of what once was sub-angular-blocky clay rich peds which had been deposited irregularly into this area and then due to the high levels of pedogenesis and post-depositional processes the materials were starting to reform newly (authigenic) sub-angular blocky peds. Regarding the quartz rich bands, these are not present here like they are at the skull (GR 7555) and pelvic regions (GR 7491), as these materials are present in short wide linear segments and give the impression that all horizontal parallel bandings have been disturbed due to activities relating to homogenization of the sediment.

GR7464

Sample 1, tangential TS

982.1

Sub-angular-blocky peds moderately developed (sm-m and m sizes) with clear and irregular boundaries. Grey-orange colour, with cloudy limpidity and striated b-fabric, 10:90 coarse fine ratio in embedded and well sorted distribution. Some (*c.*15%) orange-red intrusive hypocoatings related to intrapedal cracks and little (*c.*2%) gray depletion hypocoatings. Few orange-red irregular and diffuse orthic nodules. Very little (*c.*1%) opaque very small circular nodules in moderate distribution related to edge of peds and weakly clustered basic distribution. Little (*c.*2%) tectosilicates.

Interpretations: Micro-unit 1 and 2 for TS 982 are comparable to micro-units 1 and 2 for TS 935 (*i.e.* the other skull orientation TS for GR 7464). Boundary is not a lower boundary but an edge of the peds boundary to micro-unit 2.

982.2

Brown-gray colour with speckled b-fabric of 40:60 coarse fine ratio in embedded and poorly related distribution. Very little (*c.*1%) orange-red impregnative hypocoatings related to mineral grains and little (*c.*2%) small anorthic yellow-orange nodules. Common (*c.*30%) tectosilicates at 1pellicular, with negligible microcline at 2complex near wood and 1p elsewhere. Little (*c.*2%) inosilicates of pale green to colourless pleochroism at 1 linear. Very little (*c.*1%) mica (biotite-chlorite meso-alteromorph) 2 pellicular and parallel linear, strongly related distributed to rock fragments. Some (*c.*10%) rock fragments of quartz, plagioclase, and micas (biotite at interior and chlorites at edges), and negligible pink rock fragments (pink granite). Little orange amorphous organic matter, very little opaque plant remains, few orange plant remains with moderately parallel orientation to surface, and little fungal remains strongly related distribution to orange plant remains.

Interpretations: Comparable to micro-unit 2 of TS 935. Wide variety of mineral grains, rock fragments and organics (including degraded coffin wood to AMO, coffin wood in linear form and preserved in orientation and distribution, very small pieces of charcoal, and fungal hyphae and spores. The mica is a biotite meso-alteromorph altering to chlorite through weathering at tops and bottoms (pellicular) and through expansion of interlayers (parallel linear) with chlorite occupying the interlayer spaces rather than voids. The chlorites which are present in the sediment (rather than in the rock) are very small to small and irregular forms with diffuse boundaries. The chlorites in the sediment are therefore unlikely to be unaltered grains from the rock fragments as they are at variance not only in size and colour but also in form, they are instead more likely to be the result of weathering of micas within the Micromass as these micas show chlorite alteration patterns.

982.3

A micro-unit largely composed of plant remains. Orange in colour and isotropic at 80:20 coarse to fine ratio with intergrain aggregate unsorted related distribution with a common abundance of voids (*c.*40%). Some (15%) orange/yellow hypocoatings related to small AMO and little (*c.*2%) small tectosilicates. Some (*c.*20%) orange circular AMO, a high abundance (*c.*50%) orange plant remains in strong related orientation to the surface, and some (*c.*10%) fungal remains in strong related distribution to AMO.

Interpretations: This is micro-unit composed of the coffin wood and its degraded edges which become orange AMO. Micro-unit 3 expands in height towards the RHS of the TS. Fungal remains include spores and hyphae but no sclerotia observed.

Sample 1, perpendicular TS

935.1

Yellowish-gray orange sediment with striated b-fabric and a 10:90 coarse fine ratio well sorted and embedded. Few (5%) intrusive hypocoatings related to intrapedal cracks, little (2%) depletion hypocoatings related to interperdal cracks and little (*c.*2%) tectosilicates. Sub-angular blocky moderately developed (sm to m-lr) microstructure.

Interpretations: Micro-unit 1 and micro-unit 2 are all mixed up throughout and across the whole of the TS. There is no strong reason why the micro-unit described above is labelled as micro-unit 1 rather than micro-unit 2, as neither have strong proof that they are stratigraphically above the other in any way, however it may be that micro-unit 1 was deposited first and then micro-unit 2 infilled later around the peds of micro-unit 1. Micro-unit 1 is the orange clay peds and micro-unit 2 is the gray clays with the greater abundance and variety of coarse materials.

935.2

Orange-gray sediment with speckled b-fabric and a 40:60 coarse fine ratio embedded and poorly sorted. Few red hypocoatings and little red nodules opaque nodules. Common (*c.*30%) tectosilicates, little inosilicates, very little (*c.*1%) mica (muscovite), few (*c.*5%) chlorite and little (*c.*2%) carbonate (calcite/dolomite) with some red staining along exterior reaches of intra-mineral fractures. Few amorphous orange organic matter in strong distribution to voids and woody

remains, few orange woody remains in good to poor preservation strongly distributed to up and skull, and few fungal remains strongly distributed related to woody remains.

Interpretations: Mica (muscovite) has strong related distribution negatively related to skull, although chlorites (very small, irregular and diffuse) do not share this distribution suggesting that mica (muscovite) is weathered increasingly in terms of extent with decreasing distance from skeletal remains, despite lack of change in distance from coffin wood. Whereas quartz and plagioclases are at 1pellicular weathering except for where in strong related distribution to woody remains and amorphous organic matter where they are at 2complex (speckled, pellicular and linear), suggesting that these may be more highly altered where they are in closer proximity to high concentrations of plant remains. Fungal remains are unusually (for this site) only at good level of preservation (whereas elsewhere they are at excellent preservation).

Sample 4, tangential TS

981.1

Brown-orange coloured micro-unit with 50:50 coarse fine ratio of embedded and unsorted related distribution and a sharp and smooth lower boundary. Some intrusive brown-gray hypocoatings related to bone, little orange-red impregnative hypocoatings related to mineral grains, few opaque (sm) diffuse nodules, and little excremental pedofeatures (sm-m to m). Few tectosilicates, including microcline with heavy (extent 2 weathered) red anisotropic staining, and little pale green pleochroic inosilicates at 1 linear & pellicular weathering. Very little (*c.*1%) mica (muscovite) very small at 1 pellicular and parallel linear weathering. Little (*c.*2%) chlorites with clear to diffuse boundaries and strongly related distributed to AMO. Negligible carbonate (calcite/dolomite) at 1linear weathering.

Some orange AMO strongly related distributed to voids, common (*c.*30%) orange plant remains, little opaque plant remains, some (*c.*15%) bone weakly oriented parallel to surface, and little fungal remains moderately distributed to AMO at boundary to plant remains.

Interpretations: A coffin wood layer with a fair amount of bone on top of the woody materials. The lower boundary is clarified by a large horizontal crack. Under the woody remains is a well oriented band of fungal hyphae and spores and heavily degraded coffin wood, suggesting that the fungal organisms are largely responsible for the physical degradation of the coffin wood.

981.2

Brown-orange sediment of cloudy limpidity and weakly striated b-fabric at 15:85 coarse fine ratio in embedded and poorly sorted related distribution. Little red-orange small intrusive hypocoatings related to intrapedal cracks, few gray depletion hypocoatings related to interpedal cracks , few orthic diffuse and irregular dark red nodules. Few tectosilcates at 1pellicular weathering.

Interpretations: Loosely grouped to below the very large crack void separating micro-unit1 from micro-unit2. A clear boundary separates the small weakly developed sub-angular-blocky peds, which constitute micro-unit 2, from micro-unit 3. Micro-unit 2 was deposited before micro-unit 3 as micro-unit 3 infills between the peds of micro-unit 2.

981.3

Grey-orange apedal sediment of limpid limpidity and cristallitic b-fabric with 35:65 coarse fine ratio of intergrain aggregate and unsorted related distribution. Few impregative hypocoatings related to mineral grains and very little very small diffuse opaque nodules. Some (*c.*20%) tectosilicates of 1 pellicular and speckled weathering, and little (*c.*2%) inosilicates with pales green to colourless pleochroism at 2 linear pellicular and speckled weathering with very small opaque speckles. Very little (*c.*1%) mica (biotite) strongly related distributed to plagioclase, very little (*c.*1%) chlorite of irregular form and clear boundaries, and very little (*c.*1%) carbonates (calcite/dolomite) at 1 linear weathering. Very little (*c.*1%) very small opaque plant remains.

Interpretations: This micro-unit is a coarse and quartz-rich infill material between the sub-angular-blocky peds of micro-unit 2. There is no vertical distribution between micro-units 2 and 3. The biotite has begun a slight physical weathering as expressed by the 1 extent parallel linear pattern weathering, however it has no optically discernible chemical alterations of weathering occurring as it still displays brown to yellow-brown pleochroism and high 1st order interference colours, this may be notable in conjunction with the lack of observed fungal remains and very little plant remains (of which are S-R charcoal micro-flecks).

<u>Sample 4, perpendicular TS</u>

876.1

Grey-brown sediment in very weakly developed sub-angular-blocky (medium) peds of speckled b-fabric at 70:30 coarse fine ratio with unsorted intergrain aggregate related distribution. Few intrusive gray hypocoatings related to bone canals and few orthic orange-red nodules with clear boundaries. Few tectosilicates at 1 pellicular weathering and negligible (<1%) inosilicates of pale blue to colourless pleochroism at 2 pellicular and linear weathering. Very little (*c.*1%) mica at 2

parallel linear weathering and very little (*c.*1%) chlorites with phyllosilicate form. Some (*c.*15%) orange AMO strongly related distribution to plant remains and voids, frequent (*c.*30%) orange plant remains, little (*c.*2%) fungal remains, and common (*c.*25%) bone of fair preservation strongly related orientation parallel to surface.

Interpretations: Micro-unit 1 as seen at hand specimen level (*i.e.* x1mag), in descending order, of a bone layer and then a wood layer, but even at x10 magnification peds can start to be seen, also it may be worth assessing to which processes the lack of granular peds and low abundance of chamber voids relates to as regards evidence of a lack of bioturbation and the preservation of wood fragments in large pieces with fair to good preservation. The chlorites are suggested to be authigenic by their phyllosilicate structural forms and the micas (muscovite) displaying 2 parallel linear weathering through the expansion of interlayer spaces towards the formation of a meso-alteromorph, therefore exhibiting the characteristics that would serve as a precursor before a greater extent of weathering (*i.e.* greater than extent 2) has been achieved resulting in an extent 4 alteromorph to chlorite, note that again (see other TS) this is occurring in concurrence with the presence of plant remains and fungal remains.

876.2

Grey-orange sediment with a weakly developed sub-angular-blocky microstructure (sm-m to m-lr size range) with a cristallitic b-fabirc and a 25:75 coarse to fine ratio of embedded and unsorted related distribution. Some (*c.*10%) depletion hypocoatings related to interpedal cracks, little (*c.*2%) orange-red impregnative hypocoatings related to intrapedal cracks, and little (*c.*2%) nodules. Some (*c.*15%) tectosilicates, including microcline, at 1pellicular weathering. Negligible (<1%) inosilicates pale blue to colourless pelochroic at 1 linear weathering and little (*c.*2%) chlorites irregular form and clear boundaries.

Interpretations: Compared to the other foot TS (981) this is a mix of micro-unit 2 and micro-unit 3 of TS981 here as one micro-unit (micro-unit 2 in TS876). This may be due to an advanced or increased level of mixing in this TS compared to TS 981.

<u>Sample A1</u>

984.1

Orange isotropic organic rich uppermost micro-unit, with a cloudy limpidity and weakly speckled b-fabric and 35:65 coarse fine ratio of embedded and unsorted related distribution and granular microstructure (small) moderatly developed. Voids are mostly channels which are moderately oriented parallel to the surface and have a weak parallel basic distribution. Little quartz and

simple and multiple twinned plagioclases at 1 pellicular weathering, and very little (*c.*1%) microcline at 1 pellicular weathering. Common orange AMO circular to irregular forms and clear boundaries, and some (*c.*15%) orange plant remains fair to poor preservation with moderate orientation parallel to surface.

Interpretations: Boundary of diffuse and wavy is the lower boundary as micro-unit 1 is mostly the coffin wood, degraded but still largely preserved in orientation. These plant remains do not show marked preservation discrepancies between coffin adjacent (RHS of the TS) and the skeleton adjacent (femur towards LHS of the TS) areas, but instead between expanded areas filled with voids and the lower boundary compared to the more compacted and less disturbed wood remains towards the top of the TS.

984.2

Yellow-brown medium sub-angular-blocky moderately developed peds with cloudy limpidity weakly striated b-fabric and 20:80 coarse to fine ratio of embedded and poorly sorted materials. Few red-orange impregnative hypocoatings related to intrapedal cracks, little (*c.*2%) opaque diffuse nodules, few opaque clear nodules, and very little (*c.*1%) excremental large elliptical orange pedofeatures strongly related distribution to chambers. Little tectosilicates at 1 pellicular with little staining in speckles (Fe and Mg rich), little inosilicates at extent 1, little (*c.*2%) pink granite, and negligible (*c.*<1%) carbonates at 2pellicular and speckled with some red stains on surfaces. Very little (*c.*1%) mica (muscovite) at 1pellicular strongly related distribution to tectosilicates. Little (*c.*2%) brown mica (biotite) at 2 parallel linear to a meso-alteromorph. Negligible (*c.*<1%) chlorites circular form with diffuse boundaries strongly related distribution to plant and fungal remains and to cracks. Few orange AMO, few orange plant remains, and some (*c.*10%) fungal remains.

Interpretations: This micro-unit is in the vertical plane above micro-unit 1. Seems to have been affected by bioturbation and biotic agents of the soil. The minerals (except the chlorites which are authigenic) are moderately well distributed in interrupted and poorly delineated bands. These were probably coarse and quartz-rich bands which interlayered with the yellow-brown clays before they were disturbed and the two sediments were mixed to create the micro-unit described here. The chlorites (very small circular, diffuse, and anomalous blue interference colours) again here (compared to other TS) have strong related distribution to fungal remains, degraded coffin wood, and voids, suggesting an authigenic formation as a secondary mineral related to this particular sedimentary environment.

984.3

Gray-orange sediment in a sub-angular-blocky well developed (medium) micro-structure with cloudy limpidity and striated b-fabric and a 5:95 coarse fine ratio of embedded and well sorted materials. Voids are mostly (vvsm) intrapedal cracks with a strong orientation parallel to the surface. Few impregnative diffuse orange-red hypocoatings related to cracks, little (*c.*2%) opaque diffuse impregnative hypocoatings related to cracks and little (*c.*2%) diffuse orthic nodules. Little (*c.*2%) tectocsilicates at 1 pellicular weathering. A clear and irregular boundary to micro-unit 4 which is mixed with this micro-unit.

Interpretations: Micro-unit 3 appears similar to what micro-unit 2 may have appeared before micro-unit 2 was affected by bioturbation and a greater variety and abundance of coarse materials got mixed into micro-unit 2, there are also less voids in micro-unit 3 than in 2.

984.4

Gray-brown apedal sediment with a speckled b-fabric and 45:55 coarse fine ratio in unsorted and intergrain aggregate distribution. A few vughs make up the majority of the voids, and there are little (*c.*2%) nodules. Some (*c.*10%) quartz and simple and multiple twinned plagioclases at 1 pellicular and speckled weathering. Few microcline at 1 pellicular and speckled weathering. Little inosilicates, including pale green to colourless pleochoric inosilicate at 1 linear. Very little (*c.*1%) pink granite and common (*c.*20%) rock fragments (composed of tectosilicates and biotite) at 2 complex (pellicular, speckled and irregular linear) with chloritization towards the edges and FeOH deposits in the irreglar linear intramineral cracks. Few (*c.*5%) mica (biotite/phlogopite) at 2 parallel linear and pellicular weathering to kata-alteromorphs through interlayer spaces expansion to voids and minor alterations at tops and bottoms with darkening to opaque edges.

Interpretations: This is a quartz-rich coarse material infill material, which infilled around micro-unit 3 after micro-unit 3 was deposited. The fine material is intergrain aggregates between the coarser mineral grains. Micro-unit 3 and micro-unit 4 appear mixed but both stratigraphically below micro-unit 1 which is in turn below micro-unit 2. The mica in micro-unit 4 (biotite/phlogopite) has not been altered to by chloritization but insteads seems to be progressing down the weathering alteration pattern of meso-alteromorph to kata-alteromorph by pellicular opacity and interlayer expansion as would be expected by predicted weathering patterns towards vermiculitization pathways, at which point it is worth highlighting the lack of plant remains and/or fungal remains in this micro-unit or its neighbouring micro-unit 3.

GR 5914

Sample C3

861.1

Orange-gray sediment with a well stratified micro-laminations, with speckled limpidity and weakly striated b-fabric of 5:95 coarse to fine ratio in embedded and well sorted related distribution. The majority of the voids are cracks (vvsm and medium sizes). Few impregnative orange-red hypocoatings strongly related orientation to cracks perpendicular to the surface. Little (*c.*2%) impregnative dark red/opaque diffuse hypocoatings related to cracks. Little (*c.*2%) tectosilicates at 1 pellicular weathering.

Interpretations: The microlaminations have strong horizontal orientations, except where present at the LHS of the TS it has been turned 90 degrees from the position of formation post-ped formation but pre-intraped hypocoating formation. A diffuse and smooth boundary perpendicular to the surface separates micro-unit 1 from 2.

861.2

Yellow-gray sediment with a cloudy limpidity, a cristallitic b-fabric and a 10:90 coarse to fine ratio in embedded and well sorted related distribution in weakly developed small sub-angular-blocky peds. Few intrusive dark red hypocoatings related to cracks, channels and chambers. Few orange-red impregnative hypocoatings related to intrapedal cracks. Little (*c.*2%) nodules. Few very small tectosilicates and very little (*c.*1%) root transverse section strongly related distribution to chambers.

Interpretations: A clay and silt rich sediment which has developed peds and has not undergone severe homogenization or redox conditions since this formation, despite the presence of root activity.

Sample 1, perpendicular TS

867.1

Brown-grey apedal sediment with speckled limpidity and cristallitic b-fabric and a 50:50 coarse to fine ratio of embedded and poorly sorted related distribution. Majority of voids are cracks with a strong related orientation perpendicular to the surface. Little (*c.*2%) intrusive opaque hypocoatings related to channels and negligible (*c.*<1%) brown-orange anisotropic hypocoatings related to charcoal fragments. Some (*c.*10%) orthic orange-red nodules with clear boundaries.

Little (*c.*2%) orange-red orthic laminated nodules concentric circular and with diffuse boundaries. Little orange AMO, few opaque (vsm) linear plant remains, few dark red linear plant remains, little orange irregular plant remains, and few fungal remains. Few tectosilicates at 1pellicular weathering, very little (*c.*1%) inosilicates at 2 linear weathering, little (*c.*2%) mica (muscovite) at 1 pellicular, very little (*c.*1%) brown mica (biotite) at 2 parallel linear weathering, negligible chlorites, very little carbonates at 2 pellicular and speckled, and very little rock fragments at 2 complex weathering. Little orange AMO, few opaque AMO, little linear opaque plant remains, very little linear orange plant remains, little fungal sclerotia, and few fungal remains.

Interpretations: This micro-unit occupies all of the area of the TS and has a great variety of mineral and organic materials as well as redox pedofeatures, almost all of which are without discernible orientations or distributions. The linear opaque plant remains are fragments of charcoal and the very very small AMO opaque plant remains micro-flecks of charcoal. The orange linear plant remains and very small orange AMO is degraded coffin wood. The fungal remains include sclerotia which are poorly preseved and fragmented, as well as a greater abundance (*i.e.* *c.*5% compared to *c.*2%) of hyphae and very small spores which have fair to good preservation.

Sample 2, tangential TS

996.1

Grayish-brown sediment in weakly developed small sub-angular-blocky peds with cloudy limpidity, speckled b-fabric and a 30:70 coarse to fine ratio of embedded and unsorted related distribution. Most of the voids are vughs (*c.*5%). Little (*c.*2%) anorthic orange anisotropic nodules, very little (*c.*1%) orthic orange-red laminated nodules, and negligible orthic red laminated nodules with a moderate distribution related to up. Little (*c.*2%) excremental pedofeatures with a strong linear basic distribution and moderate distribution related to the surface. Few tectosilicates at 1 pellicular weathering, negligible inosilicates and rock fragments, and negligible chlorites with strong distribution related to nodules and charcoal fragments. Some (*c.*10%) opaque plant remains of fair to poor preservation and very little bone anisotropic with fair preservation.

Interpretations: This micro-unit covers the top ¾ of the thin section area and is a brown apedal sediment with charcoal distributed throughout the micro-unit. The lack of pedality along with the random orientations and distributions of charcoal remains could indicate that this micro-unit has not been sorted by natural depositional processes or strongly affected by pedogeneis. There is a diffuse and wavy lower boundary to micro-unit 2, suggesting that these two micro-units have undergone some mixing since their deposition.

996.2

Yellow-gray sediment in weakly developed small sub-angular-blocky microstructure, with speckled limpidity, speckled b-fabric, and a 2:98 coarse to fine ratio of embedded and perfectly sorted related distribution. Few (vsm) voids, very little tectosilicates, and very little opaque plant remains. Few pale yellow impregnative hypocoatings related to voids, little (*c.*2%) orange-red orthic nodules, very little (*c.*1%) anorthic pale yellow nodules, and very little (*c.*1%) excremental pedofeatures.

Interpretations: This is a very small micro-unit, as it occupies only the bottom quarter of this thin section and TS996 is a small thin section, it therefore may not be an accurate representation of this micro-unit, and should be compared to 997.2.

Sample 2, perpendicular TS

997.1

A dark grayish-brown sediment with weakly speckled b-fabric, and a 25:75 coarse to fine ratio of embedded and unsorted related distribution. Most of the voids are chambers (*c.*5%). Very little (*c.*1%) gray-brown hypocoatings related to plant and bone fragments with a strong distribution related to voids. Few (*c.*5%) anorthic orange anisotropic nodules, very little (*c.*1%) anorthic red anisotropic nodules, and very little (*c.*1%) excremental pedofeatures. Few (*c.*5%) quartz and multiple twinned plagioclases, few (*c.*5%) microcline, very little (*c.*1%) OPX, and very little (*c.*1%) pleochroic inosilicates, all at extent 1 weathering. Very little (*c.*1%) amorphous chlorite with strong related distribution to fungal remains. Very little (*c.*1%) AMO, some (*c.*10%) dark red plant remains, little (*c.*2%) fungal remains, and negligible bone with a strong related distribution to voids.

Interpretations: This apedal plant-rich sediment with a clear but very irregular lower boundary, has characteristics typical of a dumped deposit, rich in charred material of various sizes and at random orientations. The bone present is coated in a hypocoating similar to the micro-unit fabric and is located in a vertically oriented void, indicating it has been transported downwards into this micro-unit from a deposit stratigraphically above it. This micro-unit shows similarities with 996.1, indicating it may have little alteration with increasing distance from the skeletal remains of the pelvic and sacral area. The fungal remains are limited to randomly distributed single spores with smooth circular exteriors.

997.2

Pale yellow-gray sediment with speckled limpidity, speckled b-fabric, and a 5:95 coarse to fine ratio of embedded and well sorted related distribution. Few (*c.*5%)cracks, few vesicles, little (*c.*2%) vughs, and very little (*c.*1%) channels, almost all of very small size range. Very little (*c.*1%) pale yellow intrusive hypocoatings related to cracks, little (*c.*2%) orthic orange-red nodules, and little pale yellow isotropic nodules with a moderate related distribution negative to up. Little (*c.*2%) dark red and opaque plant remains and negligible (<1%) fungal remains.

Interpretations: This apedal micro-unit is much richer in clays and silts than the upper micro-unit (997.1). It is also much devoid of mineral grains and organic remains compared to the upper micro-unit. It shows strong similarities with 996.2 suggesting that it remains relatively constant in its micromorphological characteristics with increasing distance from the pelvic/sacral area. However, there are two anomalous moderately well-developed sub-angular-blocky peds at the edge of the thin section opposite the sacral area of the skeleton, which could be used to interpret that the micro-unit does indeed alter to an increasing pedality, but that this largely happens beyond the reach of this thin section, which is worthy of note as this was one of the few times from these samples that a small sized Kubiena tin was used to sample the sediments adjacent to the sacral or pelvic areas.

<u>Sample A2</u>

919.1

Gray-brown apedal sediment of cloudy limpidity and weakly speckled b-fabric and a 40:60 coarse to fine ratio of embedded and unsorted distribution. Most of the voids are vughs (vsm and sm). There are little (*c.*2%) anorthic nodules, and little (*c.*2%) excremental pedofeatures orane and elliptical with poor presrvation and moderately parallel orientation to the surface. Few tectosilicates at 1 pellicular weathering, little inosilicates at 2 linear and pellicular weathering, negligible nesosilicates at 2 pellicular and speckled weathering, little mica (muscovite) at 2 pellicular and parallel linear weathering to meso-alteromorphs, little rock fragments (composed of tectosilicates and carbonates) at 2 pellicular and speckled weathering, little rock fragments (composed of tectosilicates and micas) at 2 complex holo- and poro-alteromorphs, negligible pale brown cryptocrystalline 1pellicular, and negligible carbonates at 2 pellicular and speckled. Few opaque (vsm) linear AMO, few linear opaque plant remains, some (*c.*10%) orange linear plant remains, and little (*c.*2%) fragmented fungal sclerotia.

Interpretations: This dark micro-unit (micro-unit 1 occupying 2/3 of the TS from the top of the thin section), is plant and amorphous organic rich with coarse mineral grains, all of which are well oriented horizontally, suggesting a finely laid deposit which has been little disturbed by

bioturbation or pedogenetic disruptive processes. Chloritization of micas, and redox afffecting carbonate litho-relics, were observed. Also, is the brown isotropic tectosilicate a fragment of brown glass or an anomalous tephra grain (one of these has mica inclusions and heavy manganese oxide speckling, the other has vesicularity reminiscent of melted silica but it is not a globule due to irregular form)? The diffuse and wavy lower boundary appears sharp and smooth at x1mag because of the large horizontal crack at the base of the micro-unit, but the micro-unit at x50mag does not end at the crack but continues downwards for about another mm. In terms of the wide variety of materials, and the unusual (for this site) rock fragments (which are particular to this grave) it is similar to the skull (TS 867). This micro-unit has fragmented and poorly preserved sclerotia only as remains of fungal presence (*i.e.* no spores or hyphae observed), which may suggest no fungal reproduction or growth has occurred in this micro-unit.

919.2

Gray-orange sediment of weakly developed sub-angular-blocky (medium) microstructure with cloudy limpidity, weakly striated b-fabric, and 5:95 coarse to fine ratio in well sorted embedded related distribution. Few orange-red impregnative hypocoating related to intrapedal cracks, little (*c.*2%) opaque impregnative hypocoatings related to cracks, and very little (*c.*1%) orthic dark red diffuse and fragmented nodules. Few tectosilicates of 1 pellicular weathering.

Interpretations: Apart from the diffuse boundary (upper) area, this micro-unit appears largely disonnected and unaffected by the processes occuring in the upper micro-unit (micro-unit 1) (*i.e.* the finely horizontally oriented organic materials and the wide variety of mineral types). The cracks fragmenting the orthic dark red nodules have been filled only with empty resin suggesting that some of the cracks visible are products of manufacture of the TS (from being held in the vice before the block is cut open).

Sample 3, tangential TS

936.1

Grayish-orange brown sediment with moderately developed sub-angular-blocky microstructure (med to vlr) with strongly striated b-fabric and 5:95 coarse to fine ratio of perfectly sorted and embedded related distribution. Some (*c.*10%) gray depletion hypocoatings related to interpedal cracks and channels. Few (*c.*5%) impregnative orange-red hypocoatings related to cracks, channels and chambers, very little opaque small hypocoatings related to intrapedal cracks, and opaque medium hypocoatings related to vesicles. Little (*c.*2%) orthic irregular diffuse dark red nodules. Little tectosilicates of 1 pellicular weathering.

Interpretations: this micro-unit constitutes the entirety of the TS and is listed as 3t although no left foot bones were found in the grave. Perfectly sorted fine material in moderately developed peds with redox pedofeatures including depletion hypocoatings.

Sample 3, perpendicular TS (sample from between left and right feet)

907.1

Grayish orange sediment with weakly developed sub-angular-blocky microstructure. Some (*c.*10%) yellow anisotropic intrusive hypocoatings related to cracks. Few orange-red impregnative hypocoatings related to cracks, channels and chambers, little (*c.*2%) opaque impregnative hypocoatings related to cracks and channels, and very little (*c.*1%) small opaque diffuse nodules. Little (*c.*2%) tectosilicates at 1 pellicular weathering.

Interpretations: Very similar to left foot adjacent thin section (TS 936), although peds slightly decrease in size with decreasing distance towards right foot. Both show similar microstructure to the C3 for this GR but with greater evidence of waterlogging and prolonged waterlogging, by their manganese oxide coated vesicles and depletion hypocoatings and lack of ice related pedofeatures. Also, in this TS intrusive yellow anisotropic hypocoatings have a related distribution negative to up and positive to the right foot.

GR 7519

Sample 1, tangential TS

888.1

Gray-orange sediment with moderately developed sub-angular blocky microstructure with speckled limpidity, striated b-fabric, and a 5:95 coarse to fine ratio with embedded and well sorted related distribution. Some (*c.*10%) (vvsm) intrapedal cracks with strong parallel basic orientation dominate the voids. Few orange-red impregnative hypocoatings related to intrapedal cracks, and little (*c.*2%) gray depletion hypocoatings related to interpedal cracks. Little tectosilicates at 1 pellicular weathering.

Interpretations: Micro-unit 1 is mixed with micro-unit 2 across the height and width of the thin section, with a diffuse and irregular boundary separating the peds of micro-unit 1 from the later deposited more coarse-rich infill material of micro-unit 2.

888.2

Pale grey-yellow sediment with a very poorly developed sub-angular-blocky microstructure with speckled limpidity, cristallitic b-fabric and a 15:85 coarse to fine ratio of embedded and well sorted related distribution. Little orange-red impregnative hypocoatings related to voids, little opaque impregnative hypocoatings related to voids, and few orthic dark red diffuse (sm to lr) nodules. Few tectosilicates, including negligible microcline at 2p and irregular linear, at 1pellicular. Very little (*c.*1%) brown mica (biotite) at 2 parallel linear with red anisotropic staining at tops and bottoms. Very little chlorites irregular form and weakly distributed related to voids. Very little orange-yellow high birefringence value elliptical strongly related to chambers.

Interpretations: Micro-unit 2 distinguished from micro-unit 1 at x1mag by micro-unit 2's higher abundancy of nodules and impregnative pedofeatures and lack of micro-laminations. Also, micro-unit 2 is most clearly distinguished from micro-unit 1 in TS at higher magnifications by XPL view due to differences in b-fabric types and tectosilicate abundance. Plant remains are roots in voids which still possess their lignin components. Micas (biotite) are poro-kata-alteromorphs due to interlayer spaces expanded and filled only by voids, regarding the sealing at tops and bottoms by iron oxides this is comparable to that occurring in 984.4 (A1 mid femur GR7464).

Sample 1, perpendicular TS

873.1

Gray-brownish yellow sediment with moderately developed sub-angular-blocky microstructure (med to med-lr) with speckled limpidity, striated b-fabric, and 2:98 coarse to fine ratio with single population perfectly sorted related distribution. Voids are dominated by crack type with little (*c.*2%) vesicles. Few orange-red impregnative hypocoatings related to cracks and vesicles and little (*c.*2%) dark red impregnative hypocoatings related to cracks. Little tectosilicates at 1 pellicular weathering.

Interpretations: micro-unit 1 is comparable to micro-unit 1 of TS 888 (skull tangential TS for this GR), but here (TS873) with slightly less coarse materials. Boundary is clear and irregular to micro-unit 2, which is not a lower boundary but one spread throughout the TS , as micro-units 1 and 2 are mixed, with micro-unit 1 deposited first and then the coarser micro-unit 2 with less well developed peds infilling later.

873.2

Yellow-gray sediment of very weakly developed sub-angular-blocky microstructure (small) with speckled limpidity, cristallitic b-fabric, and 20:80 coarse to fine ratio of embedded and poorly sorted related distribution. Voids types even spread across channel, chamber and vugh types

with little cracks. Little intrusive yellow anisotropic hypocoatings related to voids, few orthic orange-red diffuse laminated nodules, and very little (*c.*1%) nucleic anorthic yellow anisotropic laminated concentric large clear and heavily fragmented nodules. Few tectosilicates includes very little microcline, at 1 pellicular weathering. Very little (*c.*1%) fungal remains strongly related to voids.

Interpretations: Comparable to micro-unit 2 of TS 888 (skull tangential TS of this GR). Very little fungal remains (spores) strongly related to void with yellow anisotropic laminated hypocoating which (by SEM-EDX) has elevated K levels to the surrounding sediment.

Sample 13, tangential TS

908.1

Yellow-orange sediment with moderately developed sub-angular-blocky microstructure (sm-m to m) with striated b-fabric and 5:95 coarse to fine ratio of embedded and well sorted related distribution. Few cracks, and very little vughs. Very little gray depletion hypocoatings and few impregnative hypocoatings related to intrapedal cracks. Little tectosilicates at 1 pellicular weathering.

Interpretations: Femoral head adjacent TS, see LHS of TS 938 for continuation of micro-unit with increasing distance from femur towards ribs, radius and ulna. Located mixed throughout TS with micro-unit 2 but only occupies 1/5 of the area of the TS. Micro-unit 1 moderately mixed with micro-unit 2 (*i.e.* more so here than at the stkull end see TS 873 and 888). Diffuse and irregular boundary is not the lower boundary but that between micro-units 1 and 2, which are spread throughout the TS.

908.2

Gray-yellow apedal sediment with cristallitic b-fabric and 15:85 coarse to fine ratio of embedded and poorly sorted related distribution. Few vughs and cracks with little vesicles, and very little channels and chambers. Few intrusive yellow anisotropic hypocoatings related to voids, little brownish-orange impregnative hypocoatings related to cracks, and very little gray depletion hypocoatings related to interpredal cracks. Few orthic orange-red nodules and little opaque small nodules. Few tectosilicates at 1 pellicular weathering with weakly linear basic distribution. Few dark brownish-orange AMO with strong clustered basic distribution and related to up. Little (vsm) linear opaque AMO with strong linear basic distribution. Little bone (m-lr to lr) with fair preservation and strong parallel orientation to up and strong related distribution to up, and little

bone (vsm to sm) with fair to poor preservation and random orientation and distribution related to up.

Interpretations: Bone at the top of the TS is large sized angular fragments with fair preservation and that in the middle of the TS is small S-R and poor preservation, in a strongly clustered basic distribution, suggesting that the latter has been reworked including transportation by soil faunal agents.

Sample 13p (transect between the femoral head and the radius and ulna)

938.1

Grayish-orangey brown sediment with well-developed sub-angular-blocky microstructure (m-lr to lr) with striated b-fabric and 5:95 coarse to fine ratio of embedded and well sorted related distribution. Some (10%) cracks, little (*c.*2%) vesicles and very little vughs. Few gray depletion hypocoatings related to interpedal cracks and few orange-red impregnative hypocoatings related to interpredal cracks. Little tectosilicates at 1pellicular and irregular linear weathering. Very little (*c.*1%) chlorites (v sm) with anomalous blue interference colours semi-angular (S-A) with phyllosilicate forms.

Interpretations: Micro-unit 1 boundary is not a lower boundary but a boundary to micro-unit 2 at the edge of micro-unit 1's peds. Micro-unit 1 is comparable to micro-unit 1 of 908.1 (micro-unit 1 of the TS adjacent to femoral head). Voids and depletion hypocoatings suggest prolonged waterlogging and reduced conditions.

938.2

Pale brown-gray apedal sediment with very weakly speckled limpidity, cristallitic b-fabric, and 25:75 coarse to fine ratio of embedded and poorly sorted related distribution. The majority of the voids are chambers and channels. Few gray-brown intrusive hypocoatings related to cracks. Little yellow/pink hypocoatings related to cracks, little red laminated diffuse impregnative hypocoatings, few nodules diffuse nodules, and negligible (*c.*<1%) yellow anisotropic biaxial concentrically laminated nodules. Few tectosilicates at 1 pellicular, negligible (*c.*<1%) pale bluish-green pleochroic inosilicate at 1 linear, and negligible chlorite amorphous and sharp. Little orange AMO with strong related distribution and perpendicular orientation to up direction, very little opaque linear AMO, few orange linear plant remains, little opaque linear plant remains, very little (*c.*1%) fungal remains.

Interpretations: Coffin wood with fungal remains at the top of the TS, which slopes downwards towards femoral end of the TS. The opaque plant remains are S-A to angular (A) charcoal fragments and the opaque AMO is micro-flecks of charcoal which have a strong related distribution to the linear larger (S-A to A) charcoal fragments. The orange woody remains of the coffin wood are largely undisturbed as they retain their orientation and distribution at the top of the TS parallel to the surface, and are surrounded on their lower boundaries and internal voids by heavily degraded coffin wood which has become orange isotropic AMO. Micro-unit 2 appears to be a later infill deposit around the earlier deposited micro-unit 1, but note that micro-unit 1 peds are at odd angles according their micro-laminations and birefringence striations.

Sample 4, perpendicular TS

983.1 (see TS 985 for ultra thin-section)

Gray-yellow sediment with poorly developed sub-angular-blocky microstructure (sm-m to m) with striated b-fabric and 5:95 coarse to fine ratio of embedded and well sorted related distribution. Voids are dominated by cracks (*c.*10%). Little orange-red impregnative hypocoatings related to intrapedal cracks, very little (*c.*1%) yellow anisotropic hypocoatings related to vesicles, and little (*c.*2%) very small diffuse orthic nodules related to up/foot direction.

Interpretations: Diffuse and irregular boundary between micro-unit 1 and micro-unit 2, which are mixed across the thin section. Peds may have been well developed before they were dumped here and then started to reform their micro-structure in their current sedimentological environment.

983.2

Pale yellowish-brown gray apedal sediment of limpid limpidity, cristallitic b-fabric, and 25:75 coarse to fine related distribution of embedded and poorly related distribution. Few (*c.*5%)vughs, little (*c.*2%) cracks, little vesicles, little chambers, and negligible (*c.*<1%) channels. Little pale yellow-brown intrusive hypocoatings related to vughs and cracks and very little (*c.*1%) anorthic orange laminated concentric intrusive hypocoatings related to vesicles. Very little orange-red nodules and little opaque nodules weakly distribution related to voids. Some (*c.*10%) tectosilicates at 1 pellicular and irregular linear weathering. Few rock fragments (tectosilicates, chlorites and carbonates) at 2 pellicular and irregular linear weathering moderately oriented parallel to surface/foot. Little (*c.*2%) chlorite very small weakly distributed related to voids. Very little opaque AMO, little orange AMO weakly distributed related to up/foot, and few orange linear plant remains of fair preservation.

Interpretations: Diffuse and wavy boundary between micro-unit 2 and micro-unit 3 is a lower boundary of micro-unit 2 parallel to the surface/foot. This apedal sediment infills between the peds which are micro-unit 1. The tectosilicates, which constitute the majority of the mineral grain abundance, have a weakly linear basic distribution and parallel orientation to the surface/foot, which together with the orientation of the larger rock fragments suggest that this was once a laminated deposit of fine material separated by thin (<1mm) quartz-rich coarse bands of material, however this has now been disturbed through mixing to the point where these bands are no longer visible.

983.3

Grayish-brownish orange sediment with moderately developed lenticular microstructure (m to m-lr) with striated b-fabric and 20:80 coarse to fine ratio of embedded and poorly sorted related distribution. The void types are dominated by cracks (*c.*15%) of which the (vvsm) intrapedal have a strong parallel basic orientation and the larger cracks have a strong orientation parallel to the surface/foot. Few pale brown intrusive hypocoatings related to interpedal cracks. Few gray depletion hypocoatings (neoskeletons *sensu* Brewer) related to very large interpedal cracks. Some (*c.*10%) orange-red impregnative hypocoatings related to intrapedal cracks, little opaque impregnative hypocoatings related to intrapedal cracks, and very little orange-red impregnative hypocoatings related to mineral grains. Little orange-red orthic nodules weakly distributed related to up/ foot, and very little opaque intrapedal orthic nodules. Some (*c.*10%) tectosilicates at 1 pellicular and irregular linear weathering. Few chlorites amorphous and sharp moderately distributed related to voids and quartz.
Interpretations: Only recorded observation of this type of microstructure (lenticular peds) from this grave. Dominant processes are the formation of ice lenses which formed the microstructure and waterlogging and drying which formed the redox pedofeatures including the depletion hypocoatings.

VIC. Experiment: quantification of chlorites by image analysis

Aim: To assess the abundance of blue-green secondary mineral (after primary micas) found in the thin sections (hereafter referred to as chlorite).

Material: Thin section 980 (GR 7555) was used as the pilot study thin section for this experiment.

Research Outline: The abundance will be assessed on each thin section, one at a time. This will be done using mosaic images, which are high resolution images of an entire thin section created by stitching of many smaller field of view images (hereafter referred to as tiles). Image analysis software (Zeiss) in conjunction with an *x/y* stage microscope (AxioScope A1) was used to measure the amount of the area of the thin section which is chlorite (blue-green in PPL and isotropic or anomalous blue interference colours in XPL).

- Image Analysis -Background on the Method of Analysis: The image analysis software works by first choosing a colour (defined as a proportion of red, green and blues to make a colour) within an image (.zvi file, captured on the AxioScope A1 microscope using the AxioCamMrC5 camera). Then the user can set the boundaries for this colour (*e.g.* the tolerance, *etc.*). Then the user begins the application of these now determined settings by pressing "start" and the image analysis software applies this task to the chosen image. A set of values are then presented in a text based file which is easily copied and pasted into Microsoft Excel.

Results of trials and Interpretations:

- Initial problems with the pilot methodology:

1.) The chlorites which are attempted at being measured are visible in the thin section in a range of colours in PPL (plane polarised light) (*e.g.* light blue, medium blue, dark blue, green-blue, *etc.*)

2.) The chlorite were visible in the thin section in a range of colours in XPL (cross polarised light) (*i.e.* black or anomalous blue interference colours).

3.) Chlorite was not the only material visible as blue or green-blue in the thin section in PPL (there are some blue to green (pleochroic) inosilicate minerals also present).

4.) Chlorite was not the only material visible as isotropic in the thin section in XPL (*e.g.* most of the organic materials, voids, minerals at extinction, *etc.*)

5.) Not all chlorites visible in the thin section displayed anomalous blue interference colours in XPL (intial problems point #2).

6.) The cracks within the thin section did not appear as isotropic in PPL but instead were a dark green colour (visible on the image when zoomed-in).

7.) The chlorites and iron oxides/ hydroxides/ oxyhydroxides were distinguishable from the rest of the thin section materials in RL (reflected light), but not from each other in RL.

- Possible solutions to the initial problems identified:
- I) Keep colour tolerance limits at the lowest possible setting to ensure that only the exact

colours chosen by the user (when setting of the colour limits) are selected. When setting of the colour limits the user should zoom into the image to enable selection of individual pixels.

- II) If point (I) is followed, the software will select and measures the chlorite and the cracks during selection of the colour limit boundaries on a PPL mosaic image. When the chlorites are identified by the user in an XPL mosaic image, the software selects and measures the chlorite and the quartz and plagioclase (hereafter referenced as the tectosilicates). When chlorites are identified by the user in a RL mosaic image the software selects and measures the chlorite and the iron oxides (term is used here without discrimination between iron oxides, hydroxides and oxyhydroxides).

III) If the above (item II) is true, then a formula can be created to isolate the chlorites using all three image types (PPL, XPL, and RL). Because they all have a common factor (*i.e.* chlorite) while not having any overlapping other factors (*i.e.* cracks, tectosilicates, iron oxides/oxyhydroxides).

IV) Variables:

Where r = RL

Where p = PPL

Where x = XPL

Where a = measurement of chlorite and iron oxides, but not cracks or tectosilicates (gathered through use of an RL mosaic image)

Where b = measurement of chlorite and tectosilicates, but not cracks or iron oxides (gathered through use of an XPL mosaic image)

Where c = measurement of chlorite and cracks, but not tectosilicates or iron oxides (gathered through use of a PPL mosaic image)

Where z = measurement of chlorite in the thin section

V) Proposed formula:

$p – (r+x) = y$

$(r+x) – y = z$

Thus:

$(h+r) – [(h+f) + (h+q)] = (f + q)$

$[(h+f) + (h+q)] – (f +q) = h$

Where h = chlorite, r= cracks, f = iron oxides, and q = tectosilicates

Outcome of application of proposed solution to initial problems identified: (Appendix I, “980 p Field Table.csv”). The application of the proposed formula in section V) above resulted in a negative value, therefore the chlorite was not counted successfully.

Conclusion: status of experiment: NEGATIVE RESULT

Suggested reasoning of status of experiment: The variables identified above relating to the types of materials identified in each light setting of the mosaic images do not represent the types of

materials identified in each light setting of the mosaic images as identified by the image analysis software due to the range in colour and interference colours of the chlorite.
Possible future explorations: Option I) Investigate into whether thickness of the thin section affects the chlorites in a way that makes alters their optical characteristics so that they are more readily identified and quantified by image analysis (Section 6.5.2.4). Option II) Create a software package on AxioVision that is tailored to the identification of chlorite group minerals in thin section.

VID. Experiment: chlorite visibility related to thin section thickness

Aim: To assess the extent to which variation in thin section thickness is a factor in chlorite visibility. Chlorite visibility is used here to refers to the ability to observe chlorite by optical microscopy, measured as estimated abundance values of chlorite in thin section descriptions.

Materials: Micromorphology sample block name RAA 16 (GR 5926, S 4Y) was used to produce TS 920 (Sample 4Y, GR 5926, S 4Y) and TS 978 (GR 5926, S 4Y).

Rationale and Method: A thin section was made from block name RAA 16 from site code RAA 51 (Sala Vastmaal). A second thin section was also made from the same orientation on the same micromorphology block. The plane of the cut of the two thin sections were parallel and between 0.1-0.2 cm distant (Appendix I for methodology created for the measurement of the distance between these two thin sections). The duplicate thin section was not a true 'thin section,' which has a defined thickness limit of 30 µm (Courty *et al.*, 1989), but instead , was an 'ultra-thin section' with a defined limit of 10 µm thickness (2-12 µm in Lindholm and Dean, 1973; 10 µm in Humphries, 1992). TS 978 is 30 µm thick and TS 920 is 10 µm thick. Thicknesses of thin sections were measured with a micrometer, assuming a zero bond of the mounting medium.

Hypothesis: The two thin sections will give the same estimated abundance of chlorite using a polarizing microscope: the variations in a 20 µm thick section has no noticeable effect on estimated abundance of chlorites observed in thin sections.

Results: Mosaic images in Appendix VIII attached for TS 920 (10 µm thick) and TS 978 (30 µm thick) under all four illumination conditions (plane polarized light/PPL, Figure A6, cross polarized light/ XPL, reflected light with dark field cube / RLdf, and ultraviolet flight with fluorescence cube/ UVFS; Appendix VIII) and chlorite grains were identified (Figure A7).

- Thin section mosaic images:

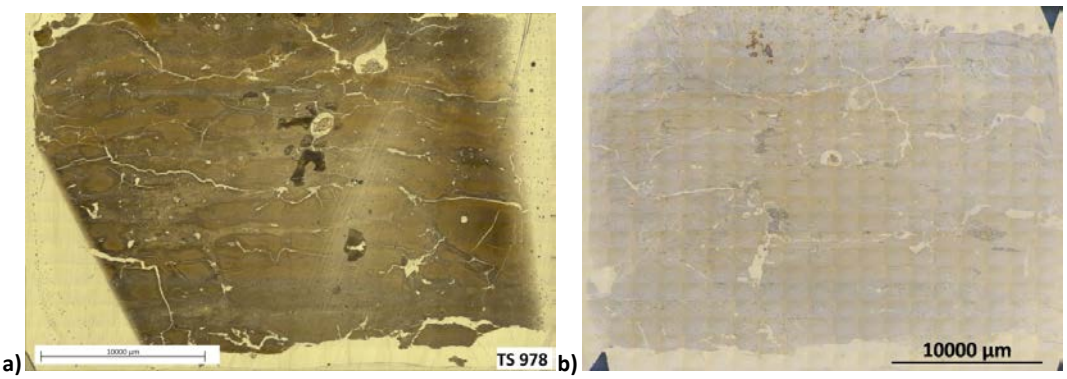
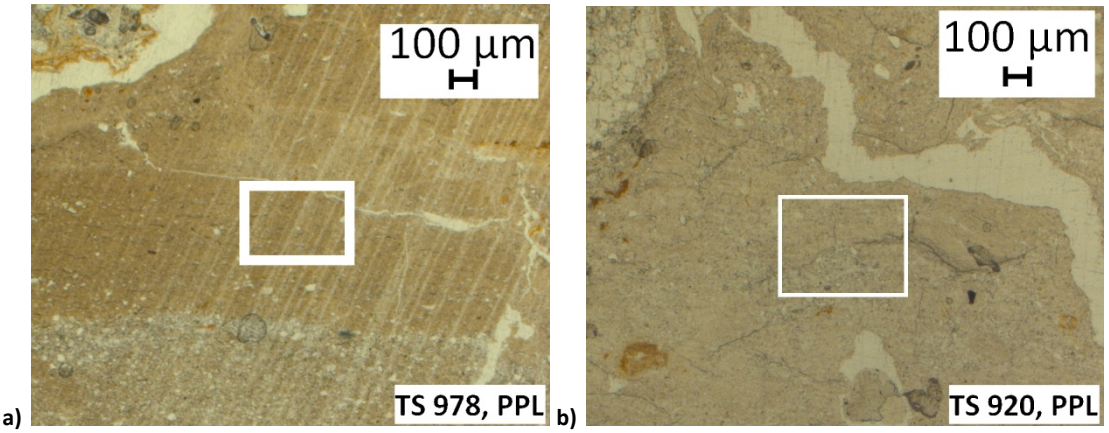
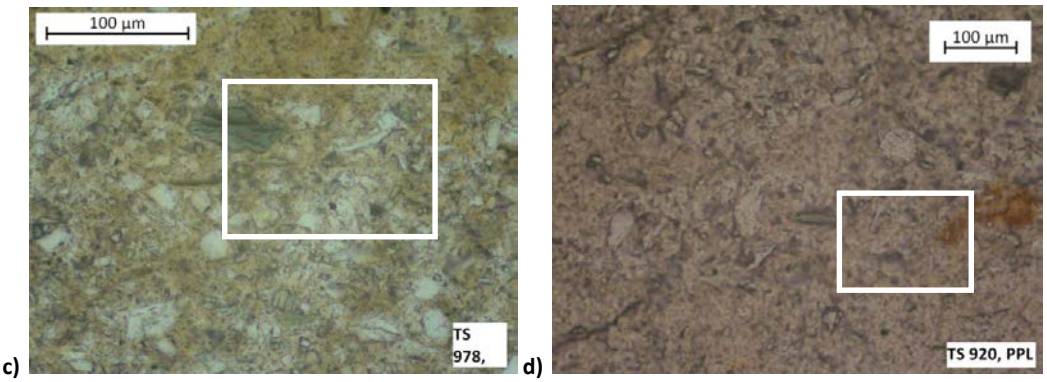


Figure A6: Mosaic images of slides of different thicknesses from the same micromorphology sample block. (a) Mosaic image of TS 978 (PPL). (b) Mosaic image of TS 920 (PPL).

- Chlorite images:





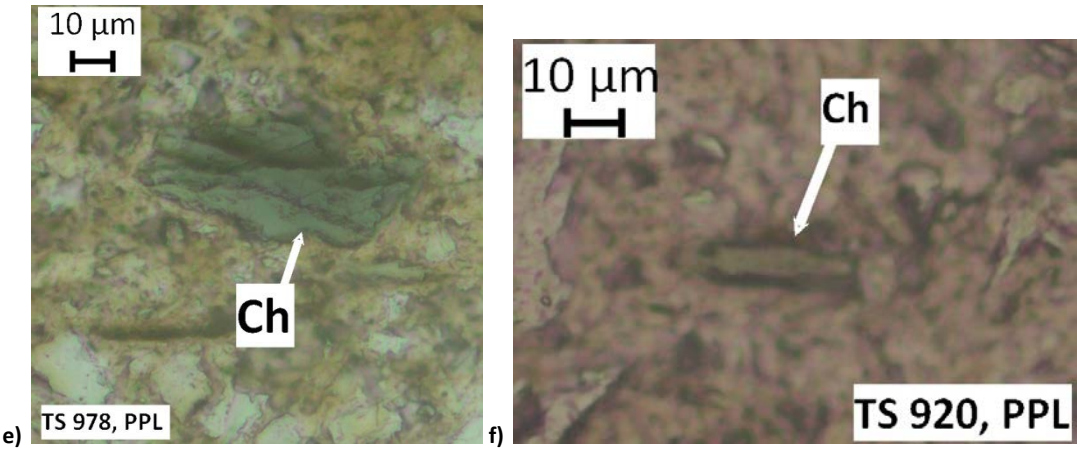


Figure A7: Chlorite grains from experimental thin sections. (a) Contextual image of chlorite in TS 978 (PPL). (b) Contextual image of chlorite in TS 920 (PPL). (c) Detail of image (a). (d) Detail of image (b). (e) Detail of image (c). (f) Detail of image (d). The grains shown in images (e) and (f) are images taken from the same area of the two thin sections (TS 920 and TS 978) (Method of location and correlation of the two grains within the sediment between TS 920 and 978 is listed in Appendix I).

Interpretation: Chlorite grains were less apparent to the operator in the ultra-thin section (TS 920, 10 µm thick), and could not be isolated from the surrounding groundmass based on threshholding the colour properties within the AxioVision image analysis software.

Conclusion: The production of ultra-thin thin sections (at 10 µm thick) does not aid, but inhibits, the identification of chlorite group mineral grains in thin section in optical microscopy with transmitted light.

Experiment: grave soil microstructure and distance from coffin

Aim: To assess any differences in micro-structure with minute differences with distance from coffin within the same micromorphology sample block.

Material: Experiment carried out on the micromorphology sample from the foot area of the skeleton (GR7555, Sala Vastmaal).

Method: A thin section is made from the impregnated micromorphology block on the long axis (experimental slide #1). A second thin section is then made from the same block and on the same orientation, 1.5-2.5 cm further into the block (experimental slide #2).

Hypothesis: It is hypothesized that the pedality changes between experimental slide #1 and experimental slide #2.

Rationale: The hypothesis that the pedality changes between experimental slide #1 and experimental slide #2 is based on the fact that experimental slide #1 will be from closer to the edge of the impregnated sample block and experimental slide #2 will be from further into the interior of the impregnated sample block. Experimental slide #1 will therefore correspond to a plane closer to the coffin and experimental slide #2 will correspond to a plane further from the coffin. This is done in order to assess the possibility that the more angular peds are allogenically formed and deposited as infill material which seeps through the cracks between the wooden boards which formed the coffin.

Results:

- Thin section TS 937 is experimental slide #1, and thin section TS 980 is experimental slide #2.
- Observations: Experimental slide #2- thin section cut from further into the block (*i.e.* further from the coffin and closer to the skeletal remains) showing sub-angular-blocky

peds (TS 980; Figure A8). Experimental slide #1- from closer to the edge of the sample block (*i.e.* further from the skeletal remains and closer to the sides of the wooden coffin showing smaller peds with a greater degree of angularity (TS 937; Figure A9).

- Mosaic images:

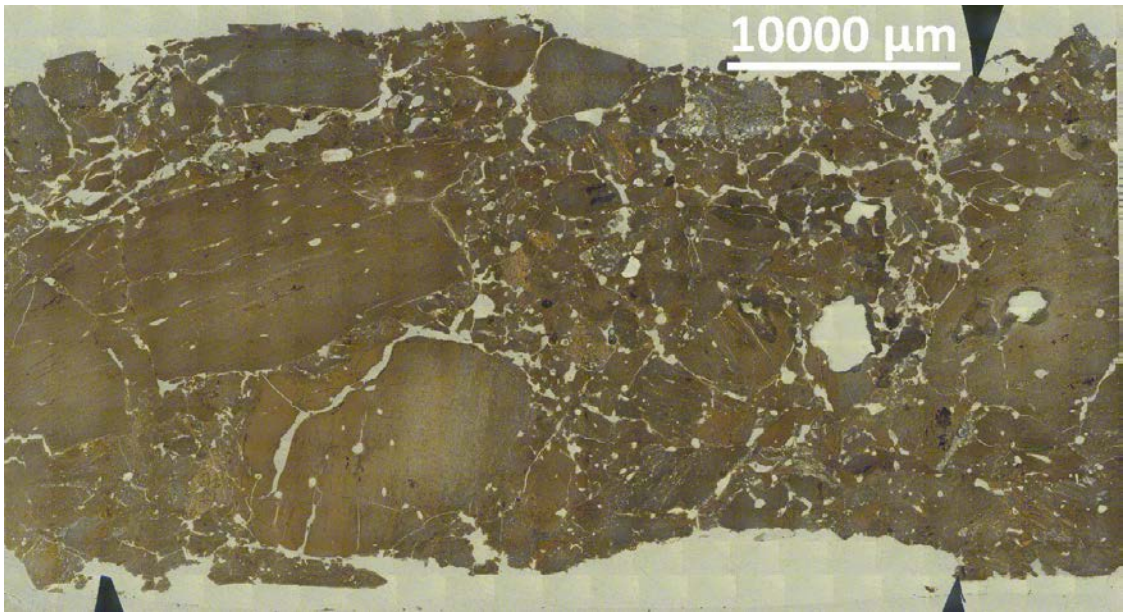


Figure A8: Mosaic image of TS 980 (GR 7555, S 3, TS 980, PPL). This thin section was made from sediment further away from the coffin than TS 937.

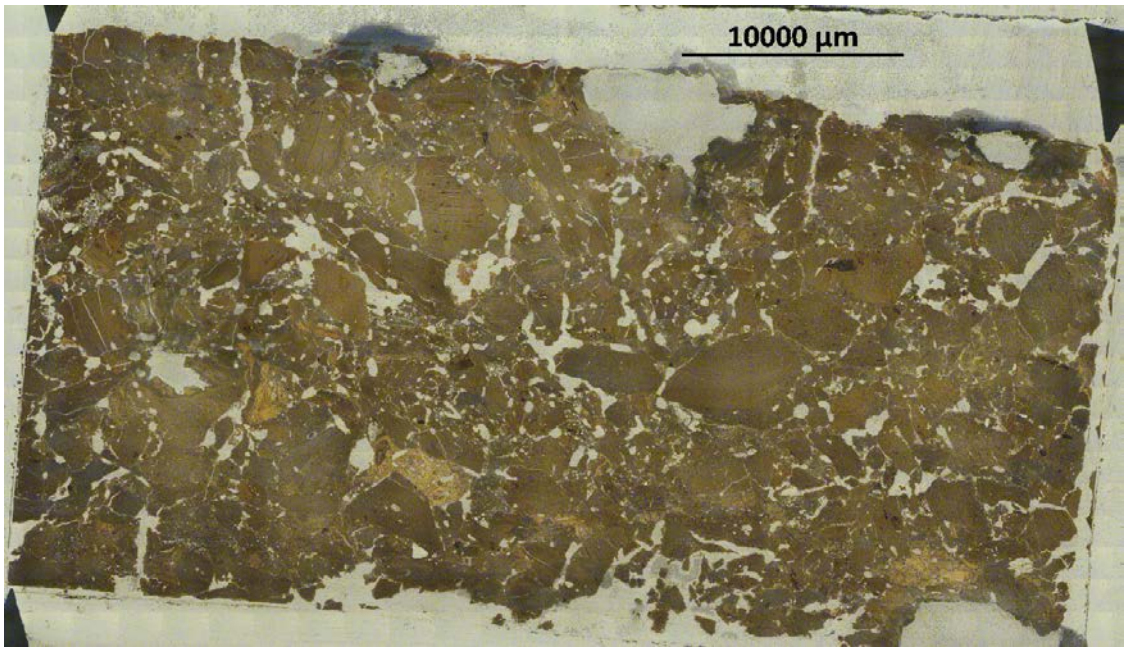


Figure A9: Mosaic image of TS 937 (GR 7555, S 3, TS 937, PPL). This thin section was made from sediment closer to the coffin than TS 980.

Interpretations: There is a difference in the levels of pedality of the microstructures between the

sediment present in experimental slide #1 (TS 980) and experimental slide #2 (TS 937). The soil in the thin section made from the sediment closer to the coffin (TS937) exhibits a microstructure of smaller and more angular peds than the thin section made from sediment several centimeters further away from the coffin (TS 980).

Conclusion and suggestions for future studies: The evidence of the change in microstructure by an increase in angular peds towards the coffin supports the hypothesis that there is a change in pedality with increasing proximity to the coffin at the centimeter scale. However, this conclusion may be related to the fact that in the sample utilized in this experiment the thin section closer to the coffin was also closer to the edge of the Kubiena tin, and the sediment at the boundary of the Kubiena tin may have suffered slight disturbance during sampling. Future studies should investigate differences of pedological microstructures in grave soils with proximity to a coffin when the coffin is within the centre of the micromorphology sample rather than at the edge of the Kubiena tin.

Appendix VII: Pig 1, experimental burial

VIIA. Micromorphology raw data: thin section description sheets

Controls (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 1161 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: C4B, (C4, control inside coffin, above pig, west end/head end; kubiena was placed 4cm below level C4A was collected at). Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly) : well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), distribution, body orient (str, m, w) :

- Vesicles: none
- Channels: 2%, m and lr, strong parallel referred orientation related to plane of ground surface, moderate parallel basic distribution, n/a;
- Chambers: none
- Vughs: 10%, v sm and sm and m, unoriented, random, n/a;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates:
  60% quartz, colourless/ 1st order greys, sm-m and m and m-lr and lr, R-A, 1 pellicular and irregular linear;
  1% feldspar (cross-hatch twinning), colourless/1st order greys, sm-m and m, 1 pellicular;

- Inosilicates:

  1% amphibole, medium green to dark olive green pleochroism/ mid to high second order interference colours, sm-m, anhedral, 2 pellicular;

  1% amphibole, colourless to very pale bluish grey/low second order blues, sm-m and m, anhedral, 2 pellicular;

  1% CPX, colourless/high second to low third order interference colours, sm and sm-m and m, anhedral, 2 pelicular;

- Nesosilicates: none

- Phyllosilicates:

  1 glauconite, green with red/ 2nd order yellows and greens interference colours with red, sm-m and m and m-lr, lobate to circular forms and well-rounded, 2 unknown (*i.e.* pellicular or complex) (discernment via light microscopy not conclusively possible in identifying whether this is merely a surface covering of red/red possibly iron-rich material or a replacement which saturates the entire depth of the mineral?);

- Other (e.g. rocks, carbonates, sulfates, ash):

  1% limestone, grey with orange-red/high order pinks with red, m-lr and lr and v lr (max. 3000x500), SA-R, 2 complex (a surface covering of red/red possibly iron-rich material or a replacement which saturates the entire depth of the rock fragments is at extent 2 on the more numerous smaller fragments of limestone although it should be noted that weathering is limited to 1 pellicular on the anomalous larger fragment of limestone);

  1% granitic rock fragments, colourless with yellow and opaque/ 1st order greys with yellow and opaque, primarily composed of tectosilicates and accessories have been altered to a yellow fine material which traverses the fragments in thin irregular linear bands and an opaque material which occurs as small speckles, m and m-lr, R, 2 complex;

  <1% rock fragment mostly composed of unoriented small (50-100) CPX crystals, colourless/ low third order, lr, SR, 2 complex;

  <1% Shell, grey with brownish red/ high order pinks with dark red, m-lr and lr, linear, SA-SR, 2 pellicular & irregular linear;

  1% orange/orange ellipses, m-lr and lr, elliptical, R, diffuse edges;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: 2%, dark brown/dark brown, elliptical, poor, random, unoriented;

- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100μm) (if lr state max. observed in μm), related feature, and colours] :

•Intrusive: Coatings: 1%, m, quartz, dark red/ dark red;

•Matrix:

Hypo-coatings (related, touching a surface) : 5%, m, mineral grains and rock fragments, medium brown/ 1st order yellows;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 μm) (if lr state max. observed in μm), colour, laminations (</>30μm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)] :

1% nodules (anorthic), unoriented, weak clustered basic distribution, m, opaque/opaque interior with red/red radially arranged exterior, 1 lam (>30), diffuse, not fragmented, CZ;

1% nodules (anorthic), unoriented, weak clustered basic distribution, m, opaque/opaque, not laminated, clear, not fragmented, CZ texture;

1% nodules (anorthic), unoriented, weak clustered basic distribution, m, dark red/dark red, not laminated, diffuse and irregular boundary, not fragmented, CZS;

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 μm), angularity, size of clasts (e.g. CZS) : 2%, orange brown/ dark brown, lr (max. 750x500), R, CZ;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: Although still a sand sized quartz sediment, this sample is much finer in texture than the stratigraphically higher controls (*i.e.* C2 and C3). Large rock fragments here are extremely limited, which is in contrast to the stratigrahically higher controls.

Thin Section Description Recording Sheet

TS: 1163 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: C4A (C4, control inside coffin, above pig, east end/foot end; 0cm from top of intra-coffin sediment mound) Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly) : well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: 1%, m and lr, unoriented, random, n/a;
- Chambers: none
- Vughs: 10%, sm and m and lr, unoriented, random, n/a;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates: 65% quartz, colourless/1st order greys, sm-m and m and m-lr and lr, SR-A, 1

pellicular;
1% feldspar (narrow polysynthetic twinning), colourless/ 1st order greys, m and m-lr, subhedral, 1 pellicular;
<1% feldspar (cross-hatch twinning), colourless/ 1st order greys, m and m-lr, subhedral, 1 pellicular;
<1% spherulitic masses of acicular feldspar, colourless/ 1st order greys in radial arrangement (only observable in XPL), m, spherical/circular morphology with a smooth regular surface, 0;

- Inosilicates: 1% CPX, colourless/ high 2nd to low 3rd order interference colours, m, 1p
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  5% limestone fragments, grey/grey, lr and v lr (max 3000x1750), R-A, 1 pellicular;

  2% granitic rock fragments, colourless with opaque and yellow/ first order greys with opaque and 1st order yellows, primarily composed of either perthitic tectosilicates with accessory opaques and yellow/yellow fine material or of euhedral to subhedral laths of plagioclase feldspars with accessory opaques and yellow/yellow fine material, m-lr and lr, 1 complex/incongruent (with tectosilcate component less weathered than adjacent and accessory components within the same rock fragments), weak clustered basic distribution;

  1% rock fragments, m-lr and lr, primarily composed of carbonate-rich material and CPX with accessory opaque/opaque (magnetite), 1 pellicular and irregular linear (exploitation of inter-mineral fractures assumed over intra-mineral fractures with CPX more weathered than adjacent carbonaceous material within the same rock fragment);

  1% calcite, colourless/ high order pinks, lr, subhedral with internal structure of tightly packed rhomba easily discernible, 2 pellicular and regular linear (linear regular to cleavage planes);

  1% ooids, grey/grey with high order pinks, m-lr and lr, well-rounded post high fragmentation, 1 pellicular (post fragmentation and post rounding);

  1% other, brownish orange/ brownish orange, lr, ellipsoid and well-rounded, 2 altering to yellow/yellow speckled with accessory of opaque/opaque speckles;

  <1% shell, grey/ high order pinks and greens, m and m-lr, linear and A, 1 pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: 5% plant remains, lr and v lr, dark brown/ dark brown, linear and irregular forms, fair to poor, strong clustered basic distribution, unoriented;
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

•Intrusive: Coatings: 1%, sm, quartz, dark red/ dark red;

•Matrix:

Hypo-coatings (related, touching a surface) : 5%, sm and m, mineral grains and rock fragments, dark brown/ 1st order yellows;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)] :

2% nodules (anorthic), unoriented, weakly clustered basic distribution, m, dark brownish red/ dark red, not laminated, diffuse, not fragmented, CZS (randomly distributed sand sized quartz Coarse materials);

1% nodules (anorthic), unoriented, strong clustered basic distribution, m and lr (max 750x500), opaque/opaque, not laminated, clear, not fragmented, CZS, lobate and circular morphologies;

1% nodules (anorthic), unoriented, weak clustered basic distribution, m, opaque/opaque interior with red/red exterior, 1 lamination (>30), clear and irregular boundary, not fragmented, CZ, re/red exterior is arranged radially when viewed in XPL;

1% nodules (anorthic), unoriented, strong clustered basic distribution, m and lr (max 2000x1000), grey/ high order pinks and greens, not laminated but composed of small to medium sized rhombahedra, sharp and irregular boundary, not fragmented but slightly porous (c.25% voids);

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 µm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: a coarse quartz rich sediment with some large limestone fragments and few Fe-rich nodules and some small weathered granite fragments. Based on observation in a C3 sample where there was very dark red material covering/altering from the glauconitic lobate pellets it may be that the dark red lobate objects seen in this thin section are altered from glauconite grains.

Thin Section Description Recording Sheet

TS: 1206 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: C2C (C2, north corner, 15.5cm deep) Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly) : well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: 2%, m and lr, weak parallel referred orientation related to plane of ground surface, n/a.
- Chambers: none
- Vughs: 10%, sm and m and lr and v lr, unoriented, n/a.
- Cracks: none.

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates: 65% quartz, colourless/ 1st order greys and pale yellows, sm-m and m and

m-lr, A-R, 2 irregular linear and pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: <1% chlorite, medium blue to dark blue pleochroism/ anomalous blue interference colours, sm-m, orthogonal SR morphology with diffuse edges, 1 pellicular;
- Other (e.g. rocks, carbonates, sulfates, ash):

  5% limestone, grey/ grey, lr and v lr (max. 3 centimetres x 1.5 centimetres), R-SA, 1 pellicular;

  1% granitic rock fragments, primarily composed of plagioclase/alkali feldspars (some with Carlsbad twinning) and mica (most of which has been altered to a yellow/yellow fine material or to chlorite meso-alteromorph from mica), lr and v lr (max. 3000x2500), SR and elliptical morphology, 2 complex;

  2% shell, pale grey/ high order pinks and greens, m-lr and lr, linear, 1 pellicular and linear;

  1% calcite, colourless/ high order white, m-lr and lr, subhedral with strongly expressed cleavage planes, 2 pellicular and linear (regular to cleavage planes);

  <1% ooids, pale grey/ high order pinks, m-lr and lr, circular form, 1 pellicular;

  <1% flint, colourless/ 1st order greys (speckled), v lr (max. 2000x500), SA and linear, no weathering discernible;

  2% other, orange/ orange, m-lr and lr, elliptical forms, n/a.

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr >1000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: <1% opaque plant remains, v v lr (1500x750max), opaque/opaque, orthogonal form and A, poor and highly fragmented, distribution patterns not discernible due to single/isolated occurrence, unoriented;
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface) : 1%, m, quartz grain, reddish brown/ brownish red;

  Quasi-coatings (not touching) : none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 μm) (if lr state max. observed in μm), colour, laminations (</>30μm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/Z, sand/S)] :

2% nodules (anorthic), unoriented, weak clustered basic distribution, lr (max. 750x500), very dark red/ dark red, not laminated, clear boundary, not fragmented, CZS texture;

2% nodules (anorthic), unoriented, weak clustered basic distribution, m, opaque/opaque, not laminated, clear, not fragmented;

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 μm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: A coarse quartzose sand sediment with some large bits of limestone and large Fe-rich nodules and very little fine material. Quartz grains are generally a bit smaller (and more fractured) here (C2C) compared to other C2 samples (C2A and C2B).

Thin Section Description Recording Sheet

TS: 1207 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: C3A (C3, centre, 22.5cm deep) Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly) : well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: 2%, m and lr and v lr, moderate parallel referred orientation related to plane of ground surface and moderate linear basic distribution, n/a.
- Chambers: 1%, m and lr, unoriented, moderate basic clustered distribution, n/a;
- Vughs: 10% m and lr and v lr, unoriented, random distribution, n/a;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates: 60% quartz, colourless/ 1st order greys and pale yellows, sm-m and m and m-lr and lr, R-A, 1 pellicularand irregular linear; 1% feldspar (cross-hatch twinning),

colourless/1st order greys, sm-m and m, subhedral, 1 pellicular;

- Inosilicates: <1% amphibole, pale green to dark olive green pleochroism/ 2nd order yellows, euhedral, 1 pellicular;
- Nesosilicates: none
- Phyllosilicates:

  1% mica, brownish orange/ brownish orange, lr and v lr (max. 3000x750), linear morphology with internal phyllosilicate structure still observable through exploitation of single parallel cleavage planes to cracks, 3 complex (to fine material);

  1% glauconite, green/2nd order greens and yellows, m-lr and lr, SR and lobate forms, 2 pellicular;

- Other (e.g. rocks, carbonates, sulfates, ash):

  1% limestone, lr and v lr (max. 1.5centimetres x1centimetre), A-SR, 1pellicular;

  2% granitic rock fragment, primarily composed of feldspars and opaque materials (small and orthogonal), lr and v lr (max. 1250x1250), circular and elliptical forms and R, 2 complex (incongruent weathering with feldspars less weathered);

  1% rock fragment (possibly a highly altered form of limestone or an acicular feldspar rich granitoid?), colourless and pale yellow/ 1st order greys and isotropic, v lr (max. 3000x2500), elliptical form and R, possibly interpreted categories of either (a highly altered (extent 4) alteromorph of oolitic limestone where the ooids have altered to a silicic material displaying 1st order grey colours but in a radiating pattern and the spaces between these former ooids have been altered to a yellowish isotropic fine material) or (a weathering extent 1 of an acicular feldspar rich granitic rock with inter-mineral cracks weathered and infilled/replaced with a yellow fine material)?);

  2% calcite, colourless/ high order pinks and greens, m-lr and lr, subhedral with cleavage well expressed, 2 pellicular and linear (regular to cleavage planes);

  2% shell, pale grey/ anomalous greys with high order pinks and greens, m-lr and lr, linear, 2 pellicular and linear;

  <1% other, brownish orange/ brownish orange, lr, elliptical, n/a;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: 2% plant remains (humified), m and lr and v lr, dark red/ dark red, elliptical and irregular, poor, weakly clustered basic distribution, unoriented; <1% opaque plant remains, m and lr, opaque/opaque, irregular, poor, moderate clustered basic distribution, unoriented;
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

•Intrusive: Coatings: 2% intrusive coatings, m, quartz grains, red/red.

•Matrix:

Hypo-coatings (related, touching a surface) : <1%, m, quartz grains, reddish brown/ dark brown;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 μm) (if lr state max. observed in μm), colour, laminations (</>30μm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/Z, sand/S)] :

<1% nodules (anorthic) (carbonate-rich), unoriented, random, lr (max. 750x400) , pale grey/ high order pinks and greens, not laminated, sharp boundary, not fragmented, composed of small (30-50) sized rhomba with imperfect packing resulting in a porous internal structural arrangement;

5% nodules (anorthic), unoriented, random, m and lr (max. 600x600), dark red/ dark red, no laminations observed, sharp, slightly fragmented, CZ texture;

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 μm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: A quartzose sand sediment with some medium sized inclusions of limestone and Fe-rich nodules and very little fine material. At x1 mag this C3A samples appears slightly finer than the C2 samples. Fe-rich nodules appear generally smaller, more evenly distributed and more abundant here (C3A) than in the C2 samples. NB: TS1207 is a little bit too thick (i.e. >30μm) in some places. Also NB: at x1mag it looks as if there are lots of Fe-rich nodules, but this is misleading and caused by the presence of well-rounded dark humified plant remains and also some dark coloured and well-rounded rock fragments.

Thin Section Description Recording Sheet

TS: 1208 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: C3C (C3, north corner, 23cm deep) Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly) : well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), distribution, body orient if applicable (str, m, w) :

- Vesicles: none
- Channels: 5%, m and lr, strong parallel referred orientation related to plane of ground surface, weak linear basic distribution, n/a;
- Chambers: 1%, m, unoriented, random, n/a;
- Vughs: 5%, m and lr, unoriented, random, n/a;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates:
  65% quartz, colourless/ 1st order greys, sm-m and m and m-lr and lr, A-SR, 1 pellicular (which dependent upon plane of cut sometimes manifests itself as angular cavernous patches mid grain);
  1% feldspar (cross-hatch twinning), colourless/ 1st order grays, m and m-lr, subhedral, 1 pellicular;

- Inosilicates: 2% amphibole (tremolite actinolite series), pale greenish blue to medium greenish-blue/ mid to high second order interference colours, m-lr to v lr (max. 2500x1000), subhedral, 1 pellicular and regular linear (regular to amphibole cleavage planes)

- Nesosilicates: none

- Phyllosilicates:

  1% glauconite, dark red with green/ dark red with 2nd order greens and yellows, m-lr and lr, lobate morphology, 2 complex altering to a dark red (iron-rich?) material;

- Other (e.g. rocks, carbonates, sulfates, ash):

  1% granitic rock frements, colourless with opaque and yellow/ 1st order greys with opaque and 1st order yellows, primarily composed of a perthitic textured tectosilicate with accessory of small opaque materials and micaceous material which as altered to yellow fine materials (clays?), lr and v lr (max. 2000x1500), 2 incongruent (with micaceous components altered to yellow fine material and opaque material formed favourably and unevenly compared to the weathering and alteration of the tectosilicate component);

  1% limestone, grey/grey, lr and v lr (max. 2000x1000), linear and orthogonal and elliptical, SA-R, 1 pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: 1% plant remains, v lr, brownish red/ dark reddish brown, elliptical form, fair, random, unoriented;

- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if large state max. observed in µm), related feature, and colours] :

- Intrusive: Coatings: 2%, lr (max. 250), quartz, brownish red/ red;

- Matrix:

Hypo-coatings (related, touching a surface) : <1%, m, quartz, dark reddish brown/dark brown;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 μm) (if lr state max. observed in μm), colour, laminations (</>30μm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)] :

2% nodules (anorthic), unoriented, random, lr (max. 1000x1000), dark red/red, not laminated, clear, not fragmented, CZS (randomly distributed 40% sand sized quartz inclusions);

1% nodule (anorthic), unoriented, moderately clustered basic distribution, m and lr (max 600x400), opaque/opaque, not laminated, diffuse, not fragmented, ZS texture observable;

1% nodules (anorthic), unoriented, moderately clustered basic distribution, m and lr (max 550x450), dark red/ dark red, not laminated, clear, not fragmented, ZS ;

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 μm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: of all the extra-coffin controls (C2 and C3) this is the one that looks in hand specimen (*i.e.* at x1 magnification) most like a coloured soil rather than just a loose quartzose sand sediment. Also, more channels here than in the other extra-coffin controls.

Thin Section Description Recording Sheet

TS: 1230 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: C2B (C2, south corner, 13.5cm deep) Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 95, 5

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly): well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: 1%, m and lr, weak referred orientation parallel to plane of ground surface, n/a.
- Chambers: none
- Vughs: 10%, sm and m and lr, unoriented, n/a.
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates: 70% quartz, colourless/1st order greys, sm-m and m and m-r and lr, SR-SA, 1 pellicular;
- Inosilicates: <1% amphibole, pale green to dark olive green pleochroism/ high second

order pinks, sm-m, anhedral and R with diffuse edges, 2 pellicular;

- Nesosilicates: none
- Phyllosilicates: <1% mica (muscovite), colourless/ low 3rd order blues, m-lr, euhedral, 1 pellicular; 1% glauconite, green/ 2nd order greens and yellows, m and m-lr, SR lobate morphology, 1 pellicular;
- Other (e.g. rocks, carbonates, sulfates, ash):

  1% cyclosilicates (tourmaline) or inosilicate (amphibole- tremolite)?, mid to dark blue pleochroism/ mid to high second order, subhedral, 2 pellicular;

  2% granitic rock fragments, composed primarily of plagioclase and micas (muscovite), lr and v lr (max 1500x1000), 1 pellicular and irregular linear;

  2% shell, pale grey/ high order pinks and greens, m-lr and lr, linear form, 1 pellicular and linear;

  2% calcite, very pale grey or colourless/ high order white, m-lr and lr, subhedral, 1 pellicular and linear;

  2% limestone, grey/grey, lr and v lr (max. 3000x1000), SR-A, 1pellicular;

  2% other, orange/ orange, m-lr and lr, elliptical forms, n/a.

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous:
- Plant: <1% root (transverse), lr, orange red/red, elliptical, good, random, unoriented; 1% plant remains, sm and m, orange/ dark red, irregular, poor, strong clustered basic distribution, unoriented;
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) if lr state max. observed in µm), related feature, and colours] :

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface) : none

  Quasi-coatings (not touching) : none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr

state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/Z, sand/S)] :

5% nodules (anorthic), unoriented, strong clustered basic distribution, lr (600x400 max), very dark red/ dark red, not laminated, diffuse, not fragmented, CZ texture;

1% nodules (anorthic), unoriented, weak clustered basic distribution, lr (3250x 2000 max.), dark red/ dark red, not laminated, clear, not fragmented, CZS texture;

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 µm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: A coarse quartzose sand sediment with some large bits of limestone and large Fe-rich nodules and very little fine material.

Thin Section Description Recording Sheet

TS: 1231 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: C3B (C3, south corner, 20.5cm deep) Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly) : well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), distribution, body orient (str, m, w) :

- Vesicles: none
- Channels: 1%, lr, moderate parallel referred orientation related to plane of ground surface, random distribution, n/a.
- Chambers: none
- Vughs: 10%, sm and m and lr and vv lr (max. 10,000 x 2000), unoriented, random, n/a.
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates: 70% quartz, colourless/1st order greys, sm-m, m, m-lr, lr, and v lr, A-SR, 1

pellicular and irregular linear;

- Inosilicates: none
- Nesosilicates: <1% olivine, sm-m, anhedral, 2 complex (pellicular, irregular linear and digitate);
- Phyllosilicates: <1% chlorite, medium blue to dark blue pleochroic/ anomalous blue interference colours, m-lr, euhedral, 1 pellicular;
- Other (e.g. rocks, carbonates, sulfates, ash):

  2% granitic rock fragments, colourless with areas pale orange/ 1st order greys with areas of 1st order oranges, primarily composed of tectosilicates and orange fine material with some speckling of very small opaque/opaque materials, lr and v lr (max. 1250x1000), 1 complex (incongruent with micaceous altered to fine material at an uneven rate with weathering alterations upon tectosilicate components);

  1% limestone rock fragments, grey/ grey, lr and v lr (max. 2000x1500), elliptical form and well-rounded, 1 pellicular (high order pinks at diffuse edges);

  1% calcite, colourless and pale grey/ high order pinks, m-lr and lr, subhedral, 1 pellicular and regular linear (regular to cleavage planes);

  <1% rock fragment, colourless with brown/ 1st order greys with brown, primarily composed of a coarse crystalline textured tectosilicate grains at various angles with titanite as an accessory mineral, lr, R, 1 pellicuar;

  1% other, brownish orange/ orange speckled with traces of a single parallel cleavage observable, m-lr and lr, elliptical morphology, n/a;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours]:

- Intrusive: Coatings: 2% coatings, m and lr (max. 150), quartz, brownish red/ red;
- Matrix:

  Hypo-coatings (related, touching a surface): 1%, m, quartz, reddish brown/ dark brown;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 μm) (if lr state max. observed in μm), colour, laminations (</>30μm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/Z, sand/S)] :

2% nodules (anorthic), unoriented, moderate clustered basic distribution, m, opaque/opaque, not laminated, diffuse (with dark purple colours visible at thinning edges), not fragmented, CZ texture;

1% nodules (anorthic), unoriented, weak clustered basic distribution, m, dark red/ dark red, not laminated, clear, not fragmented, CZ texture;

1% nodules (anorthic), unoriented, random, lr (1000x 750max.), dark red, not laminated, clear, not fragmented, CZS texture (sand sized quartz inclusions throughout);

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 μm), angularity, size of clasts (e.g. CZS): none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: a coarse sediment, mostly composed of quartzose sand grains with some limestone pelletoids and some Fe-rich nodules throughout.

Thin Section Description Recording Sheet

TS: 1232 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: C2A (C2, centre, 14cm deep) Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 95, 5

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly): well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: 2% lr and v lr, unoriented, n/a.
- Chambers: <1%, sm, unoriented, n/a.
- Vughs: 15%, sm, m, lr, and v lr, unoriented, n/a.
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates: 70% quartz, colourless/ 1st order greys, sm-m and m and m-lr and lr and v

lr, SR-SA, 1 pellicular; <1% microcline, colourless/1st order greys, m-lr, SR, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: <1% glauconite, green/ 2nd order yellows and greens, m, R and diffuse edges, 1 pellicular;
- Other (e.g. rocks, carbonates, sulfates, ash):

  1% cyclosilicate (tourmaline) or inosilicate (amphibole), medium blue green to pale blue green pleochroic/ mid to high second order, m-lr, R, columnar structure with one good cleavage visible;

  <1% shell, pale grey/ high order pinks, lr, linear, 1 pellicular and linear;

  5% limestone (oolitic), pale grey/ pale grey, lr and v lr (2250 x 3000 max.), R-A and elliptical to linear forms, 1 pellicular;

  2% calcite, pale grey/ high order pinks, m-lr, SR and orthogonal morphology, 1 pellicular;

  2% other, orange/ orange, m-lr and lr, elliptical forms, n/a.

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or agg.: [%, size (sm <50, m 50-100, lr >100µm)(if lr state max. observed in µm), related feature, and colours]

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface): none

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly)] :

2% nodules (anorthic), unoriented, weak clustered basic distribution, lr (700 max.), dark red exterior with opaque interior/ bright red exterior with opaque interior, 1 lam (>30), clear, slight;

2% nodules (anorthic), unoriented, weak clustered basic, m and lr (580 max), red/red, not laminated, diffuse, not fragmented;

2% nodules (anorthic), unoriented, moderate clustered basic distribution, m, opaque/ opaque, no laminations observable, clear, not fragmented;

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 μm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: A coarse quartzose sand sediment with some large bits of limestone and large Fe-rich nodules and very little fine material.

Thin Section Description Recording Sheet

TS: 1262 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: C0 Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 40, 60

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): embedded

Sorting (unsorted, poorly, well, perfectly) :unsorted

Micromass

Colour (x5 objective, PPL/XPL): brownish orange

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): cloudy

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: 2, sm and m
- Chambers: 2, sm
- Vughs: 15, m and lr and v lr
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates:
  quartz: 30, colourless/1st order greys, sm and sm-m and m and m-lr and lr, well-rounded, 1 pellicular and irregular linear;
  plagioclase: 1, colourless/1st order greys, sm-m, SA, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): limestone: 50, pale grey/ fourth order pinks, lr and v lr, 1 pellicular;

  Calcite, 2, pale grey/ fourth order pinks, lr, well-rounded, 1 irregular linear and pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: 1, lr, red-brown/ isotropic, fair, random, unoriented;
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : 5, lr (c. 500), rock fragments, brownish orange/ isotropic fine material with first order grey sand-sized quartzs

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)] : none
- Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 µm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : granular, sm and m and lr

Other notes and comments on the description of the sample as seen in thin section: Half of the area of the thin section is covered by a large and well-rounded limestone fragment.

Samples (thin sections listed in numerical order)

Thin Section Description Recording Sheet

TS: 1182 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: 1 (orientation of block to pig remains not recorded on sampling block)
Deposited fill

type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 85, 15

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly) : well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: 2%, m and lr, weak parallel referred orientation parallel to plane of ground surface, random distribution, n/a
- Chambers: none
- Vughs: 10%, v sm and sm and m and lr, unoriented, random, n/a;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates:
  60% quartz, colourless/1st order greys, sm-m and and m and m-lr and lr, R-A, 1 pellicular;
  2% feldspars (cross-hatch twinning), colourless/1st order greys, m and m-lr and lr, subhedral, 1 pellicular;
  1% feldspars (plagioclase of polysnthetic twinning), colourless/ 1st order greys, m and m-lr and lr, 2 pellicular;

- Inosilicates:

  1% amphiboles, very pale grey to medium grey pleochroism/ low second order blues interference colours, m-lr and lr, subhedral and anhedral, 2 complex;

  Possibly a 1% PX which is an extent 4 phanto-alteromorph by fe-rich (red/red) deposits with very strong clustered referred distribution to large and moderately weathered limestone fragments;

- Nesosilicates: none

- Phyllosilicates:

  1% glauconite, brownish green/ 2nd order yellows and greens speckled, m-lr, elliptical and well-rounded forms, 1 pellicular and irregular digitate;

- Other (e.g. rocks, carbonates, sulfates, ash):

  5% limestone, lr and v lr (max. 2500x1250), grey/high order pinks, SA linear (with regular smooth boundaries) to SR elliptical forms (with irregular and diffuse boundaries), 2 pellicular and irregular speckled;

  5% granite, m and m-lr, colourless with yellow fine materials/ 1st order greys with fine materials of 1st order yellows interference colours, composed of feldspars (weakly to moderately altered) and micas which have been heavily altered to yellow fine material, well-rounded forms appearing roughly circular, 2 complex;

  <1% calcite, grey/ high order pinks, m-lr, subhedral morphology with rhombohedral internal structure preserved and all three cleavage planes visible, 2 irregular pellicular;

  1% flint, colourless/1st order greys, lr, SA, 1 pellicular;

  2% shell, pale grey/high order pinks, lr, linear, 2 irregular pellicular;

  2% other, orange speckled/brownish orange speckled with some small opaque speckling, one parallel cleavage visible, elliptical and well-rounded forms, n/a;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: 2%, lr and v lr, dark brown/ very dark brown, linear forms with diffuse and irregular boundaries, poor, weak clustered basic distribution, unoriented.

- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

•Intrusive: Coatings: 5%, m and lr (max. 250), quartz, dark red/dark red; <1%

•Matrix:

Hypo-coatings (related, touching a surface) : 5% m and lr (max. (max. 200), quartz, dark orange-brown/ 1st order yellows;

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

•Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)] :

5% nodules (anorthic), unoriented, moderate clustered basic distribution, lr (max. 750x500), dark red/dark red, not laminated, diffuse, not fragmented, CZ;

2% nodules (anorthic), unoriented, random, lr (max. 2500x1500), pale grey/ high order pinks, not laminated, clear and irregular boundary, not fragmented, CZS texture (randomly distributed and unoriented quartz sand sized grains throughout);

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 µm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: its currently an apedal sediment of sand sized quartz grains but some small areas show signs of what would have been the beginnings of a linked and coated pedological structure if it had been allowed more time to develop further;

Thin Section Description Recording Sheet

TS: 1240 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: 3 (NB: no orientation related to direction of pig remains was written on the sample block) Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60μm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50μm limit): 90, 10

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly): well sorted

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within μ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), distribution, body orient (str, m, w) :

- Vesicles: none
- Channels: 1%, m and lr, unoriented, random, n/a;
- Chambers: none
- Vughs: 10%, v sm and sm and m and lr, unoriented, random, n/a;
- Cracks: none

Coarse materials

Inorganics [type: %, size (μm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates:
  55% quartz, colourless/ 1st order greys, sm and sm-m and m and m-lr and lr, A-R, 1 pellicular;
  1% feldspars (cross-hatch twinning), m-lr and lr, subhedral and anhedral, 1 pellicular;
  1% coarse and unoriented crystalline textured feldspar, colourless/ 1st order greys, m-lr, R and elliptical forms, 1 pellicular;
  <1% acicular feldspar (radial structure inferred through alternate crystallographic orientations observed through twinkling during rotation of petrographic plate), colourless/ 1st order greys, m, circular and well-rounded, 1 irregular pellicular;

- Inosilicates: 1% CPX, colourless /high second order interference colours, m, anhedral, 2 pellicular (rims decrease in interference colours);

- Nesosilicates: none

- Phyllosilicates: <1% glauconite, olive green/ 2nd order yellows and greens speckled interference colours, sm-m, SA, trigonal morphology, 1 irregular pellicular;

- Other (e.g. rocks, carbonates, sulfates, ash):

  5% granite, colourless with yellow, gray, and opaque/ 1st order greys with yellow fine material and irregular patches of opaque deposits (and some with either amphiboles or others with CPX), m, m-lr and v lr (max 3000x1000), circular and irregular linear forms and R-SR morphologies, 2 complex (some at extent 3);

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: none

- Other (e.g. bone, excrement, fungal remains): none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

- Intrusive: Coatings: 5% m and lr (max 200), quartz, dark red/dark red;

- Matrix:

  Hypo-coatings (related, touching a surface): 2%, m and lr (max 300), quartz grains, dark orange brown/1st order yellow, strong clustered basic distribution;

  Quasi-coatings (not touching): none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp),

fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)]:

5% nodules (anorthic), unoriented, moderately clustered basic distribution, lr (max 600x450), dark red/ dark red, not laminated, diffuse and irregular boundary, not fragmented, CZ;

1% nodules (anorthic), unoriented, strong clustered basic distribution, m and lr (max. 550x500), 1 lamination (>30), opaque/ opaque interior with radially arranged red/ red exterior, diffuse, not fragmented, CZ;

• Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 μm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section:

No limestone fragments left (in contrast to the controls) and granites are more heavily altered (than they are in the controls).

Most granite fragments are altered to a yellow/yellow fine material with the feldspar components less weathered, but some have been altered by ferralitic weathering processes leading to a red/red (probably iron-rich) alteromorph with the mica components less weathered. Also note, that no amphiboles extraneous to rock fragments were observed in this thin section, possibly because none were observed in this particular slice (*i.e.* thin section) despite presence in the larger sampling block, but also possibly because they have all been altered to red/red (probably iron-rich) alteromorphs which are only identifiable as alteromorphs of cleaved minerals by their bright red septa (which contrast with their dark red retiporo- deposits).

Thin Section Description Recording Sheet

TS: 1253 Site code: HOV

Micro-unit: 1 of 2 Piglet number: 1

Sample positioning: A32 (corner sample at base of coffin) Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 2, 98

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): single population

Sorting (unsorted, poorly, well, perfectly) : perfectly

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 15, sm and m, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates: quartz, 100, colourless/ 1st order greys, m-lr and lr, 1p&ir lin
- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash): none

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : none

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)] : none
- Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 µm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: This micro-unit is interpreted as quartz grains which have been washed of their fine material and now rest above the lower micro-unit which is darker coloured and contains the fine material.

Thin Section Description Recording Sheet

TS: 1253 Site code: HOV

Micro-unit: 2 of 2 Piglet number: 1

Sample positioning: Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): clear, smooth

Groundmass

c/f ratio (50µm limit): 80, 20

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): coated

Sorting (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): colourless/ 1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: none
- Chambers: none
- Vughs: 10, lr and v lr, unoriented
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates:
  Quartz : 60, colourless/ 1st order greys, sm-m and m and m-lr and lr, well-rounded, 1 pellicular and irregular linear;

Feldspar (cross-hatch twinning): 1, colourless/ 1st order greys, m and m-lr, well-rounded, 1 pellicular;

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: none
- Other (e.g. rocks, carbonates, sulfates, ash):

  Granitic rock fragments: 2, yellow and colourless and opaque/ orange and first order greys and opaque, lr, well-rounded, 2 complex;

  Limestone rock fragments: 5, grey/ fourth order pinks, m-lr and lr and v lr (max. 3mm), well-rounded, 1 pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

- Intrusive: Coatings: none
- Matrix:

Hypo-coatings (related, touching a surface) : 10, sm and m, rocks and minerals, brownish orange/ orange-brown,

Quasi-coatings (not touching) : none

Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)] : 5, unoriented, clustered basic distribution, m, dark red/ dark red, none, sharp, none, C;
- Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 µm), angularity, size of clasts (e.g. CZS) : none

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: in hand view this slide appears to have very large vesicles, but these round holes are plucking from the grinding process and should be regarded as artefacts of manufacture and not as characteristics of the sediment.

Thin Section Description Recording Sheet

TS: 1254 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning: 2 Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 70, 30

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): linked and coated

Sorting (unsorted, poorly, well, perfectly) :poorly

Micromass

Colour (x5 objective, PPL/XPL): colourless/1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): cristallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: 5, sm and v v lr, unoriented
- Chambers: 5, sm and m, unoriented
- Vughs: 5, m, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates:
  Quartz: 60, colourless/1st order greys, m and m-lr and lr, well-rounded, 1 pellicular and irregular linear;

Feldspar (cross-hatch twinning): 1, colourless/1st order greys, m, SR, 1 pellicular and linear (normal to cleavage);

- Inosilicates: none
- Nesosilicates: none
- Phyllosilicates: 1, glauconite, brownish green/ brownish green and yellow, m, well-rounded, 1 pellicular (diffuse edges);
- Other (e.g. rocks, carbonates, sulfates, ash):

  Granitic rock fragments: 2, yellow and colourless and opaque/ orange and first order greys and opaque, m-lr and lr, SR, 2 complex;

  Limestone rock fragments: 1, grey/ fourth order pinks, m-lr, SA, 1 pellicular;

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none
- Plant: none
- Other (e.g. bone, excrement, fungal remains) : none

Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

- Intrusive: Coatings: none
- Matrix:

  Hypo-coatings (related, touching a surface) : 15, sm and m, rocks and minerals, pale orange/ 1st order strong yellows.

  Quasi-coatings (not touching) : none

  Infillings: 2, voids (channels), grey/1st order greys;

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)] : 5, unoriented, strongly clustered basic distribution, m and lr (max. 700), dark red/ dark red, none, sharp, none, CZS;
- Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 µm), angularity, size of clasts (e.g. CZS) : 2, orange-brown/ brown-orange, m, SR, CZ;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v

sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section:
Excremental pedofeatures, a very large channel void with a grey/grey coating on the lower edge of it along with the abundance of iron-rich nodules are interpreted as signs of redoximorphic conditions and soil biota activity in this sediment. Unknown: how many of the dark red iron-rich nodules are from mineral weathering to a secondary iron-rich material?

Thin Section Description Recording Sheet

TS: 1257 Site code: HOV

Micro-unit: 1 of 1 Piglet number: 1

Sample positioning:17y Deposited fill type: Sand

Boundary (sharp <30, clear 30-60, diffuse >60µm; smooth, wavy, irreg.): N/A

Groundmass

c/f ratio (50µm limit): 60, 40

Related distribution of c/f materials (single population, linked and coated, coated, intergrain aggregate, or embedded (Courty et al. 1989) which correlates with the InterArChive use of Stoops, 2003 terminology of: monic, gefuric, chitonic, enaulic, or porphyric): coated

Sorting (unsorted, poorly, well, perfectly) : poorly

Micromass

Colour (x5 objective, PPL/XPL): colourless/1st order greys

Limpidity (limpid (i.e. translucent or transparent), cloudy, opaque, speckled, dotted, (masked)): limpid

B-fabric (undifferentiated, cristallitic, striated, speckled): critstallitic

Voids (% abundance within µ-unit, size: v v sm <40, v sm 40-300, sm 300-500, m 500-1000, lr1000-2000, v lr 2000-5000, v v lr>5000,), up orient (str, m, w), body orient (str, m, w) :

- Vesicles: none
- Channels: 1, m, unoriented;
- Chambers:none
- Vughs: 20, sm and m and lr, unoriented;
- Cracks: none

Coarse materials

Inorganics [type: %, size (µm, max.), colours, form, extent (pellicular, linear, speckled, digitate), degree (0= <2.5% altered, 1=2.5-25%, 2=25-75%, 3=75-97.5%, 4 =<97.5% altered)), distribution and orientation]

Minerals (abundance %, type, colour in ppl/xpl, size [v sm <30, sm (30-50), sm-m (50-100), m (100-300), m-lr (300-500), lr (500-1000), v lr (>1000)], rounding or form, extent and pattern of weathering)

- Tectosilicates: quartz: 50, colourless/1st order greys, m and m-lr and lr, well-rounded, 1

pellicular and irregular linear;

- Inosilicates:

  amphibole : 1, sm-m, euhedral, 1 linear (normal to cleavage planes);

- Nesosilicates: none

- Phyllosilicates: none

- Other (e.g. rocks, carbonates, sulfates, ash):

  Granitic rock fragments: 2, yellow and colourless and opaque/ yellow and first order greys and opaque, m-lr, R, 2 complex;

  Limestone rock fragments: 2, grey/ fourth order pinks, m-lr and lr, R, 2 complex;

  Calcite: 1, grey/ fourth order pinks, m-lr, 1 complex (pellicular and speckled and linear);

Organics type, % abundance of the µ-unit, size v sm 2-50, sm 50-100, m 100-200, lr 200-500, v lr 500-1000, v v lr 1000-2000), colours, form, degree of preservation (excellent, good, fair, or poor), distribution, orientation :

- Amorphous: none

- Plant: none

- Other (e.g. bone, excrement, fungal remains) : 1, fungal (sclerotia), lr, reddish brown/ isotropic, circular, poor, strongly clustered basic distribution, unoriented;

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Pedofeatures

Pedofeatures related to voids, grains or aggregates [%, size (sm <50, m 50-100, lr >100µm) (if lr state max. observed in µm), related feature, and colours] :

- Intrusive: Coatings: none

- Matrix:

  Hypo-coatings (related, touching a surface) : 10, sm and m, rocks and minerals, orange brown/ 1st order strong yellows

  Quasi-coatings (not touching) :none

  Infillings: none

Pedofeatures not related to voids, grains or aggregates

- Nodules [% abundance, orientation, distribution, size (sm <250, m 250-500, lr >500 µm) (if lr state max. observed in µm), colour, laminations (</>30µm), boundary (diffuse, clear, sharp), fragmentation (slightly, moderately, highly), texture (clay/C, silt/ Z, and/or sand/S sized)] : 2, unoriented, moderately clustered basic distribution, dark red/ dark red, none, sharp, none, CZ;

- Excremental Pedofeatures (% abundance, colour PPL, size (sm <250, m 250-500, lr >500 µm), angularity, size of clasts (e.g. CZS) : 1, brownish orange/ orange brown, m, SR, CZ;

Peds (type and size: apedal, granular, sub-A-blocky, A-blocky, prism, platy, lenticular; v v sm <50, v sm 50-1000, sm 1000-2000, m2000-5000, lr 50000-10000, v lr >10000) : apedal

Other notes and comments on the description of the sample as seen in thin section: none

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