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Late Jurassic Sedimentation in the Boreal-Tethyan Seaway: climate modelling, geochemistry, and petrography of the Kimmeridge Clay Formation

ELIZABETH FILIZ LINDSAY ATAR

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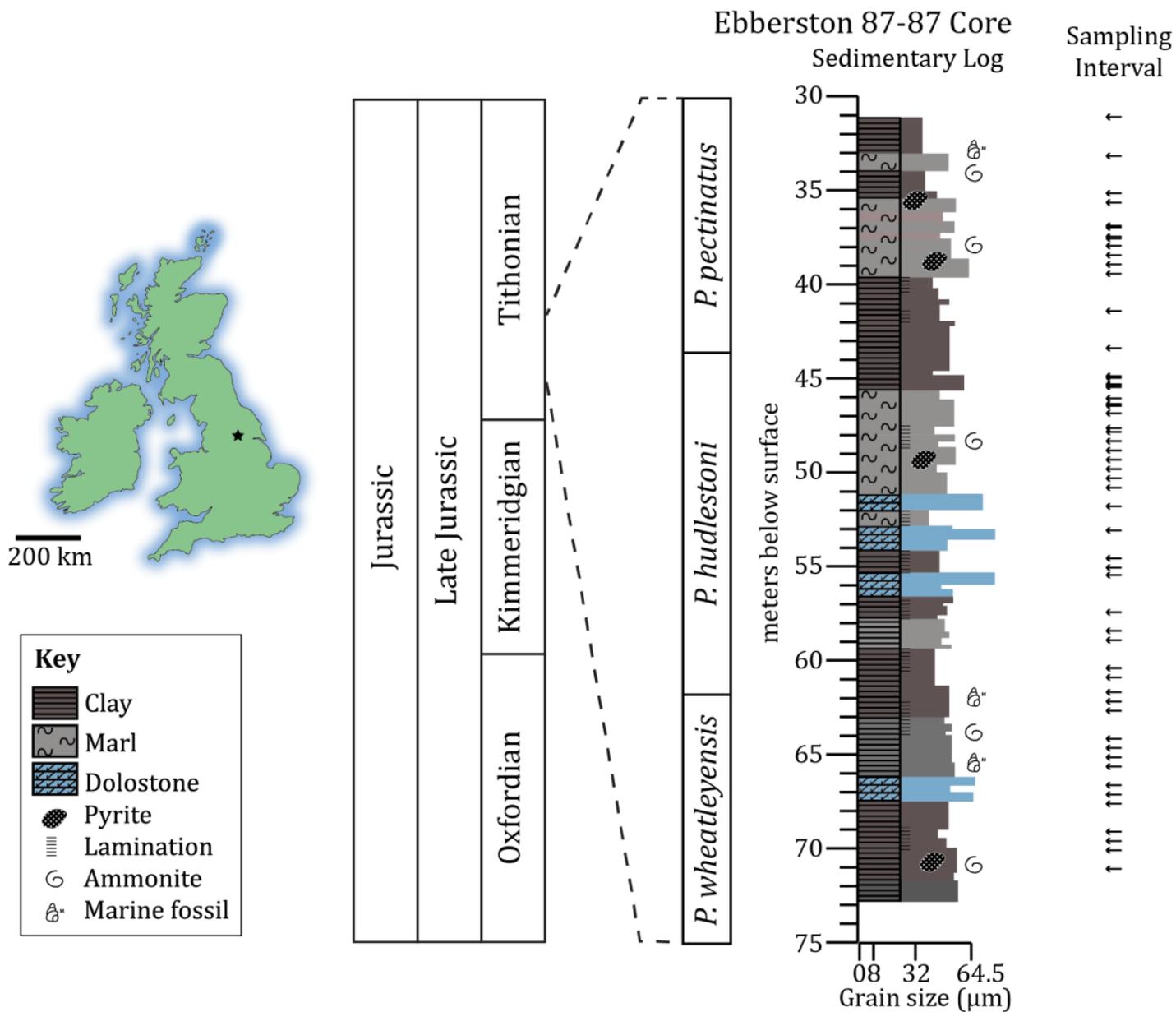
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Ebberston 87 petrography



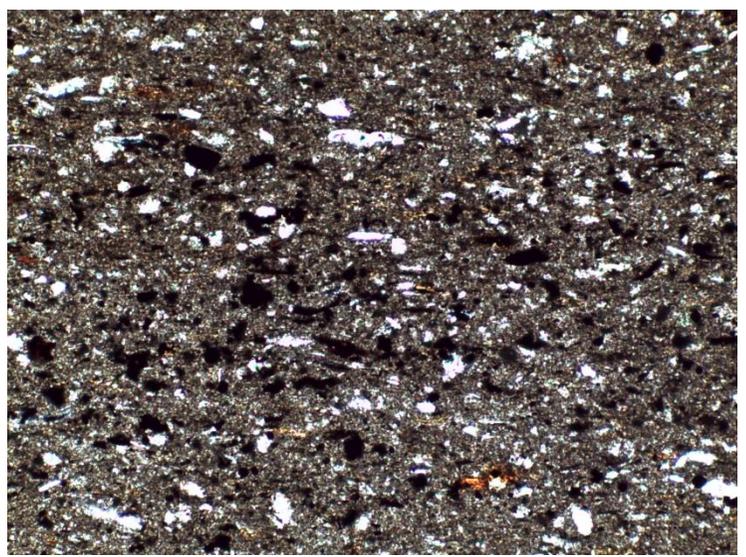
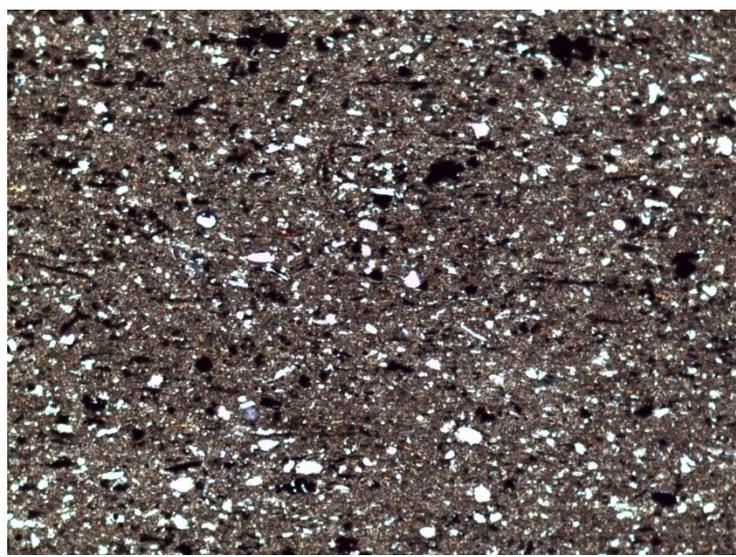
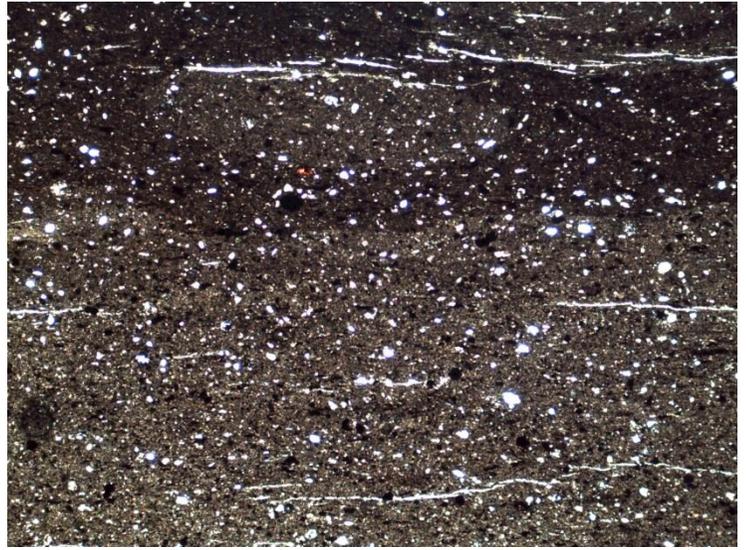
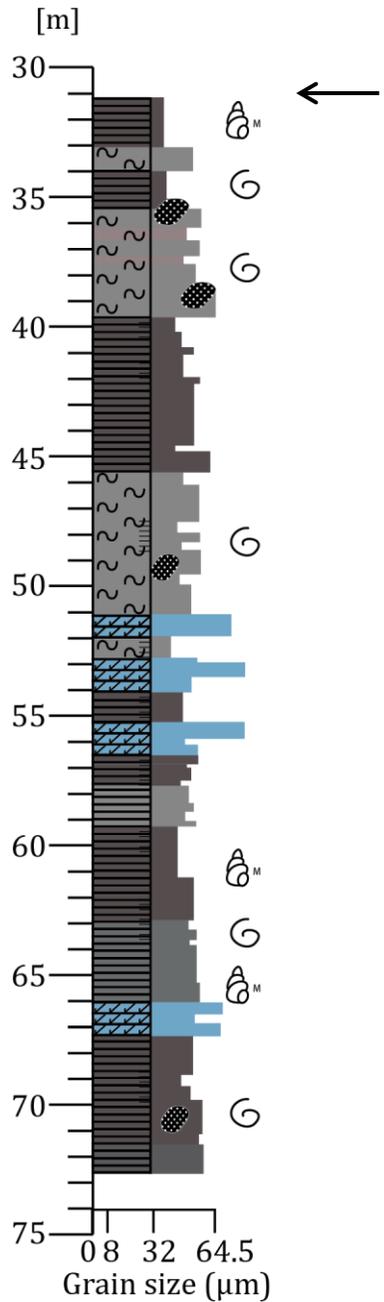
Location map, stratigraphic column and litholog of the Ebberston 87 core. Arrows indicate sampling interval for thin sections.

Facies descriptions

No.	Name	Brief Description	Samples
1	Clastic-detritus-rich medium mudstone	Heavily bioturbated, argillaceous matrix with abundant medium to coarse mud sized detrital clasts in it. Calcareous nanofossils are present and of ten infilled with authigenic kaolinite.	31.07 , 33.17 , 35.17 , 37.60 , 41.50 , 47.80 , 48.00 , 49.00 , 49.50 , 50.00 , 50.50 , 52.00 , 57.70 , 59.20 , 60.70 , 63.00 , 64.50 , 65.00 , 67.00 , 71.50
2	Organic material and calcareous pellet-rich, laminated mudstone	Lenticular, discontinuous wavy laminated, algal maceral dominated mudstone. Calcareous faecal pellets float within an argillaceous and carbonaceous matrix.	36.92 , 37.00 , 37.50 , 38.50 , 45.44 , 45.50 , 46.20 , 46.50 , 66.00 , 67.00 , 68.00
3	Coccolith-dominated medium mudstone	Fine to medium normally-graded calcareous mudstone beds. It is dominated by coccolith plates and coccolith-rich faecal pellets. Matrix comprises of coccoliths, clay minerals and quartz grains.	35.67 , 38.00 , 39.00 , 45.00 , 45.59 , 46.80 , 47.00 , 65.50
4	Agglutinated foraminifera bearing, medium to coarse, carbonaceous mudstone	Heavily bioturbated with no remaining sedimentary structures. Argillaceous and carbonaceous matrix with detrital components and abundant agglutinated foraminifera.	35.67 , 43.50 , 46.60
5	Biogenic detritus dominated, fine to medium mudstone	Disarticulated shell fragments dominate this facies. Shells and very abundant fine to coarse mud-sized quartz grains are set within an argillaceous matrix.	70.00 , 70.50
6	Carbonate cemented, coarse grained mudstone	Medium to coarse, angular, diagenetic carbonate grain-dominated sediment with an argillaceous matrix.	51.00 , 53.30 , 55.70 , 67.50

EB 31.07 m

Facies: 1

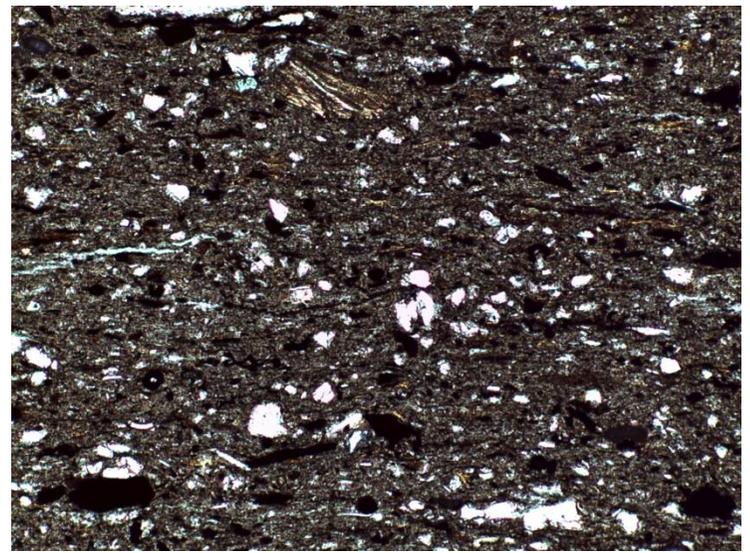
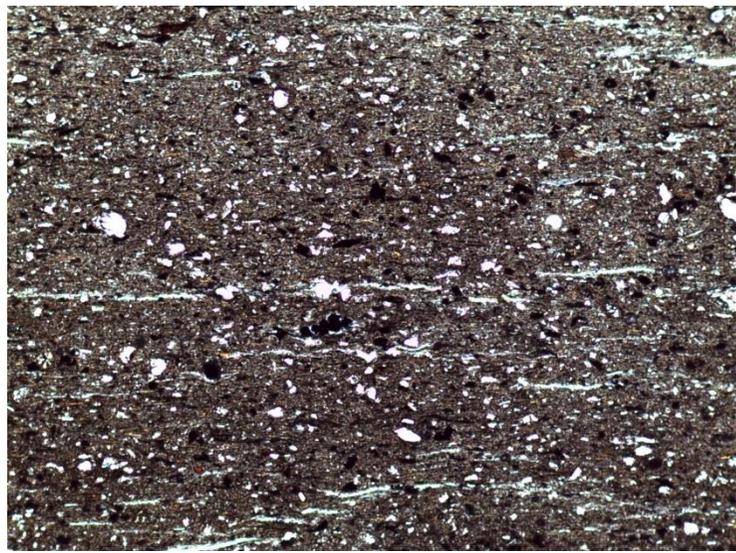
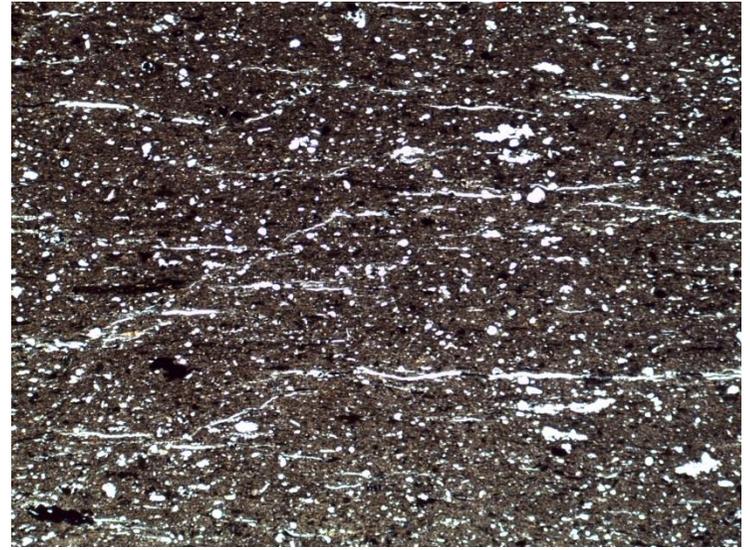
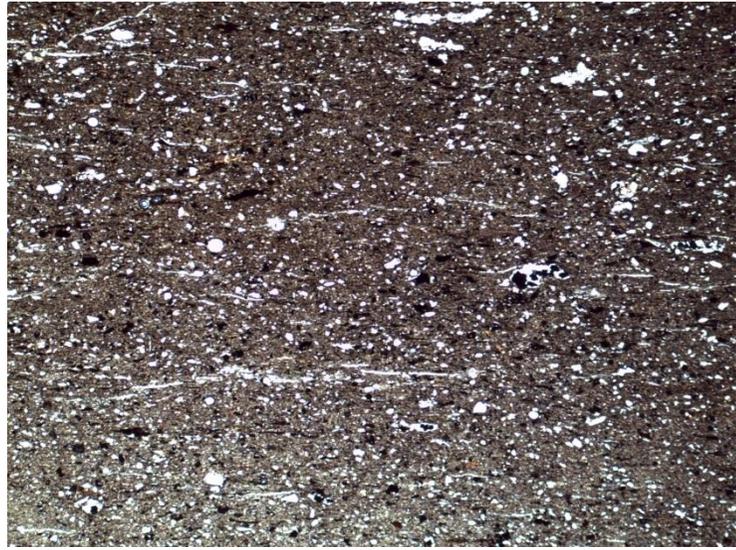
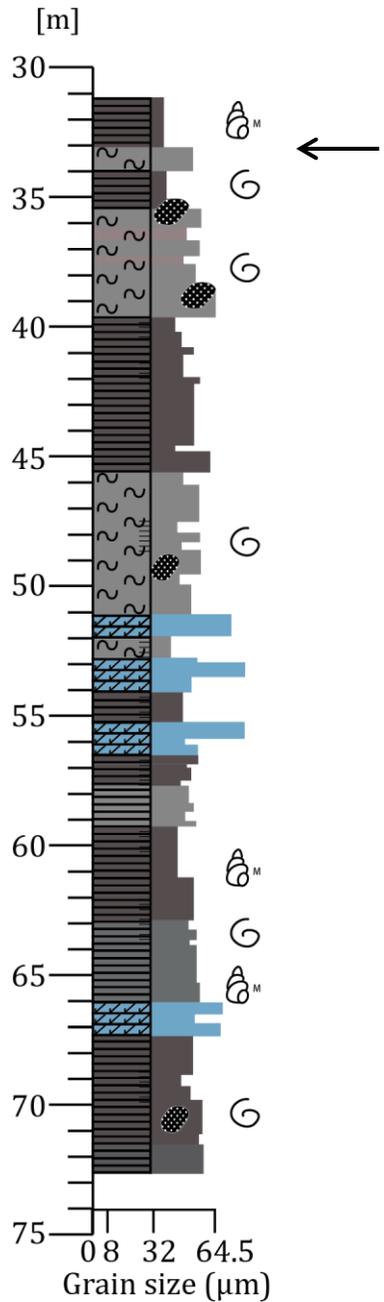


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 33.17 m

Facies: 1

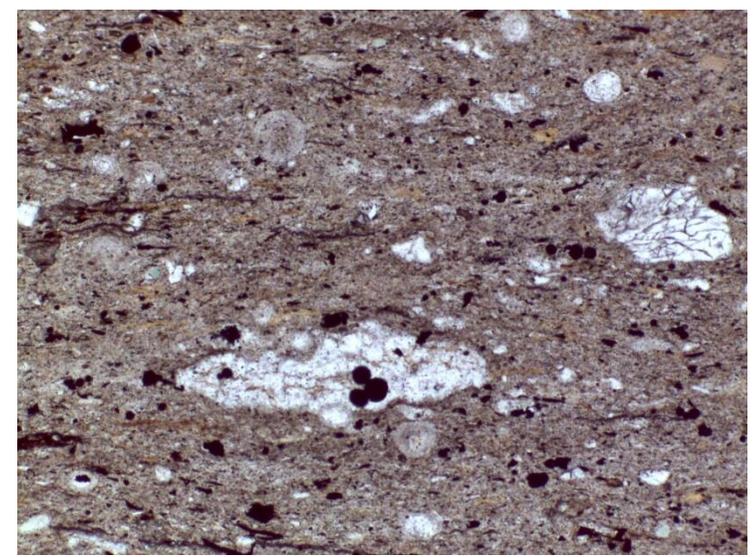
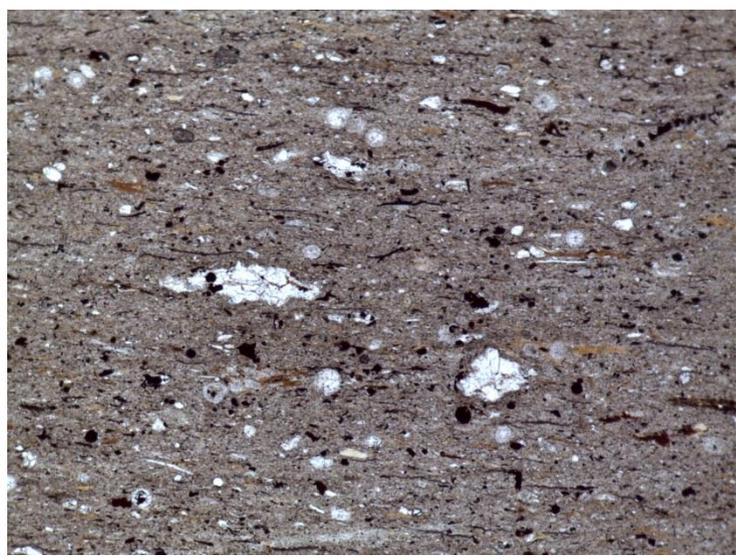
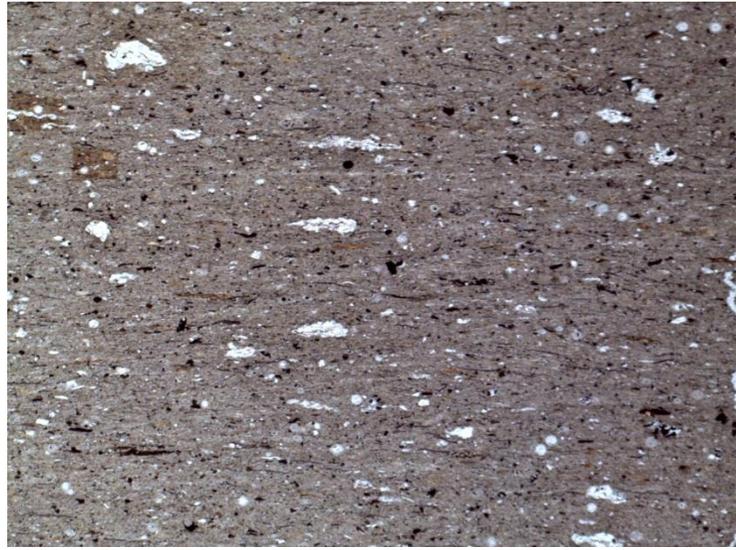
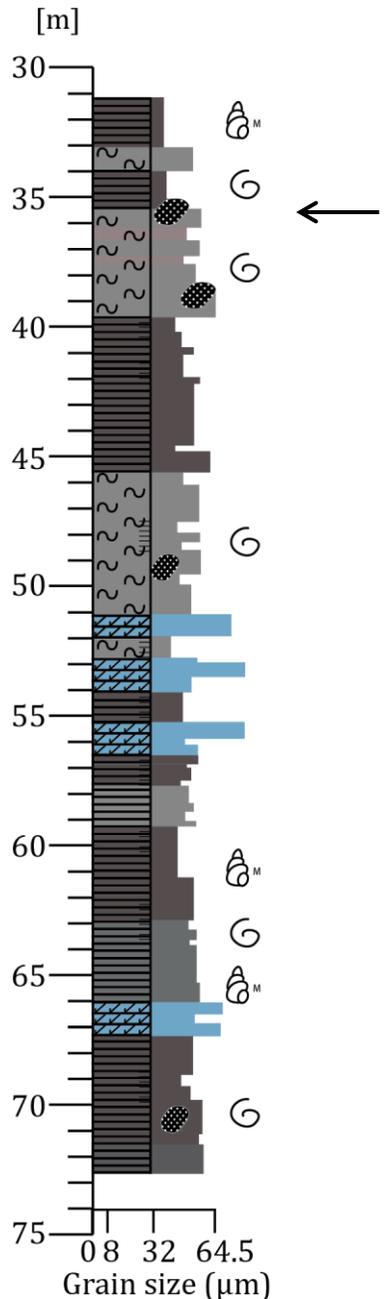


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 35.67 m

Facies: 4

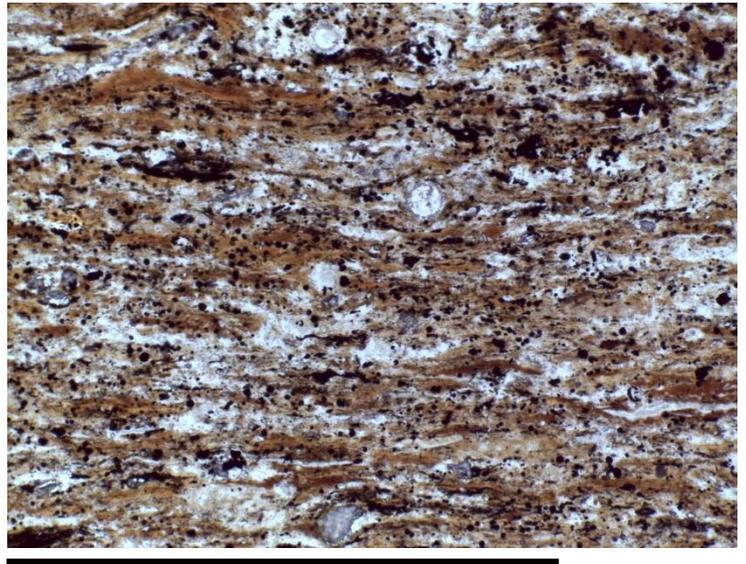
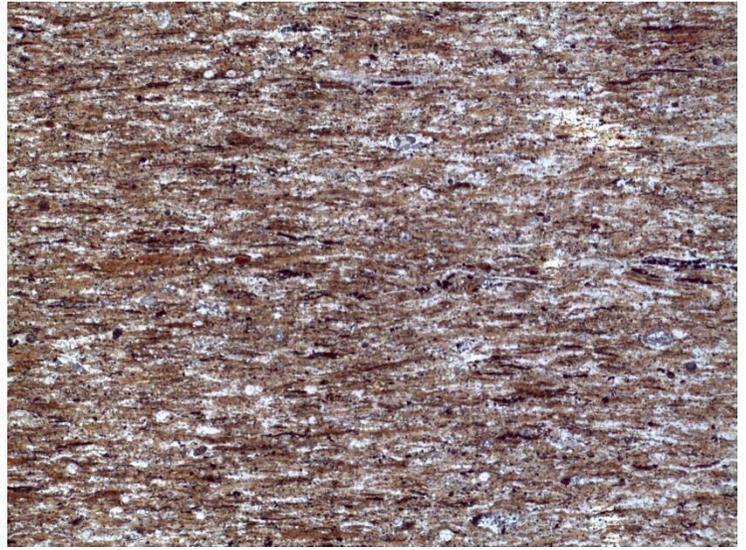
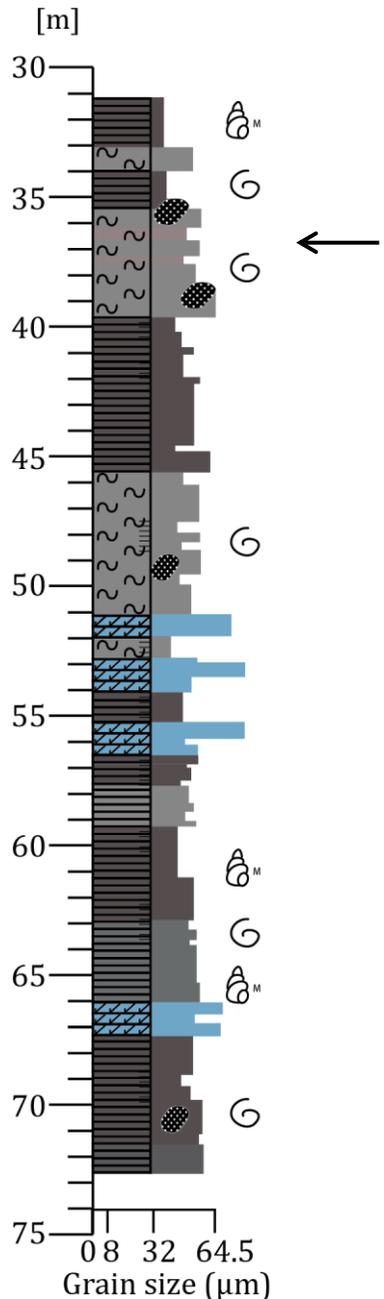


Thin section preparation: Durham University

All scale bars = 500 μm

EB 36.92 m

Facies: 2

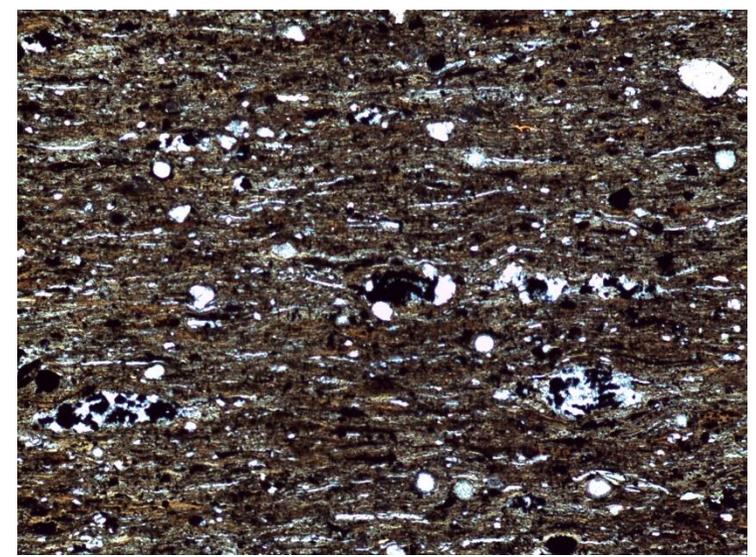
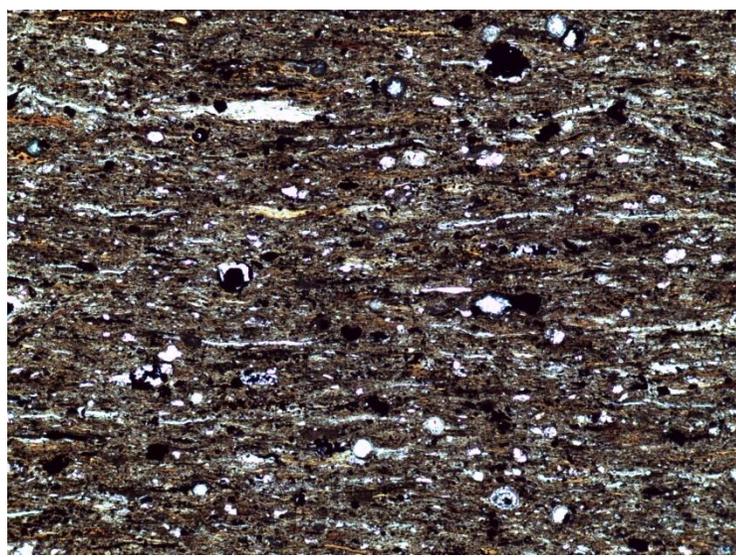
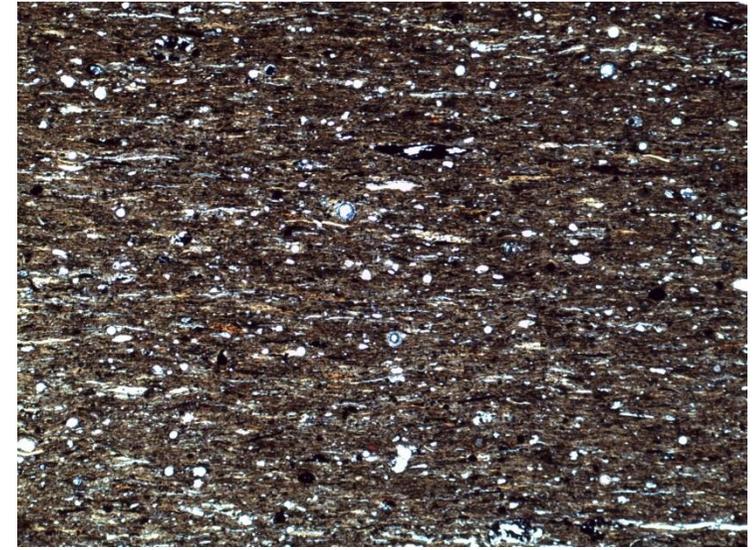
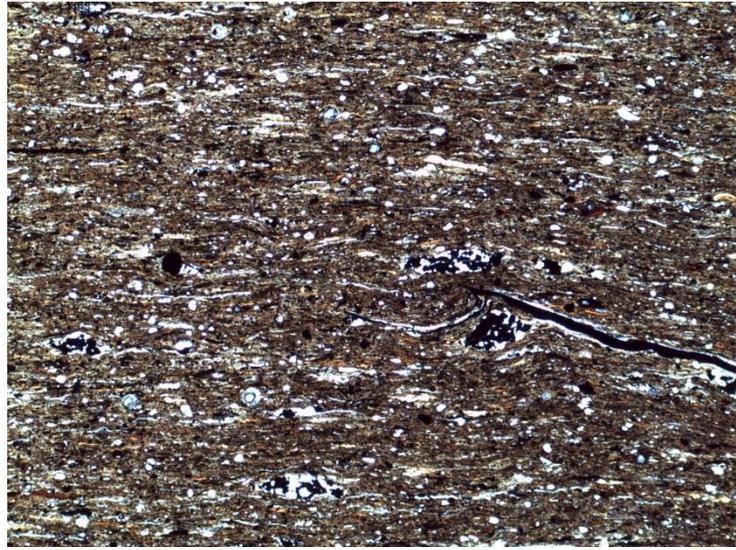
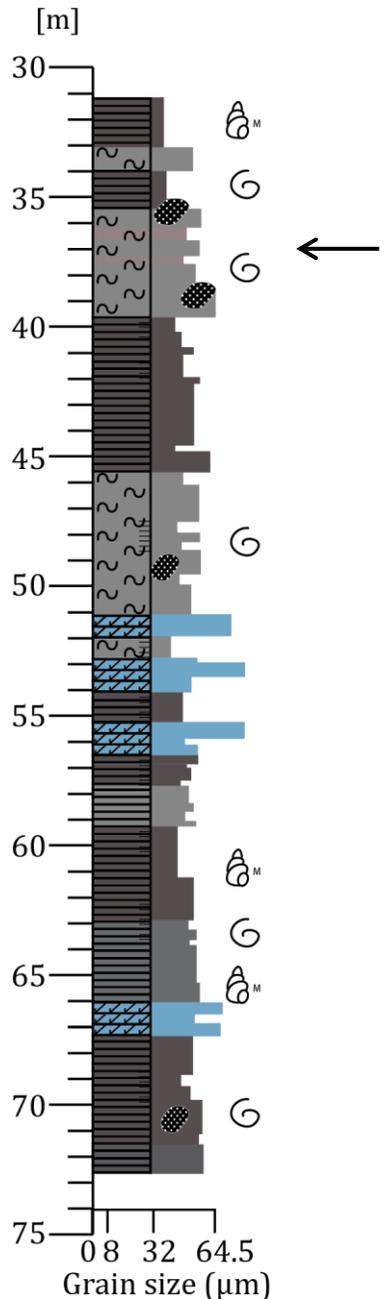


Thin section preparation: Durham University

All scale bars = 500 μm

EB 37.00 m

Facies: 2

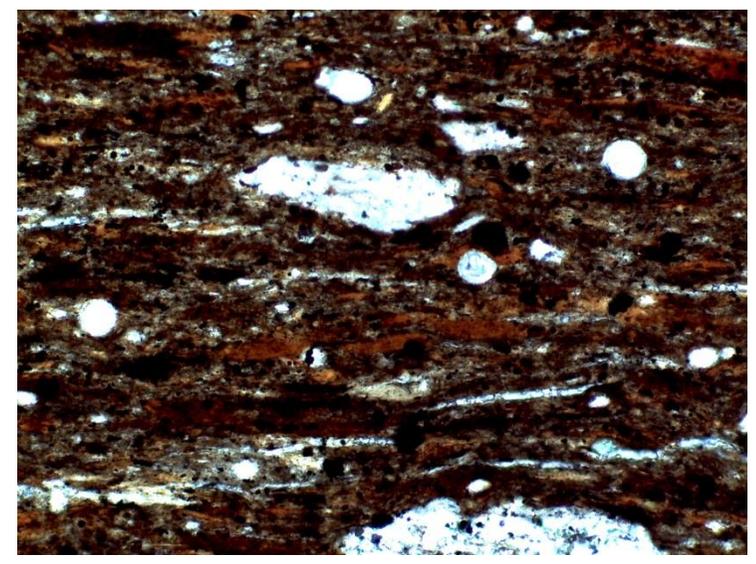
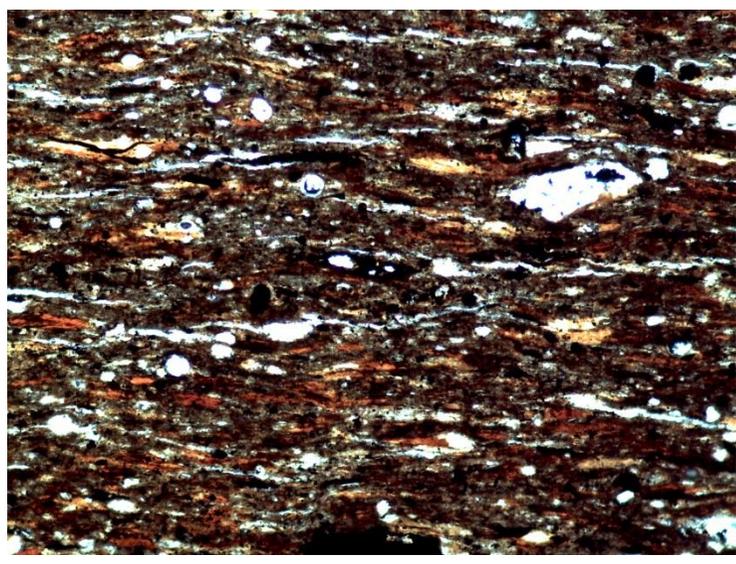
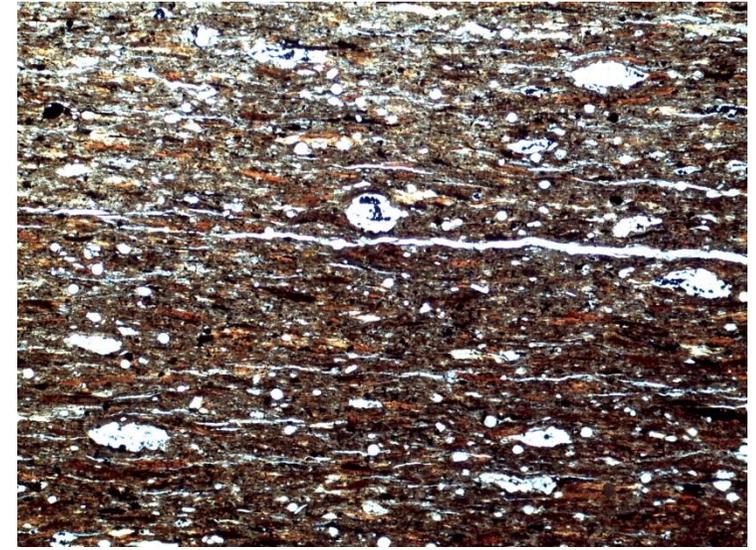
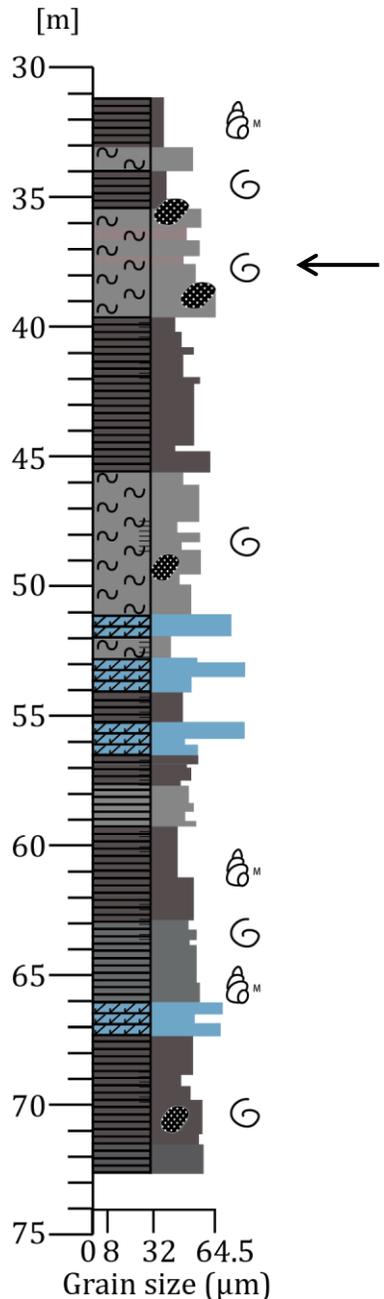


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 37.50 m

Facies: 2

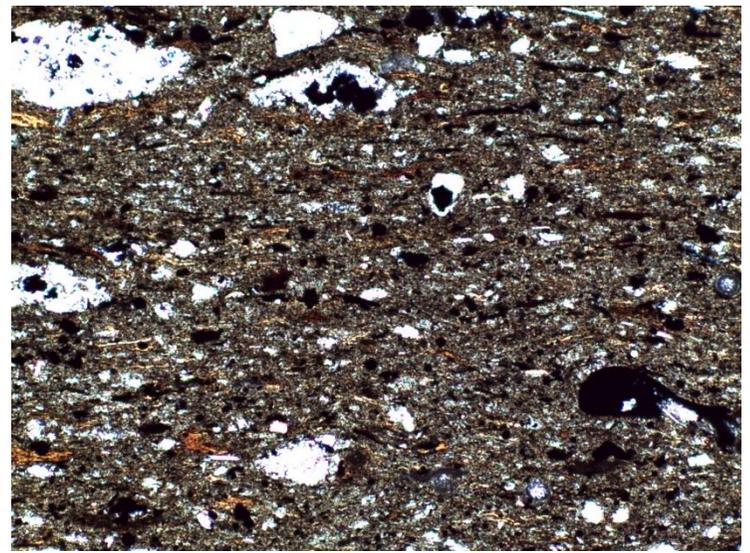
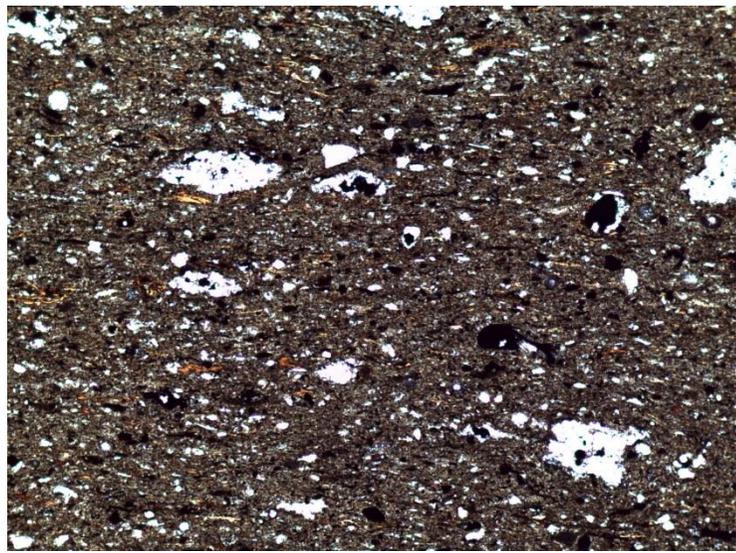
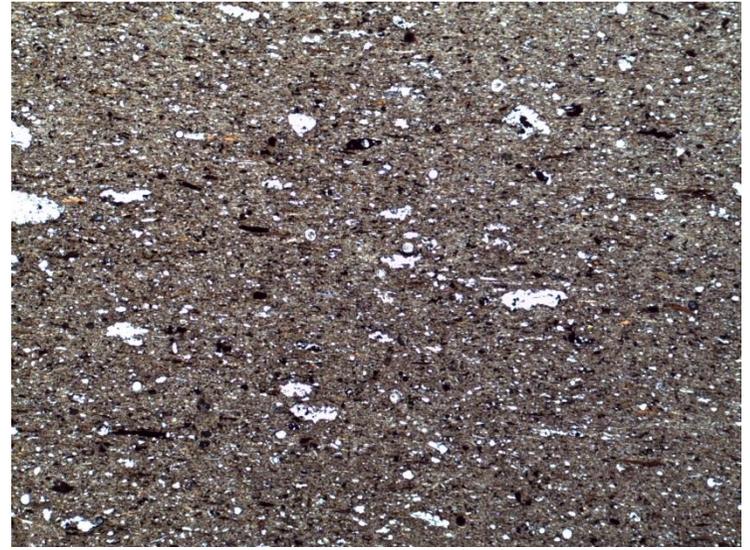
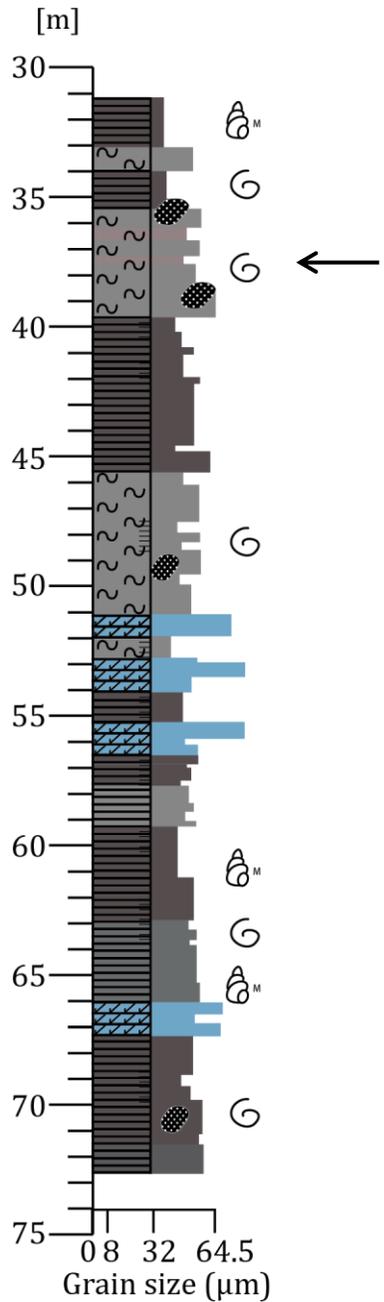


Thin section preparation: Durham University

All scale bars = 500 μm

EB 37.60 m

Facies: 1

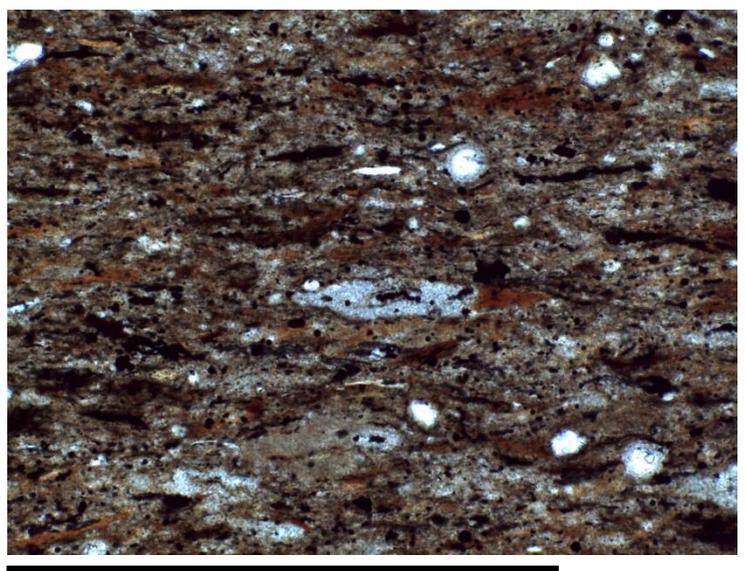
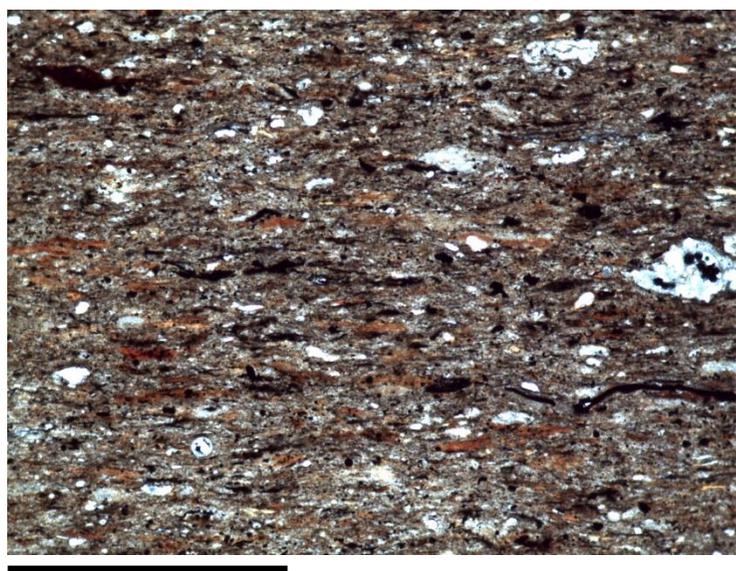
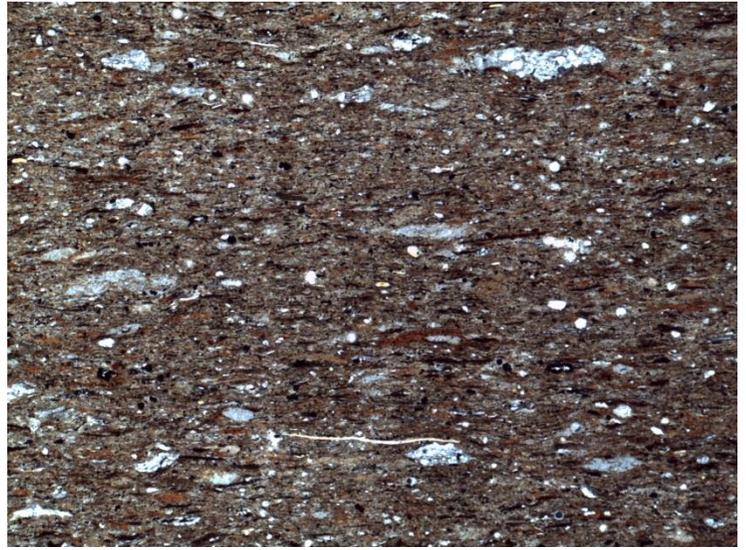
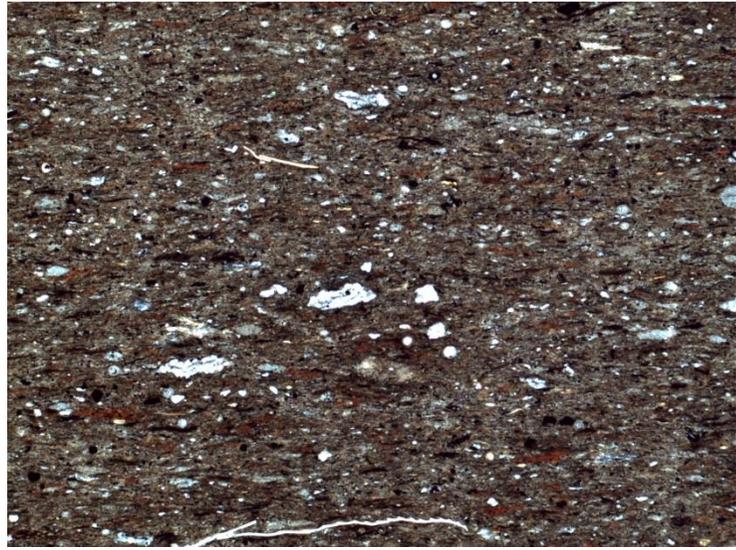
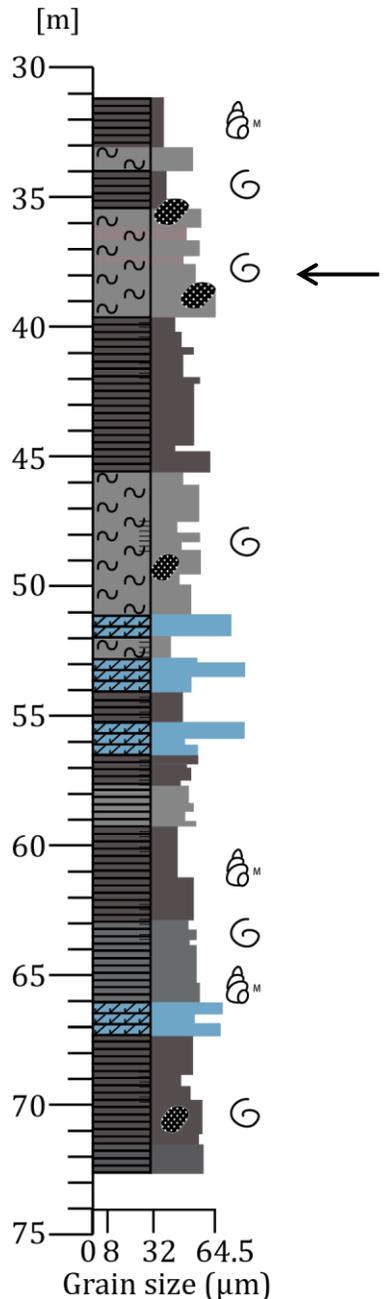


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 38.00 m

Facies: 3

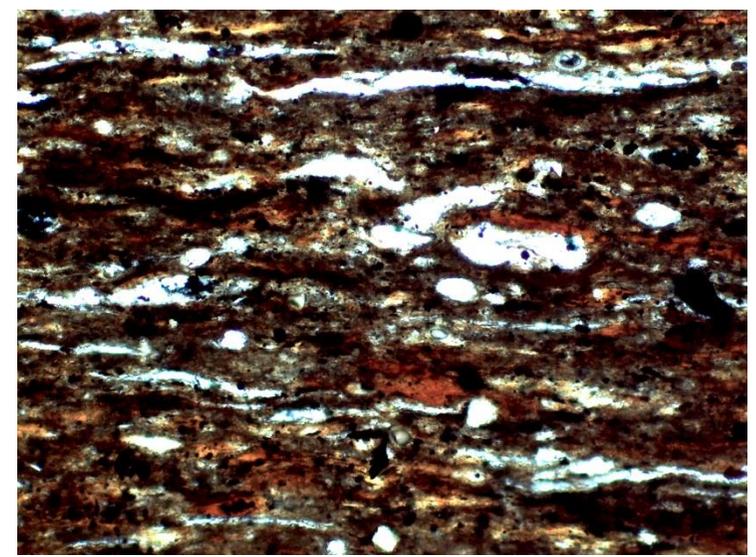
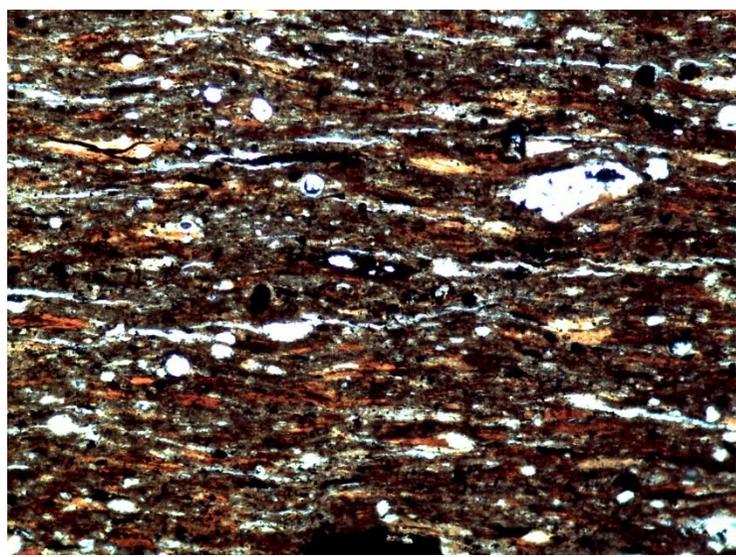
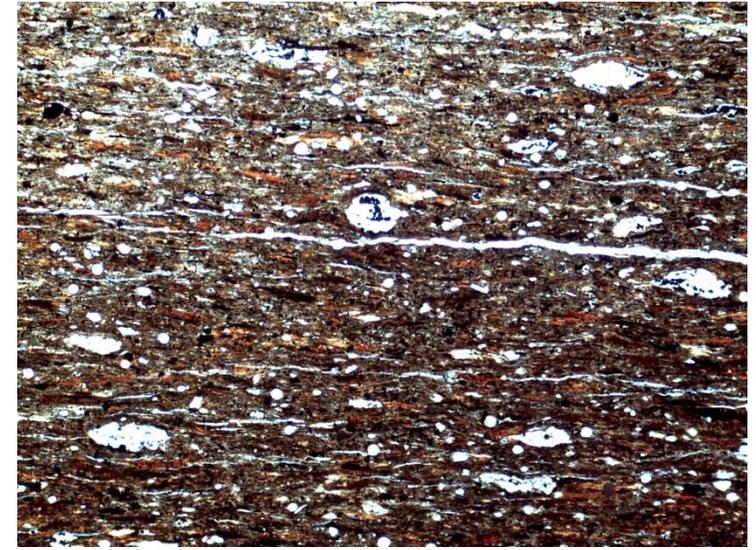
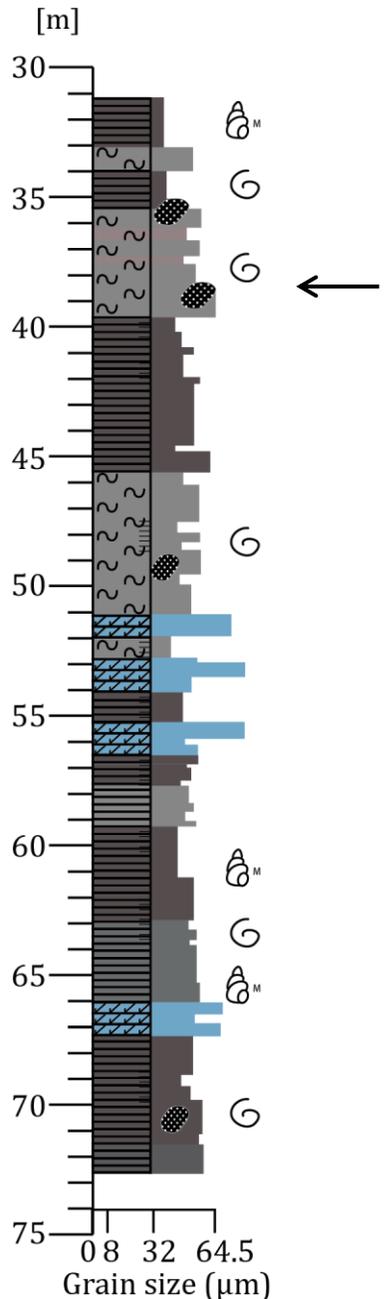


Thin section preparation: Wagner Petrographic Ltd/Durham University

All scale bars = 500 μm

EB 38.50 m

Facies: 2

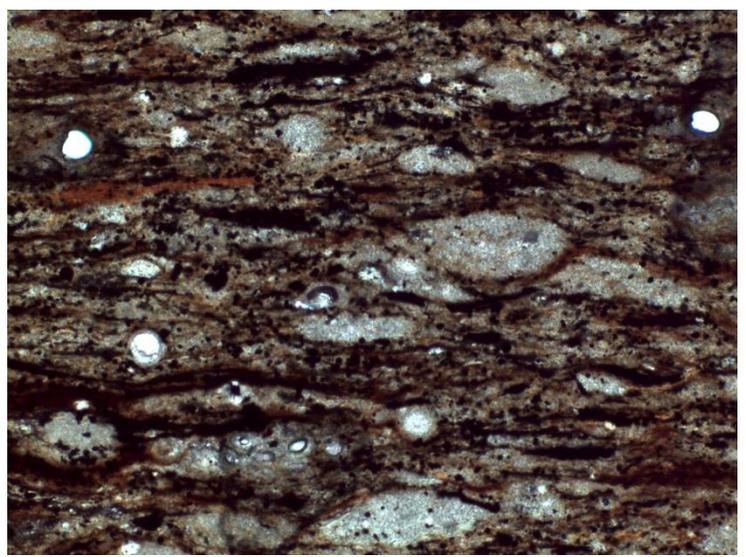
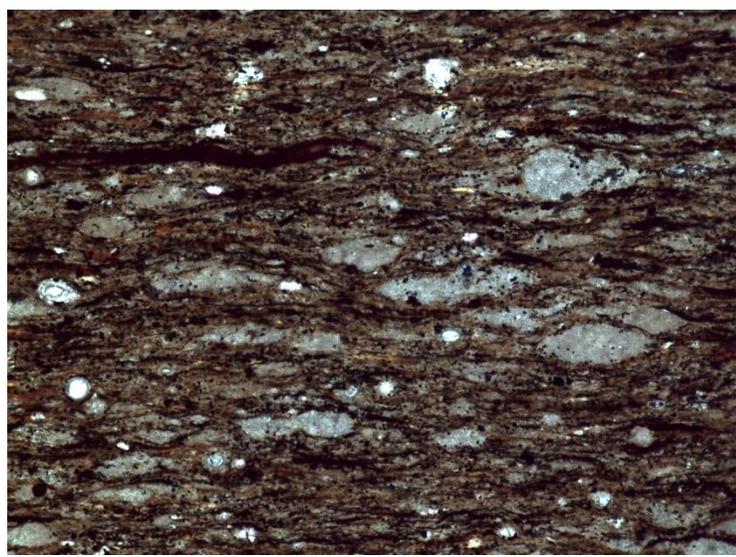
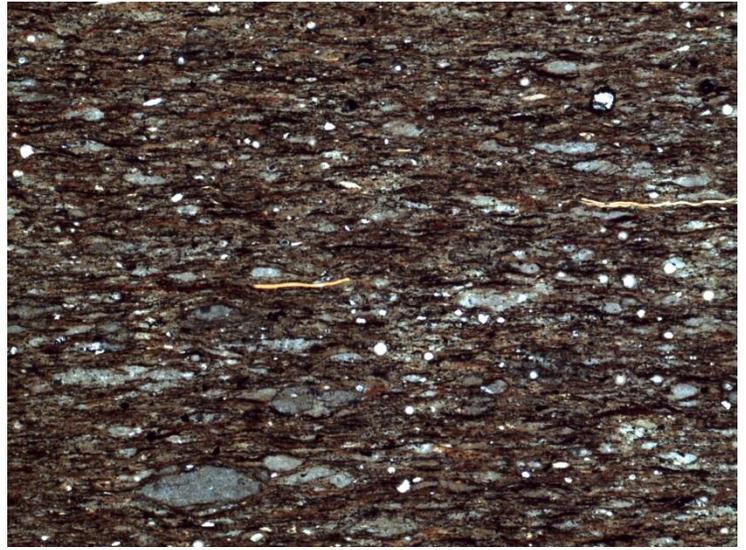
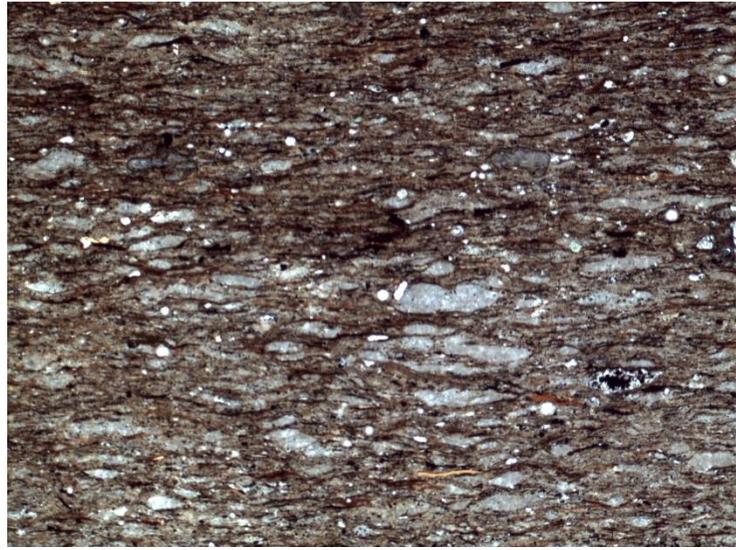
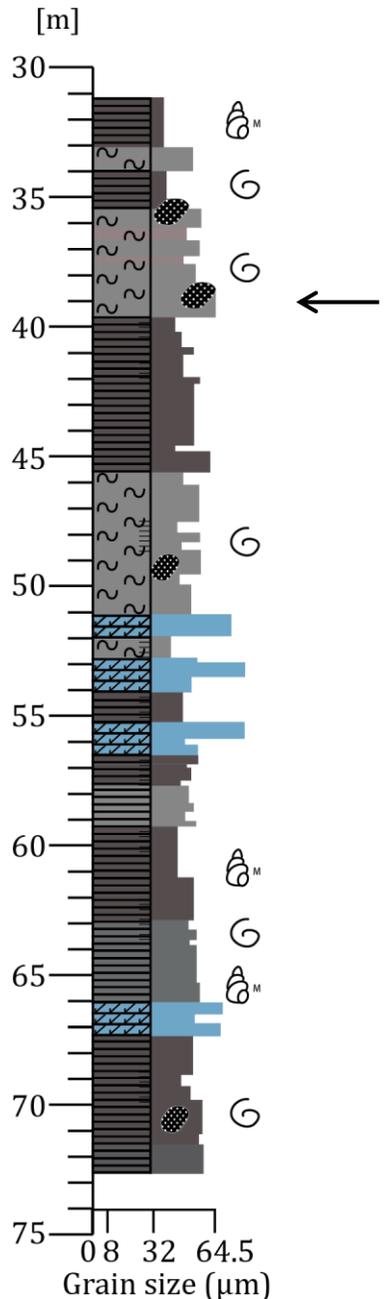


Thin section preparation: Durham University

All scale bars = 500 μm

EB 39.00 m

Facies: 3

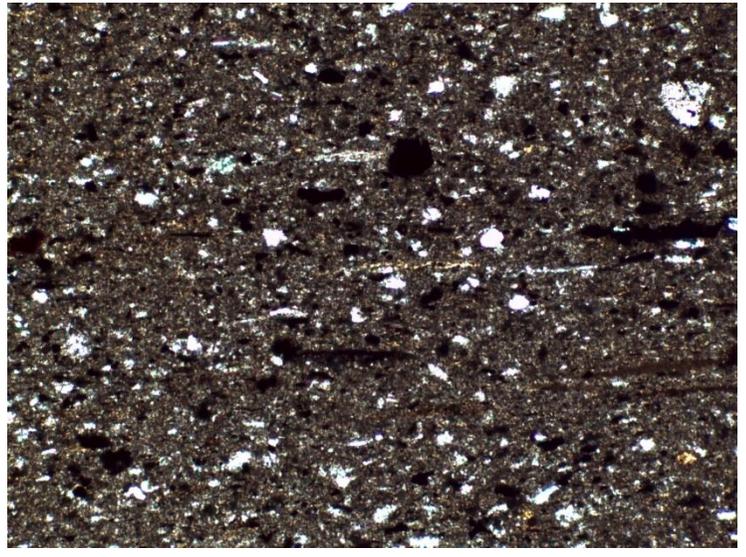
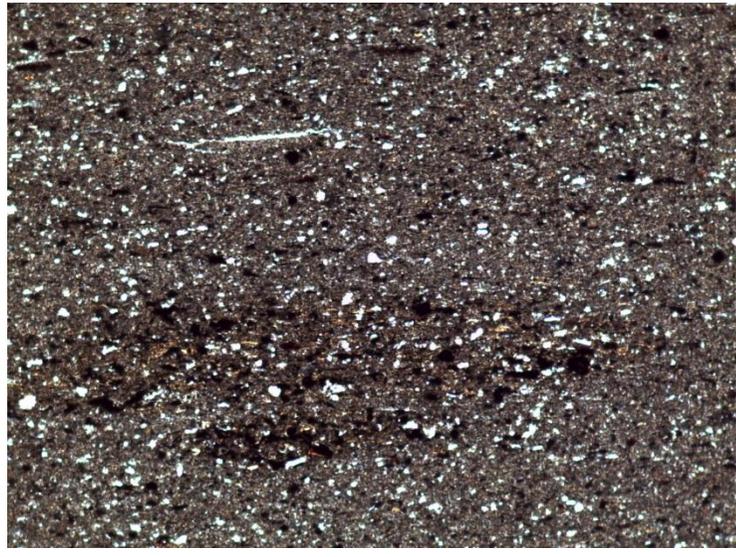
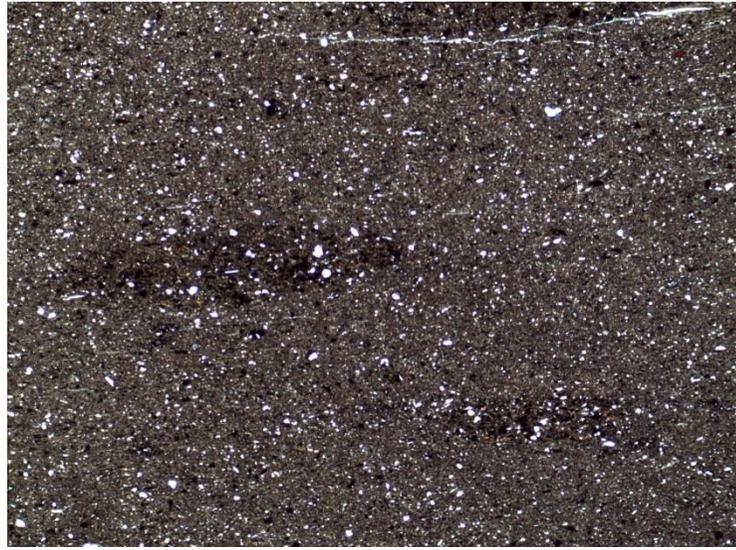
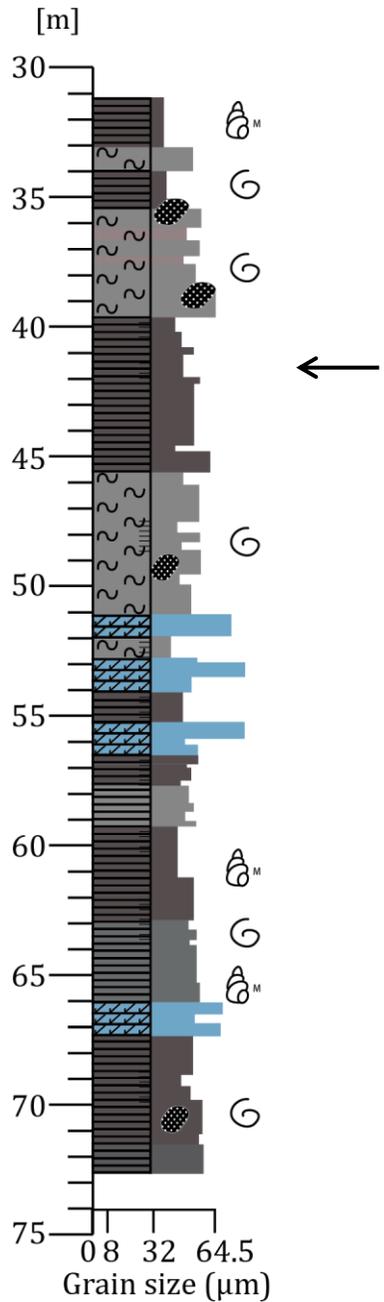


Thin section preparation: Wagner Petrographic Ltd/Durham University

All scale bars = 500 μm

EB 41.50 m

Facies: 1

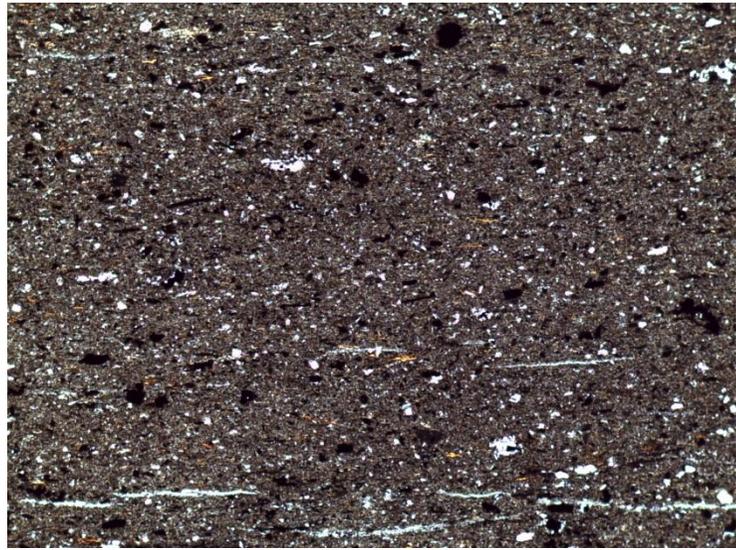
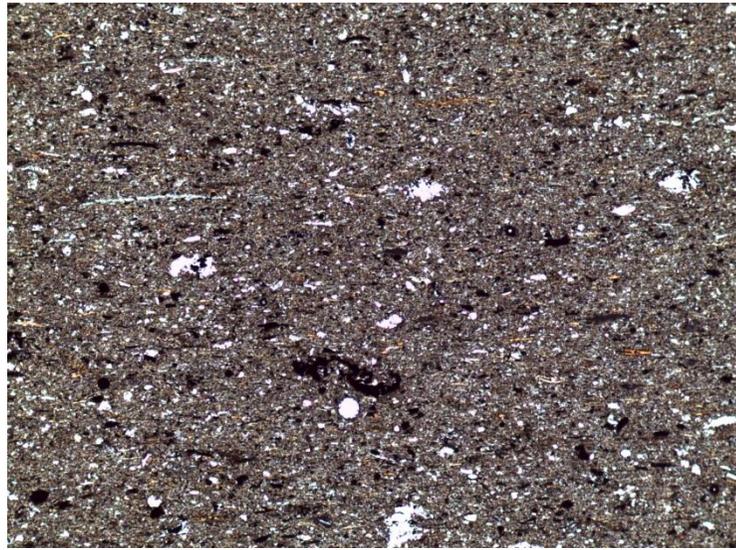
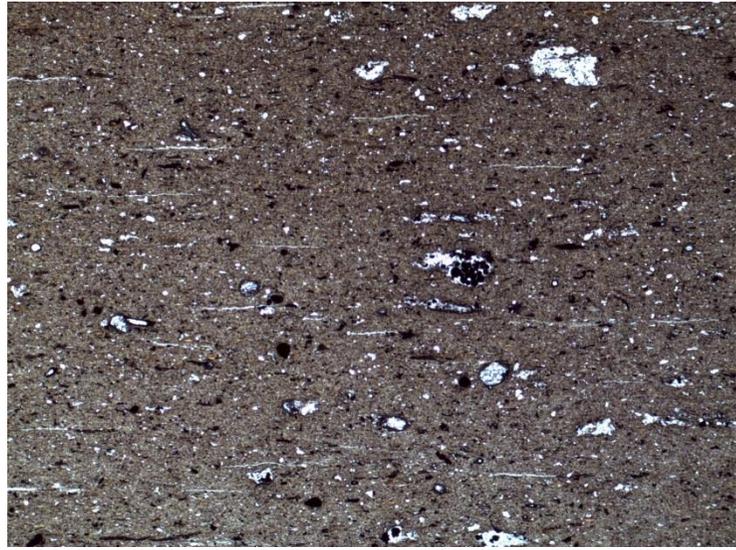
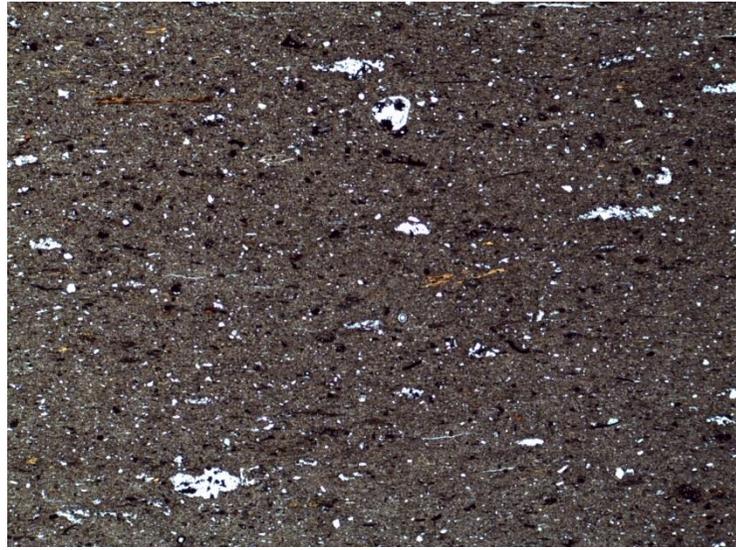
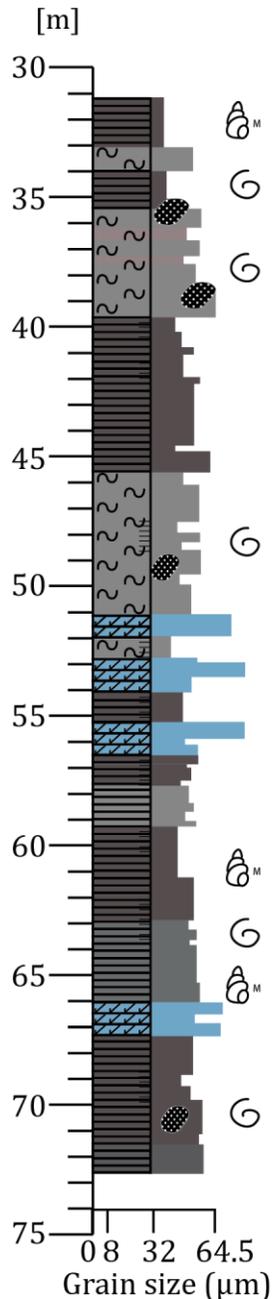


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 43.50 m

Facies: 4

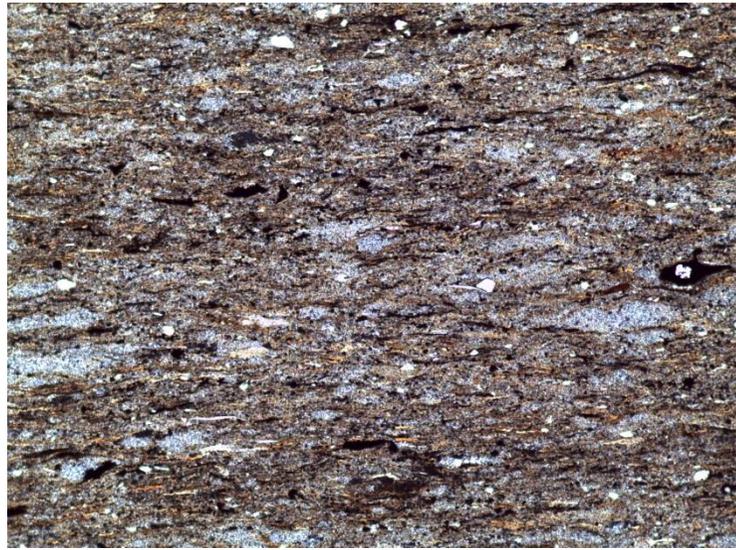
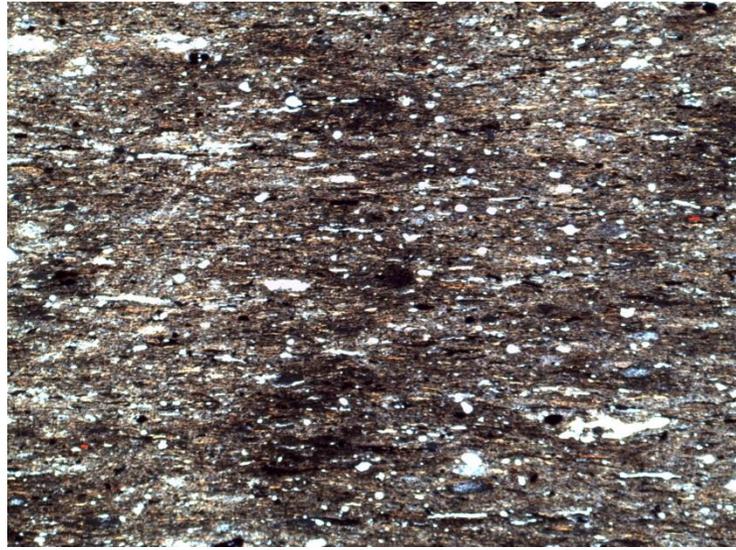
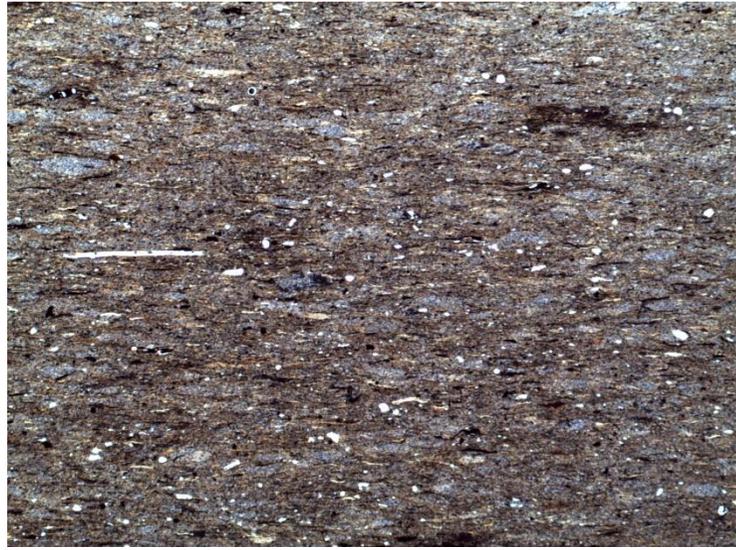
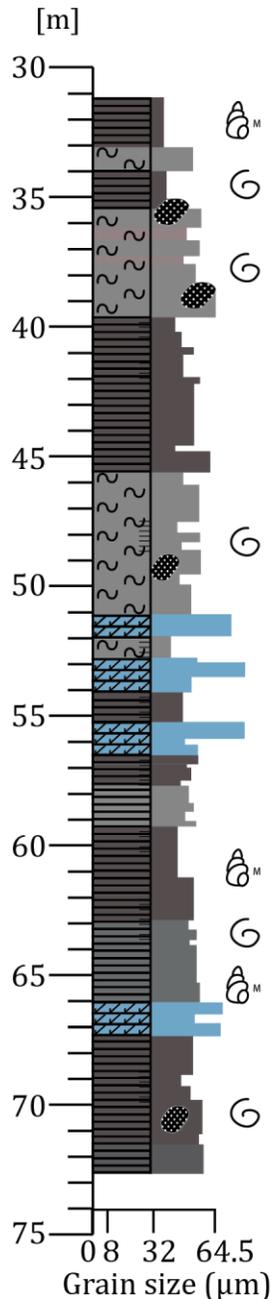


Thin section preparation: Wagner Petrographic Ltd/Durham University

All scale bars = 500 μm

EB 45.00 m

Facies: 3

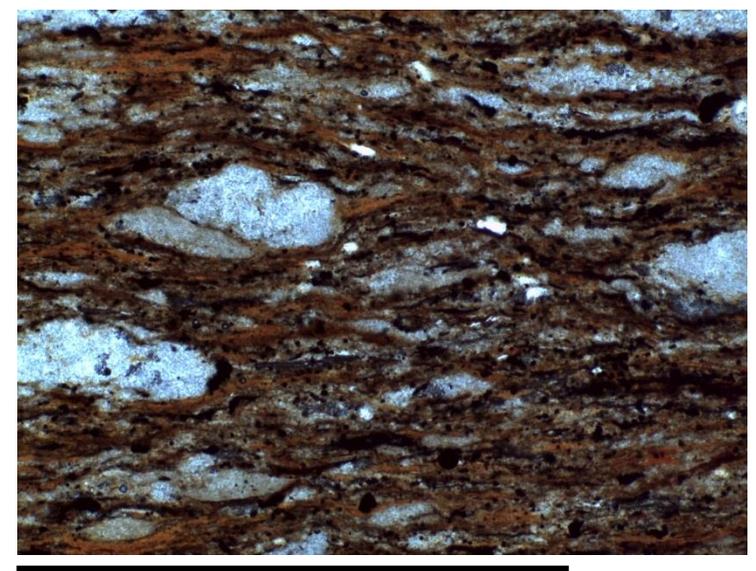
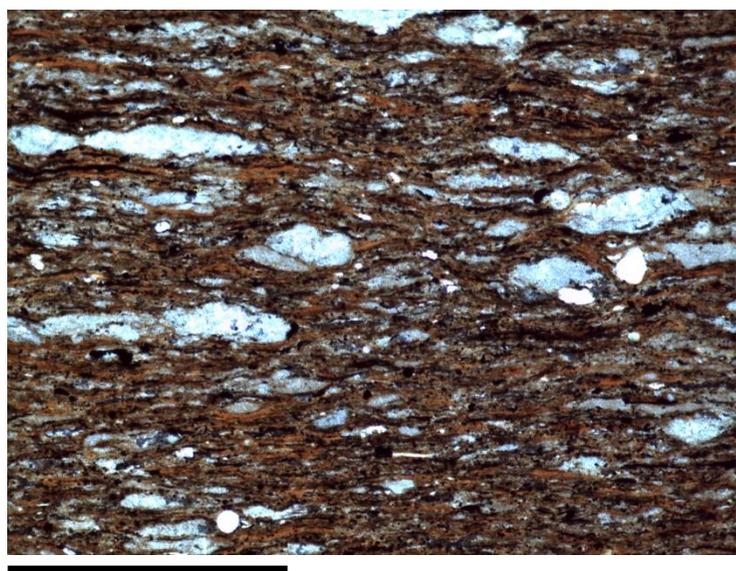
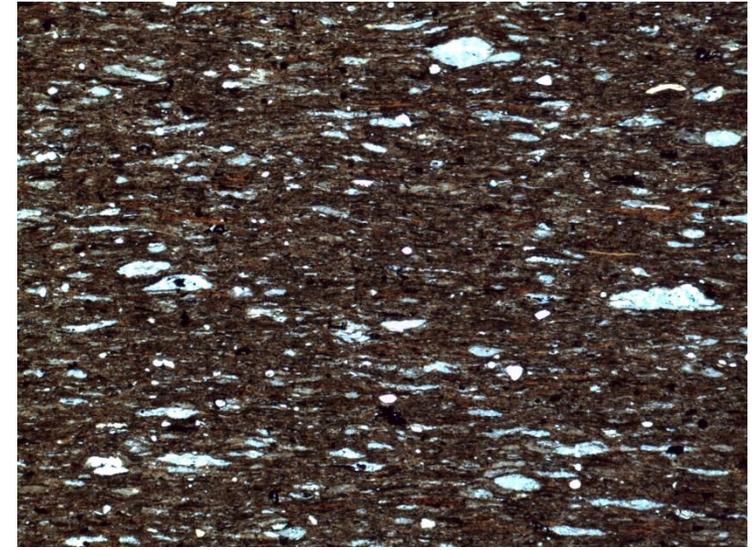
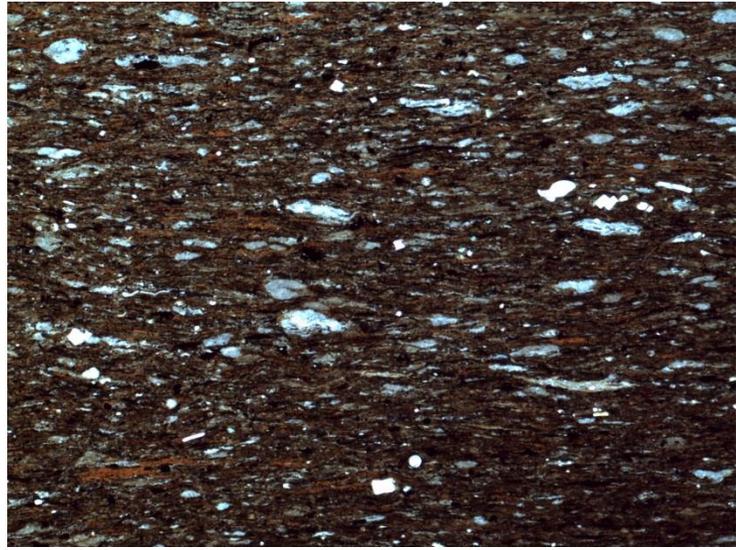
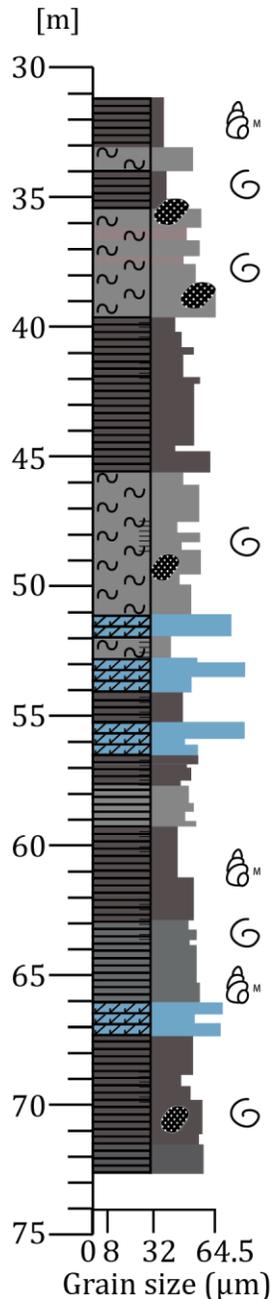


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 45.44 m

Facies: 2

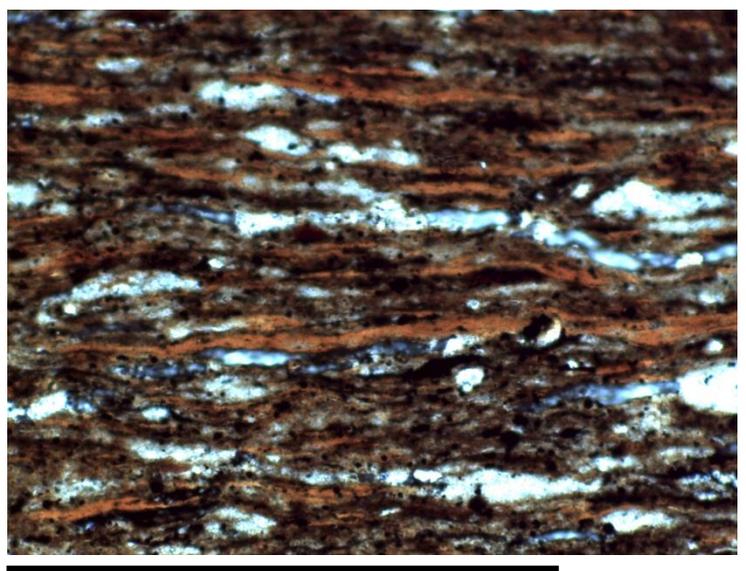
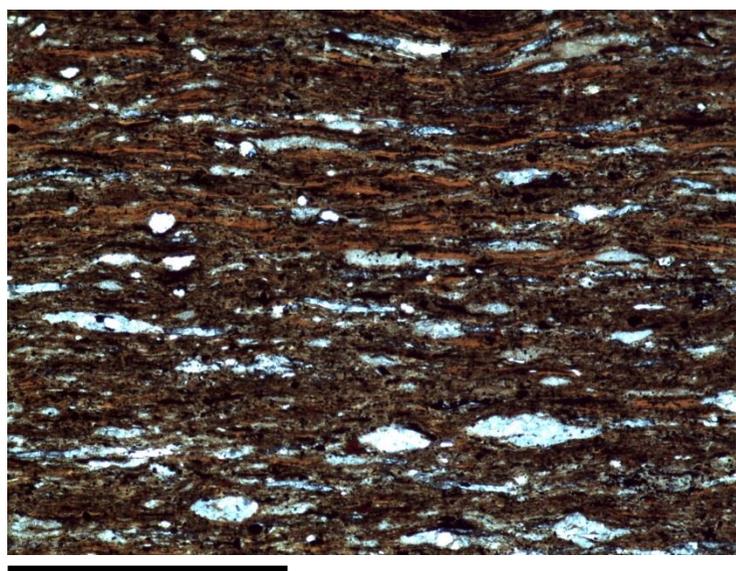
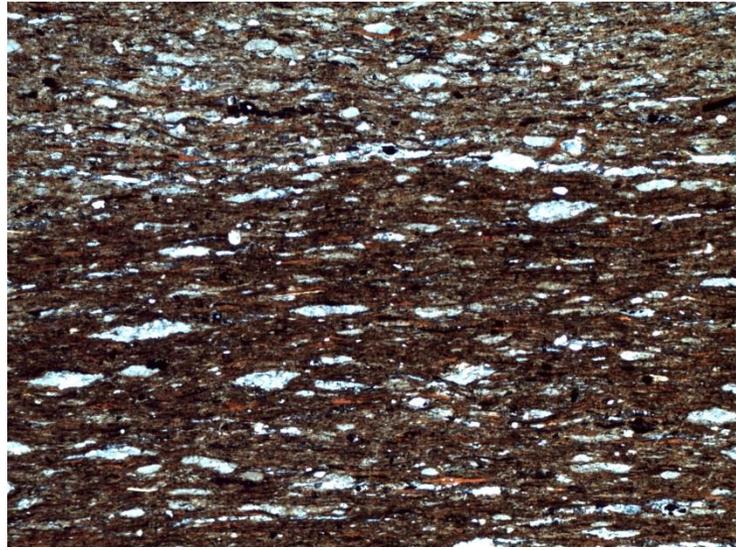
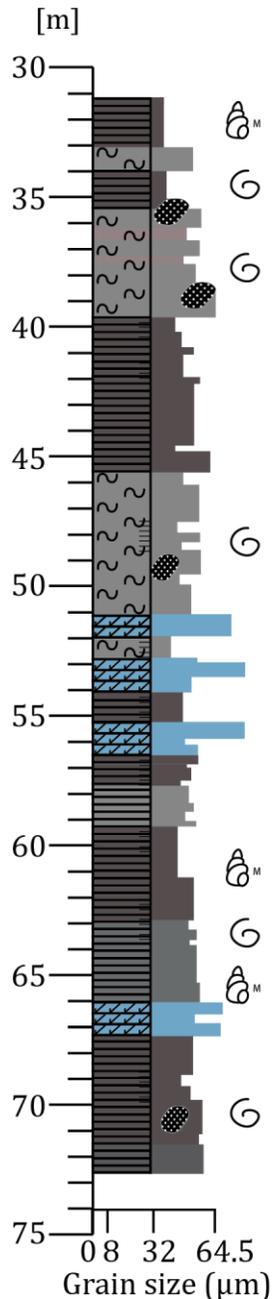


Thin section preparation: Durham University

All scale bars = 500 μm

EB 45.50 m

Facies: 2

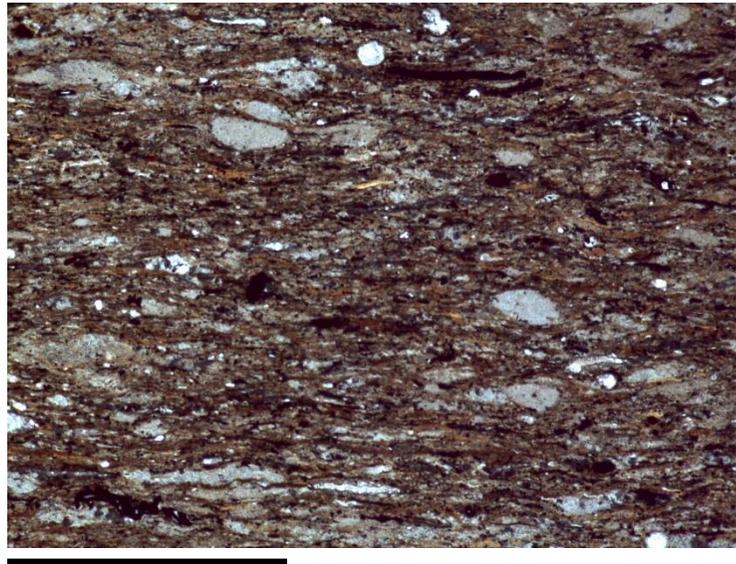
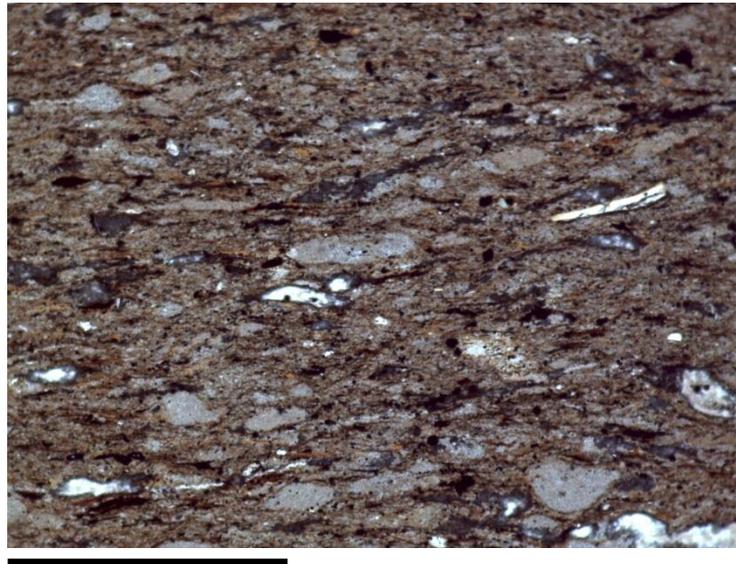
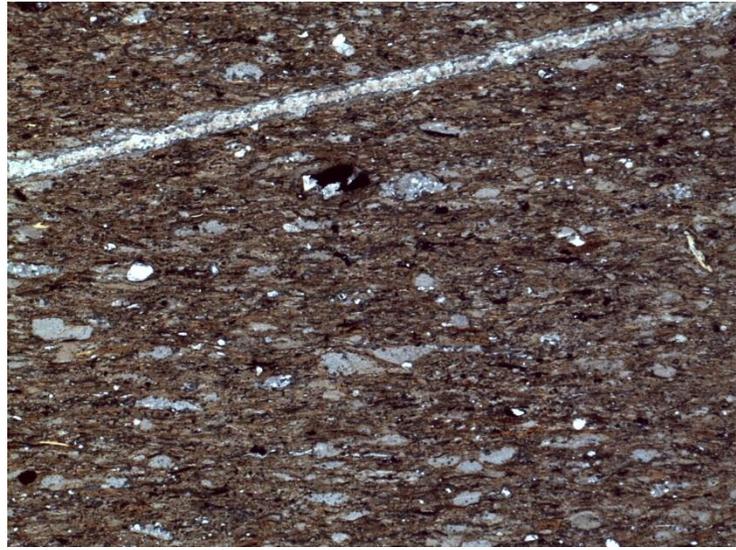
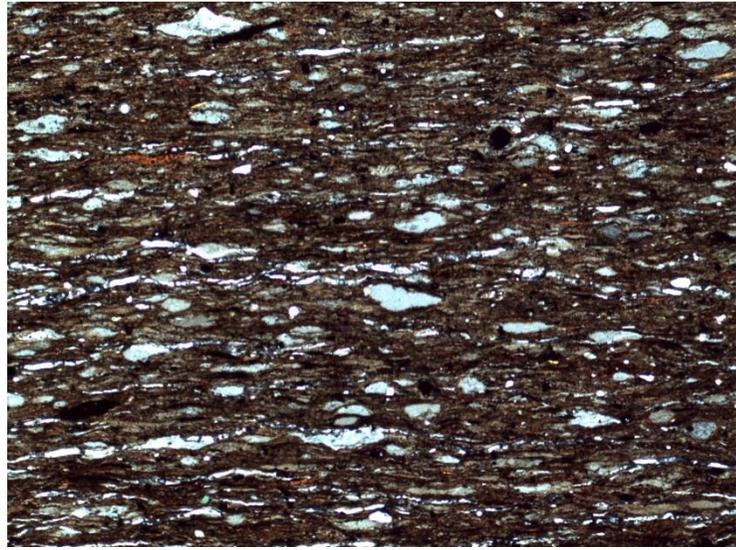
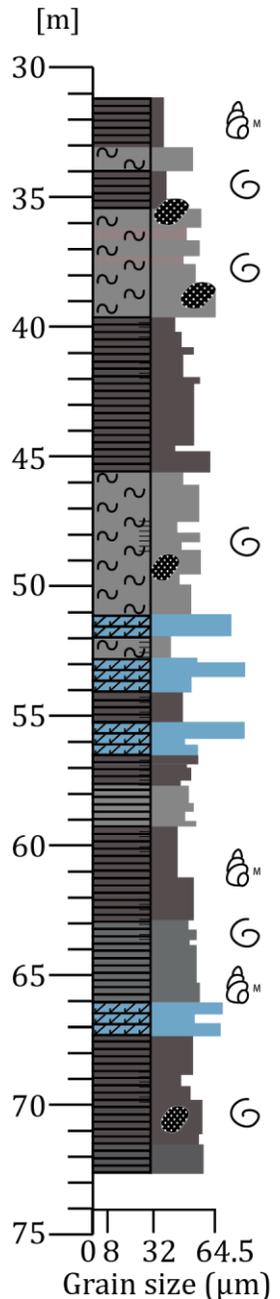


Thin section preparation: Durham University

All scale bars = 500 μm

EB 45.59 m

Facies: 2

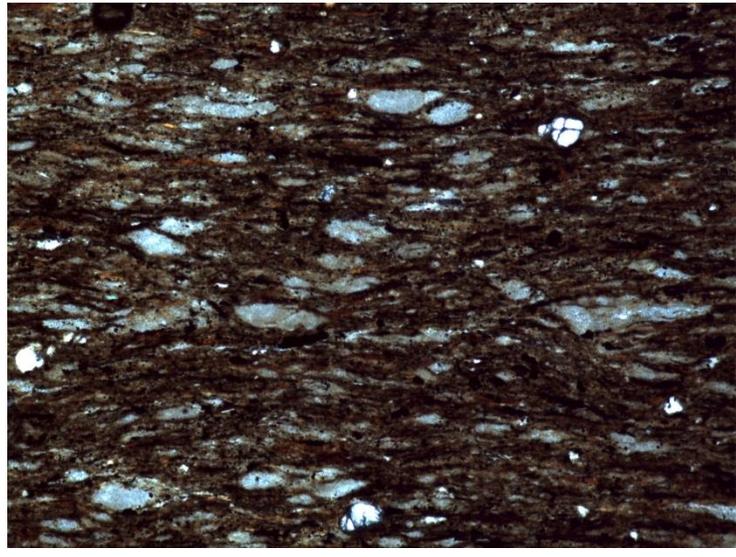
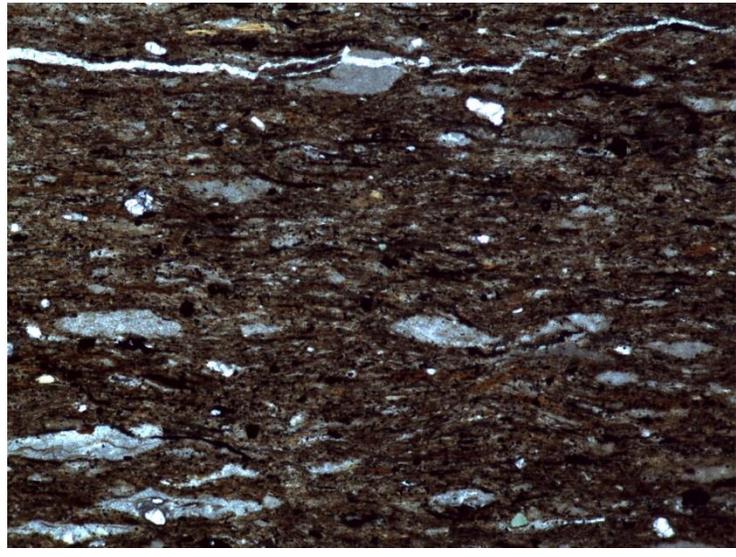
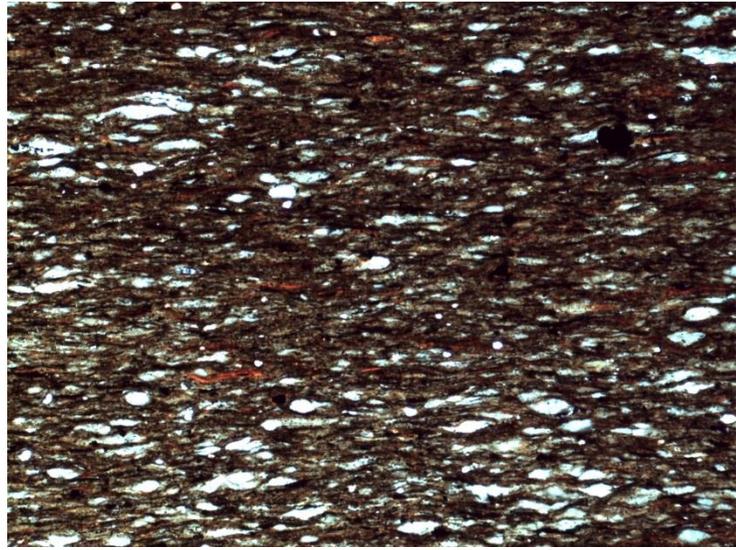
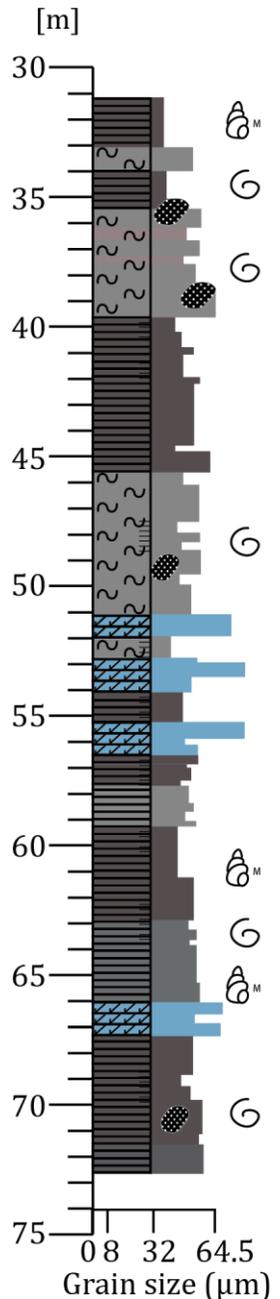


Thin section preparation: Durham University

All scale bars = 500 μm

EB 46.20 m

Facies: 2

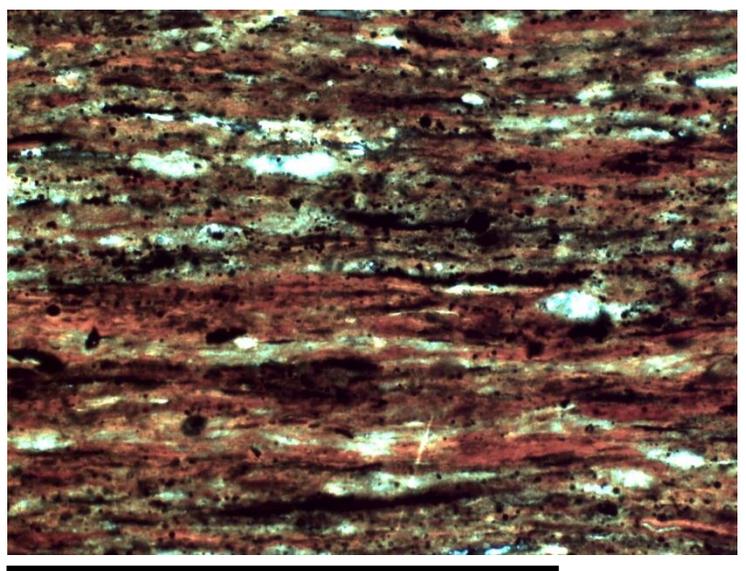
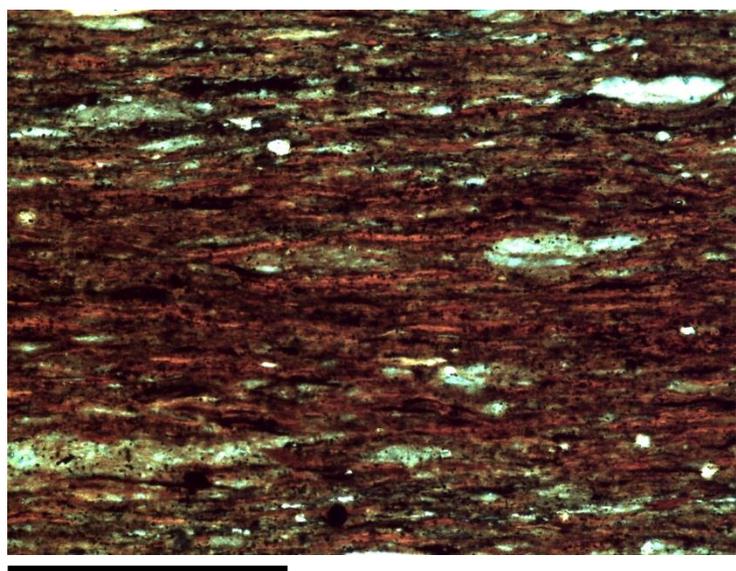
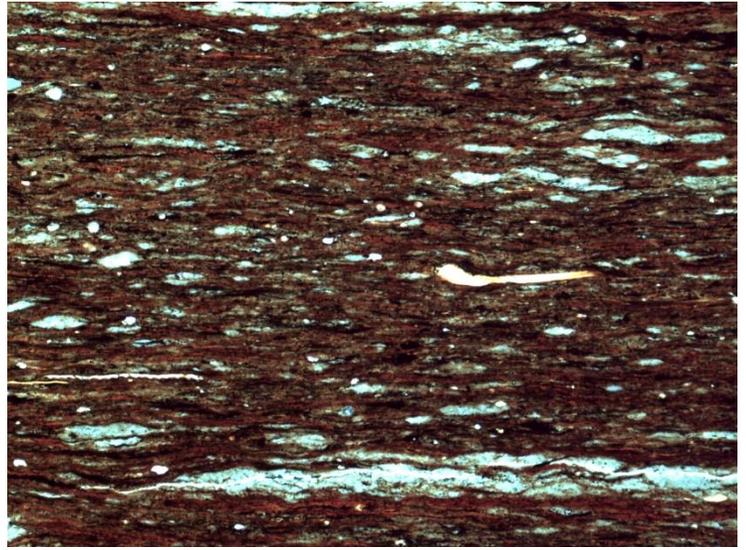
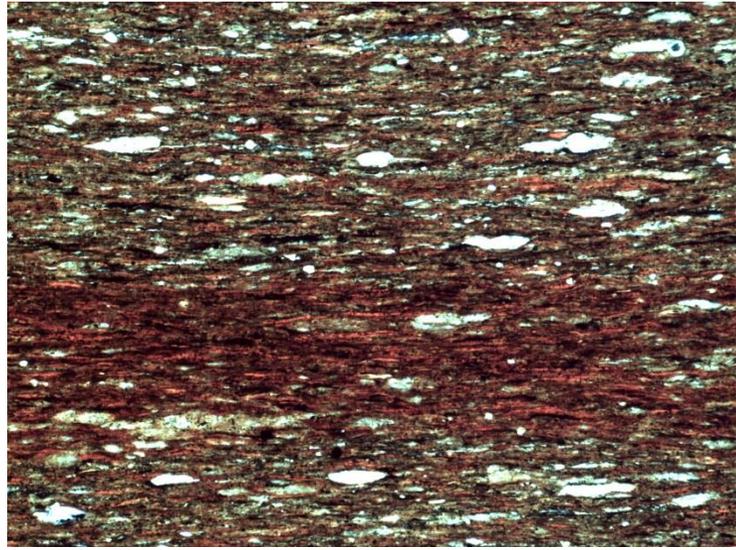
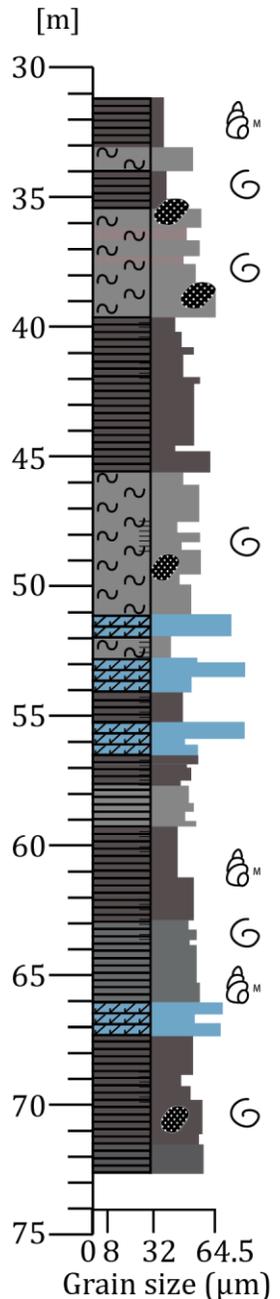


Thin section preparation: Durham University

All scale bars = 500 μm

EB 46.50 m

Facies: 2

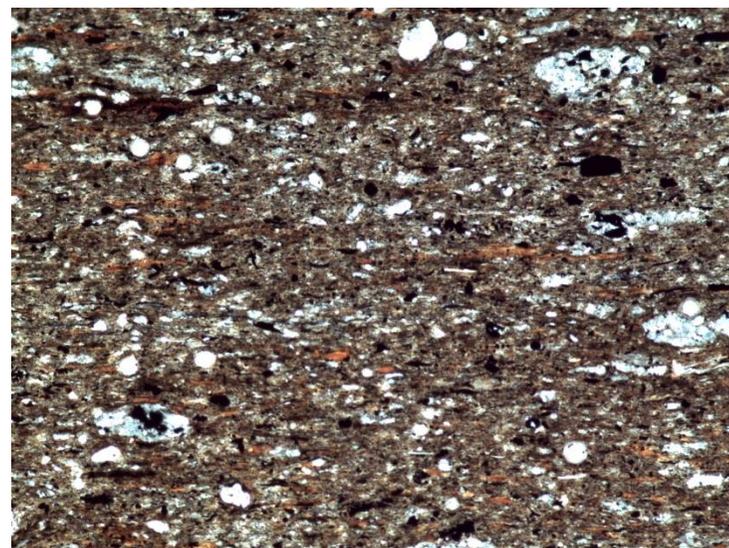
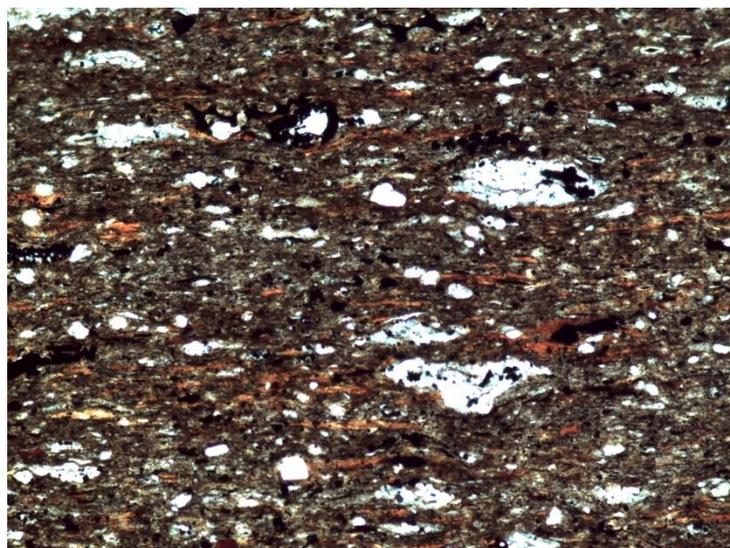
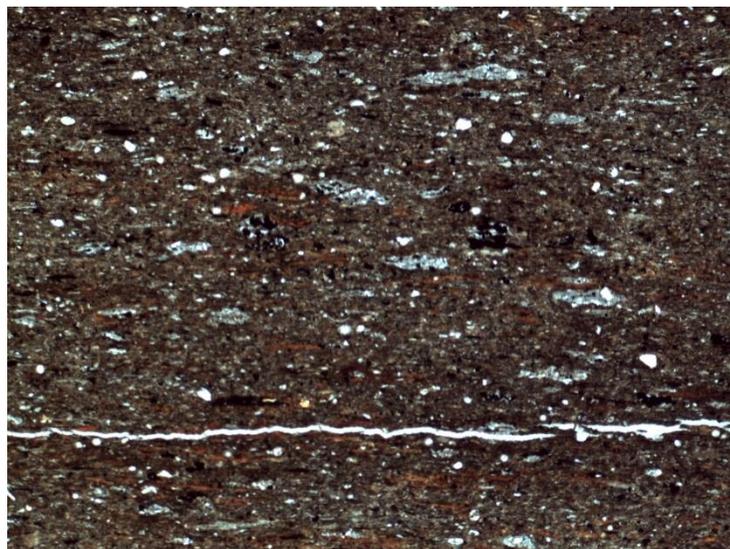
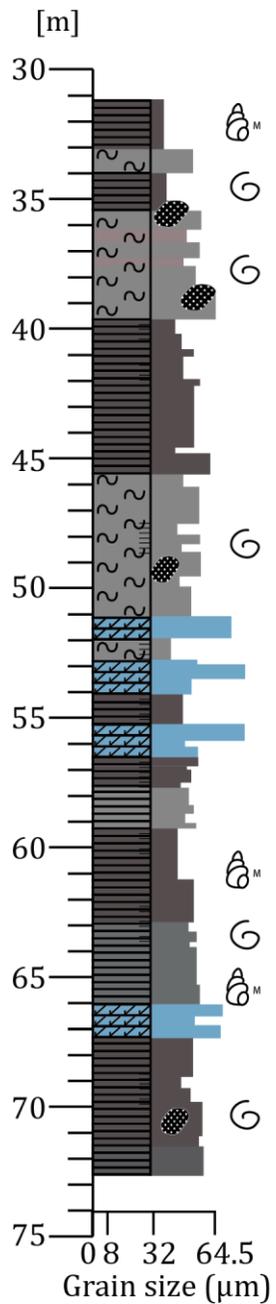


Thin section preparation: Durham University

All scale bars = 500 μm

EB 46.60 m

Facies: 4

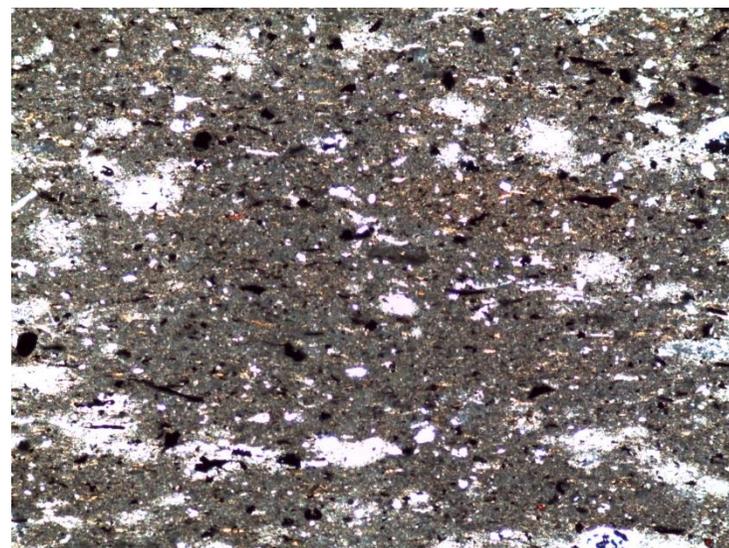
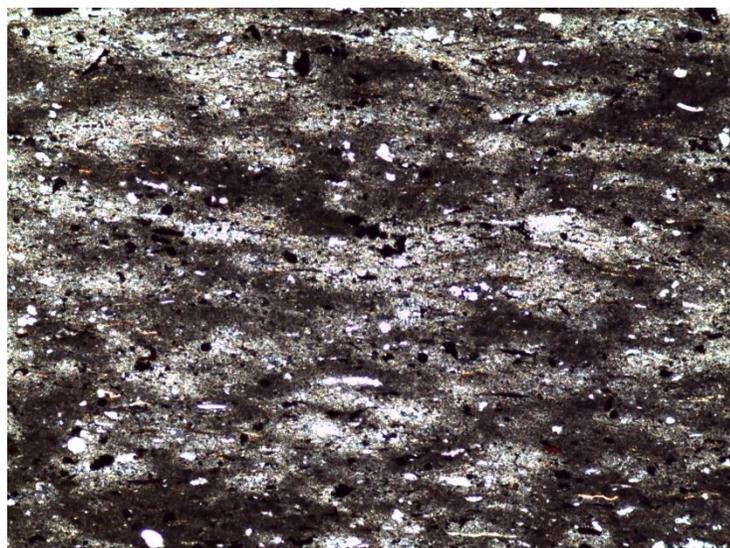
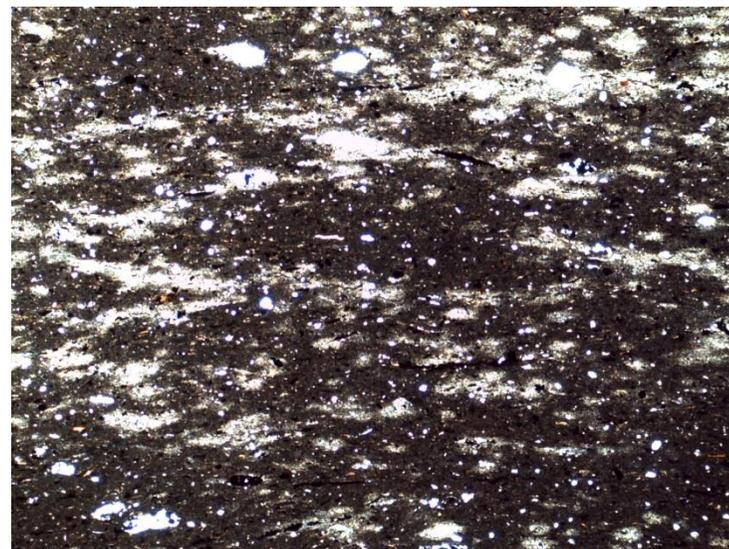
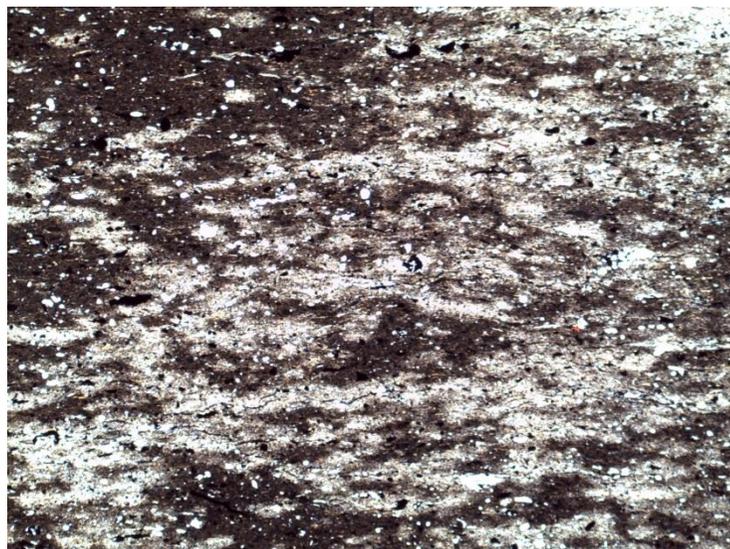
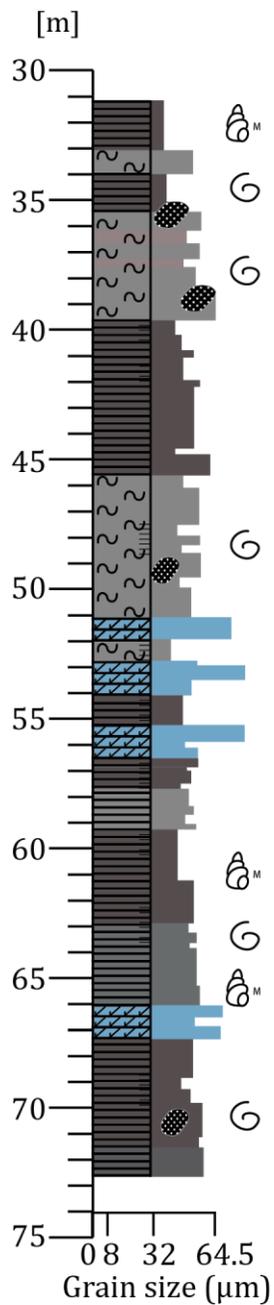


Thin section preparation: Durham University

All scale bars = 500 μm

EB 46.80 m

Facies: 3

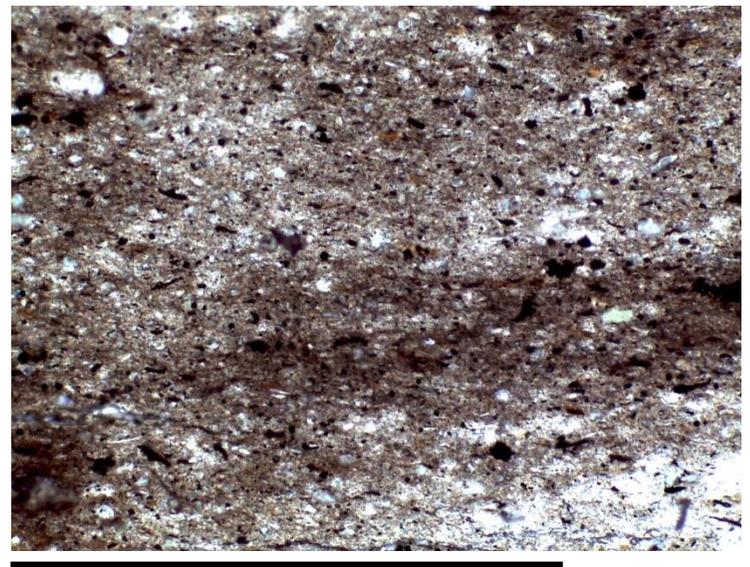
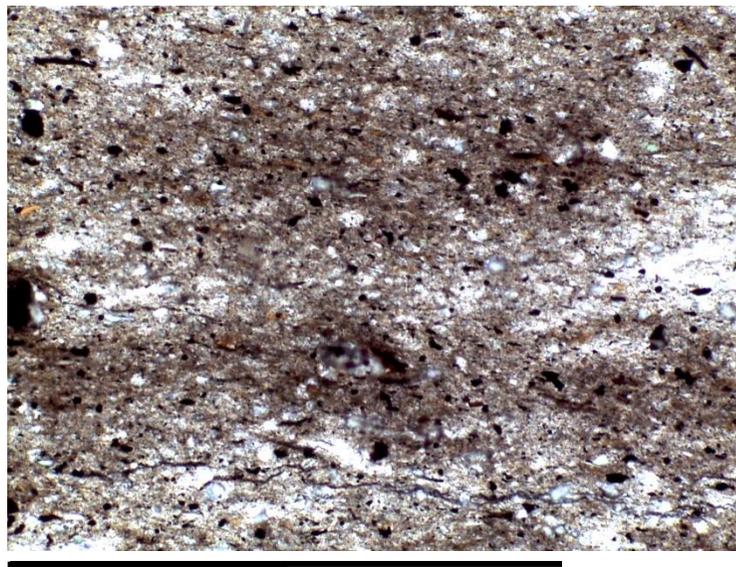
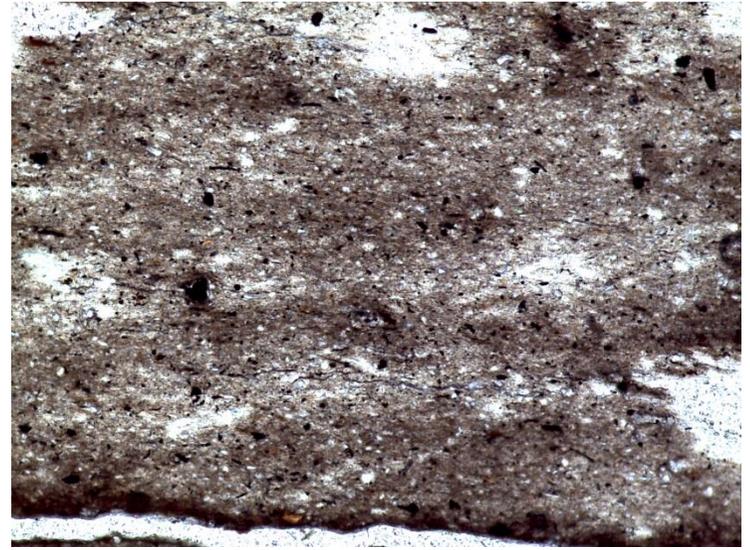
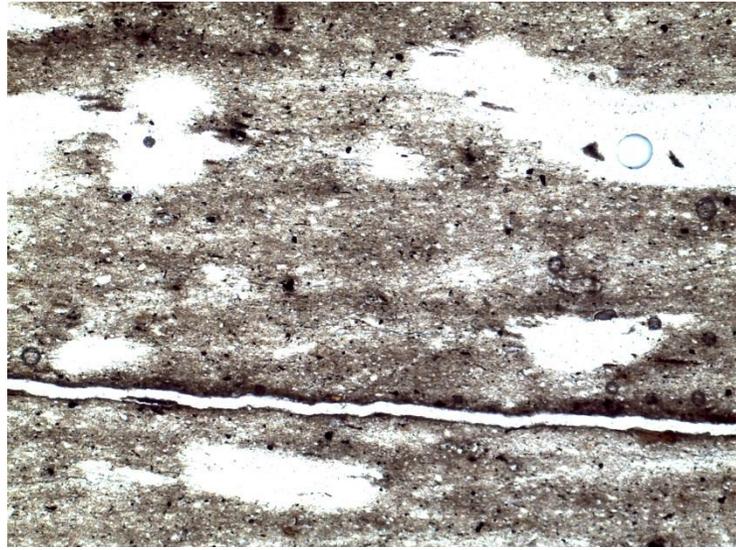
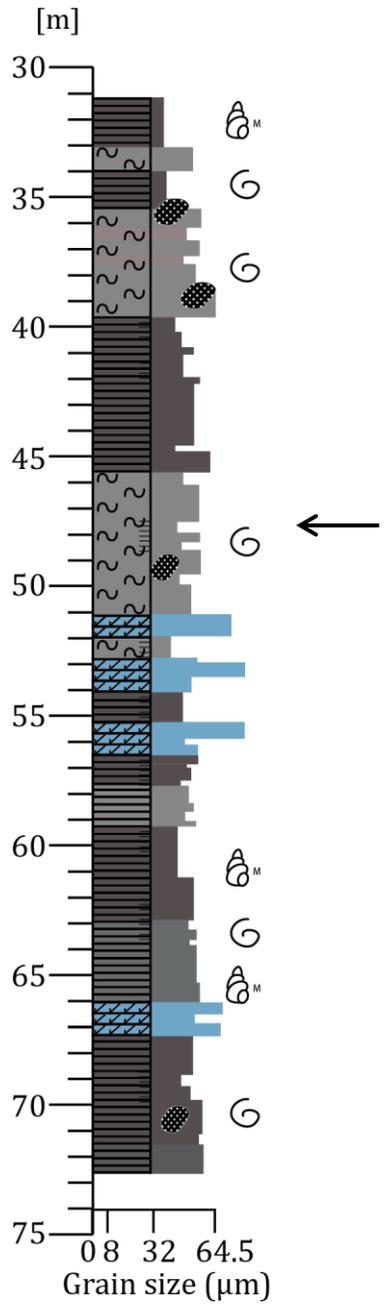


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 47.80

?Facies: 1

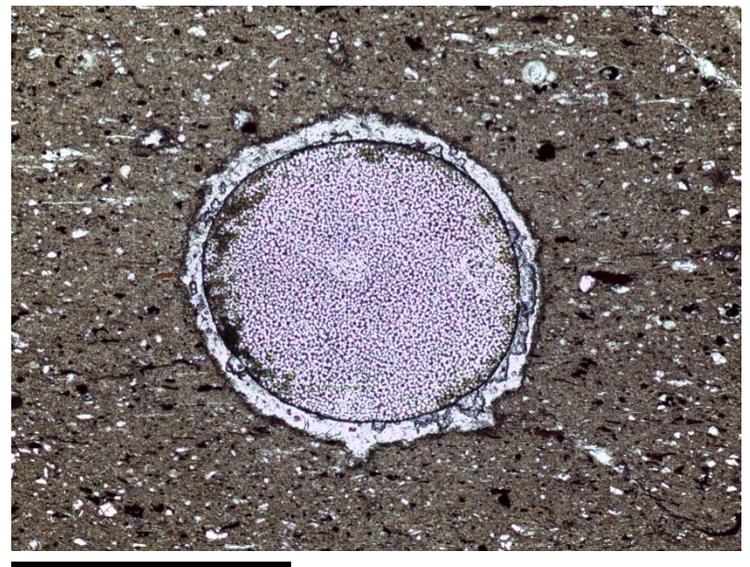
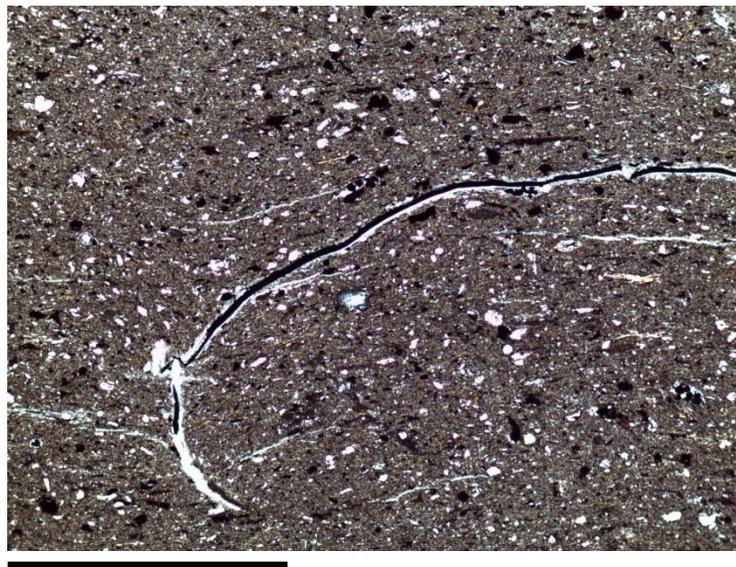
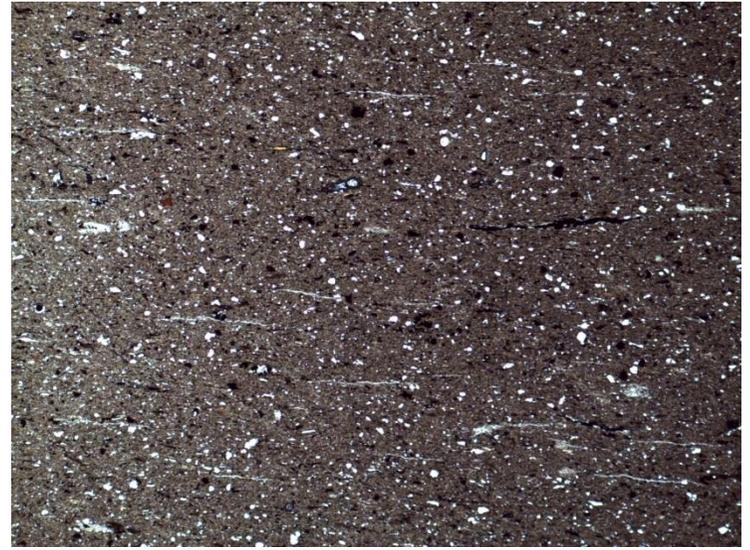
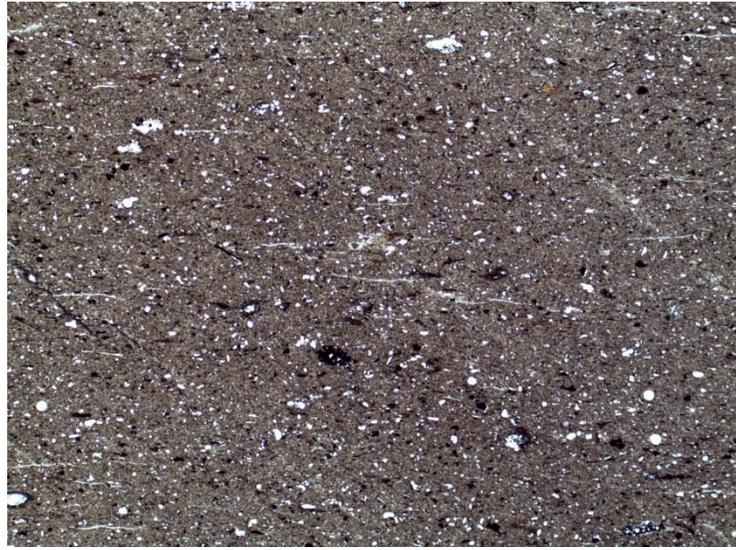
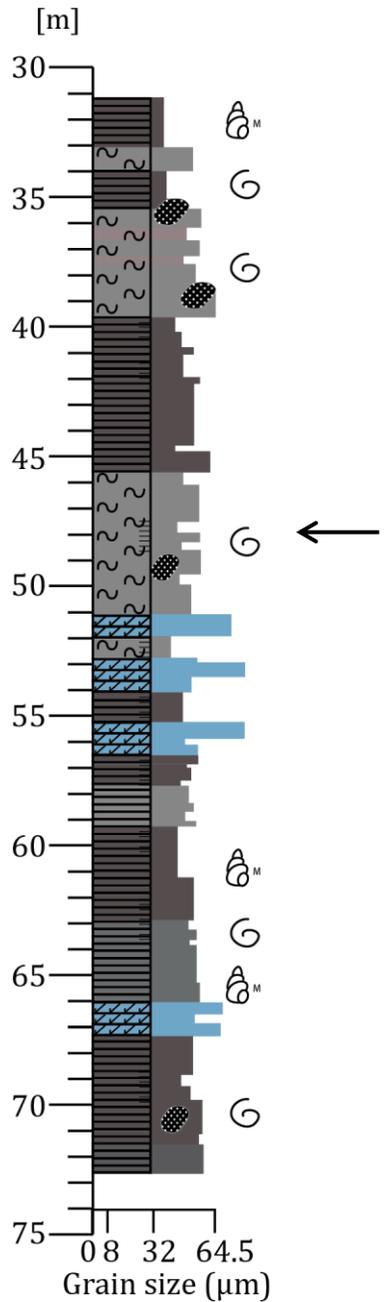


Thin section preparation: Durham University

All scale bars = 500 μm

EB 48.00 m

Facies: 1

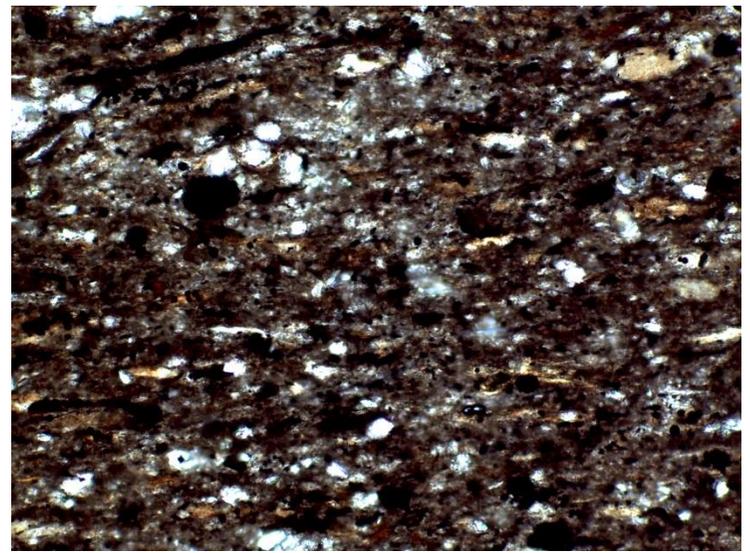
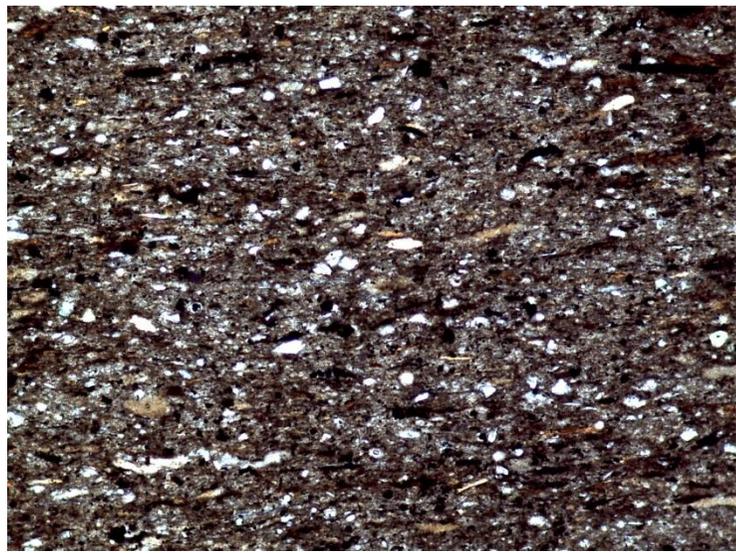
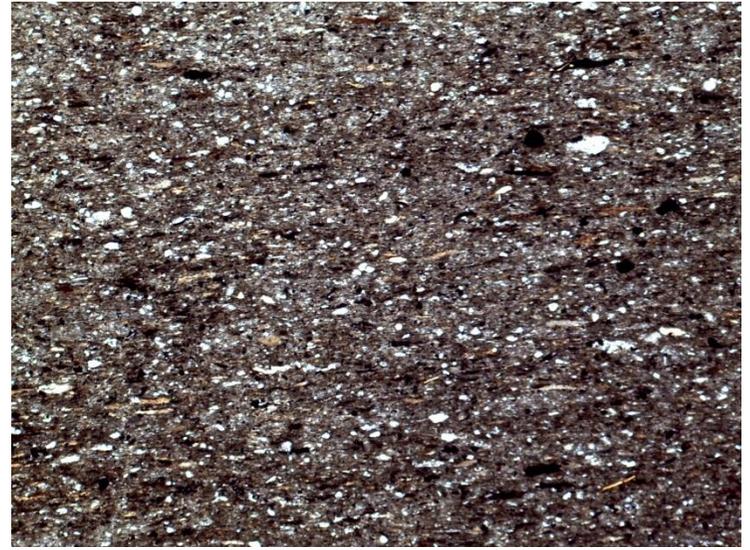
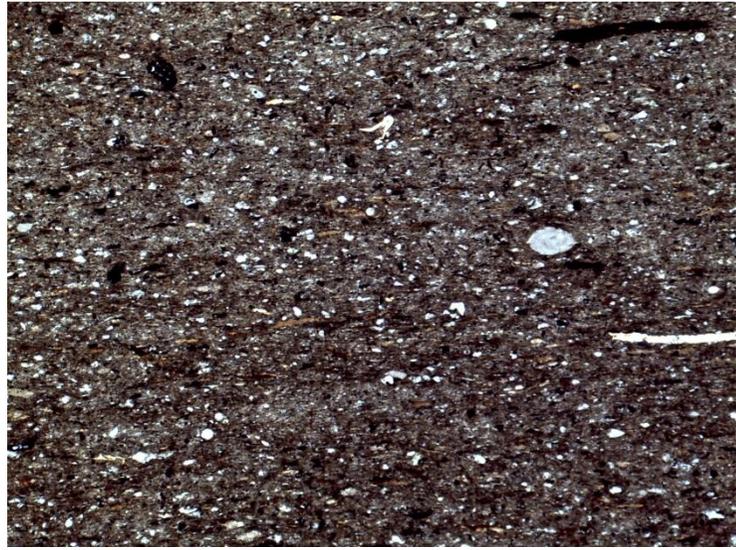
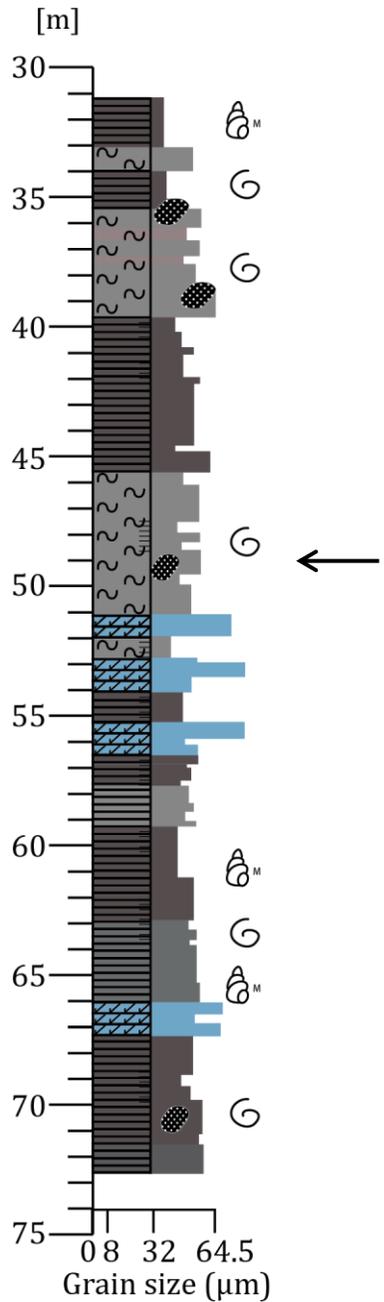


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 49.00 m

Facies: 1

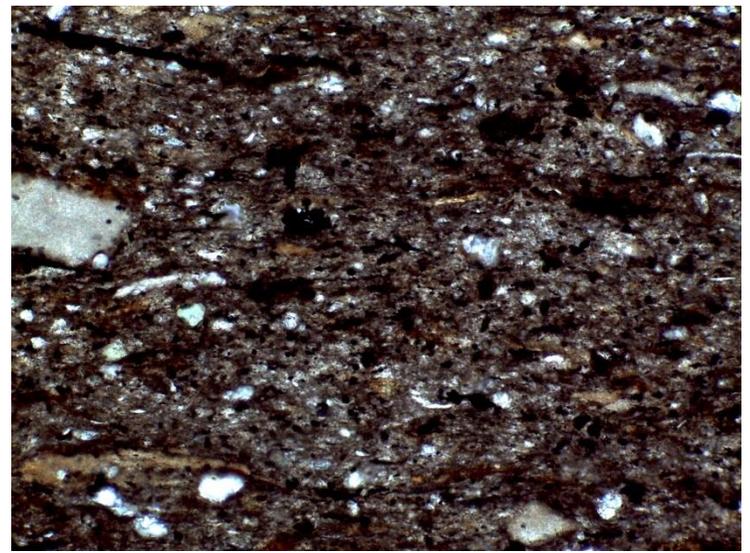
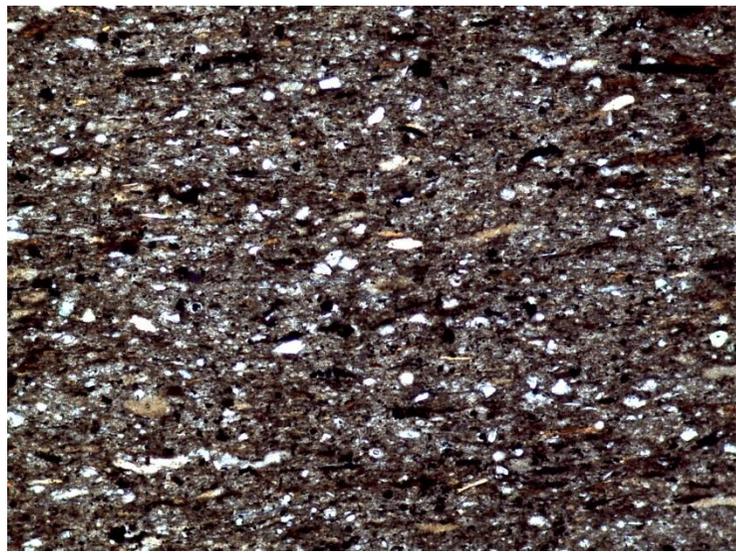
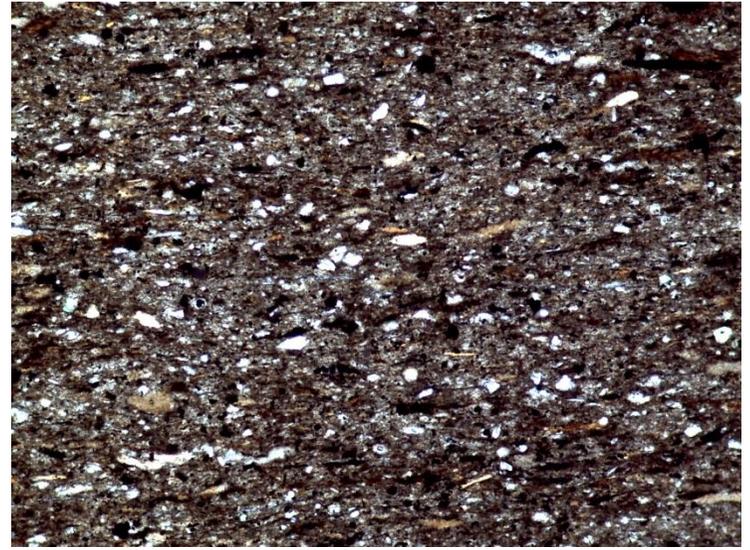
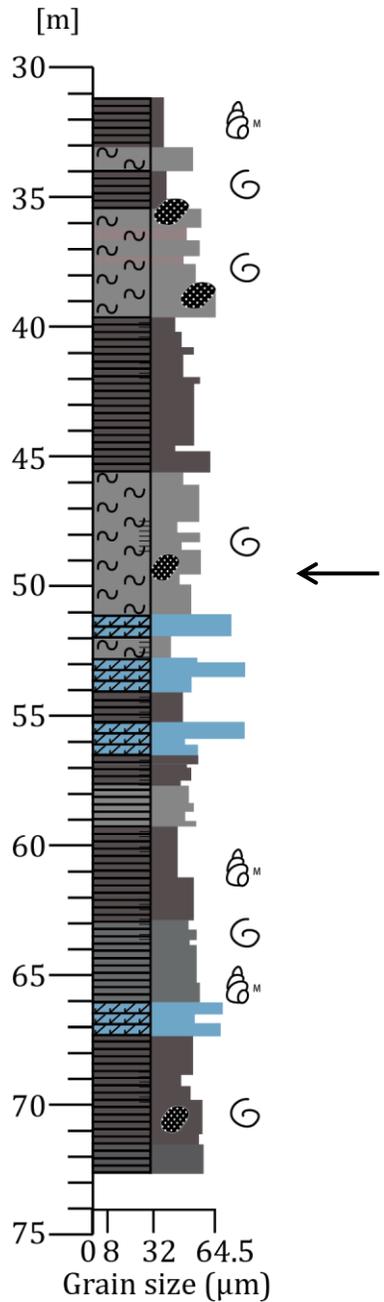


Thin section preparation: Durham University

All scale bars = 500 μm

EB 49.50 m

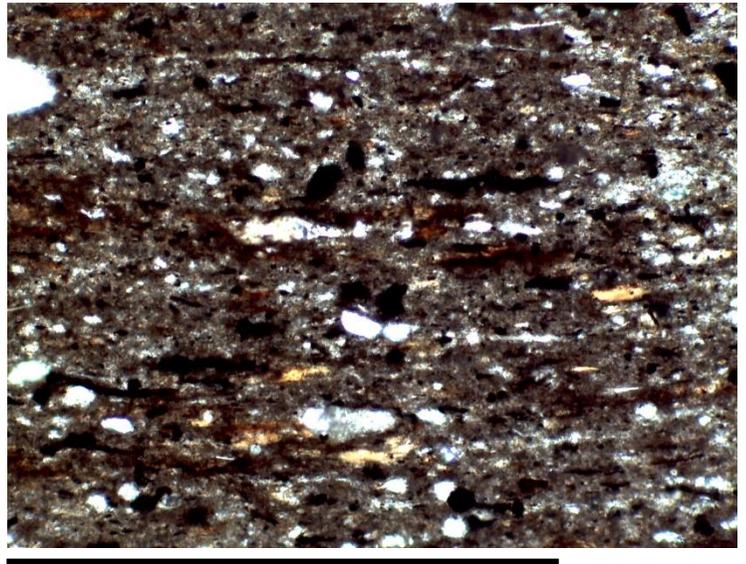
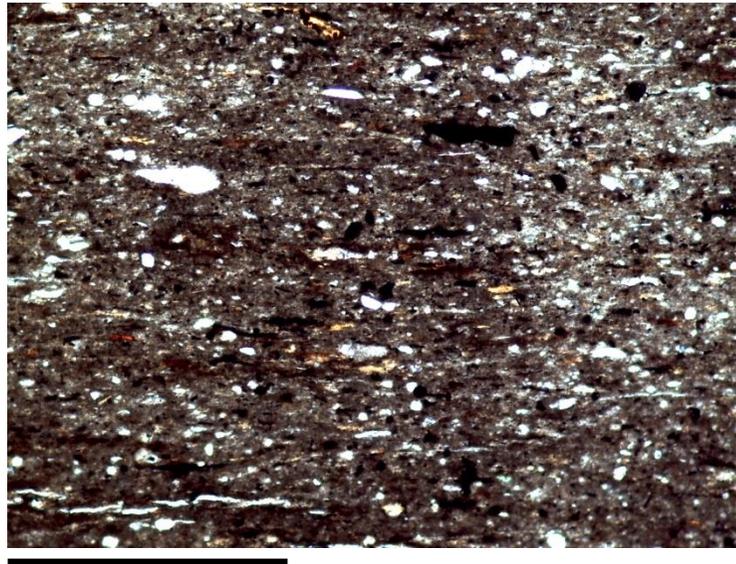
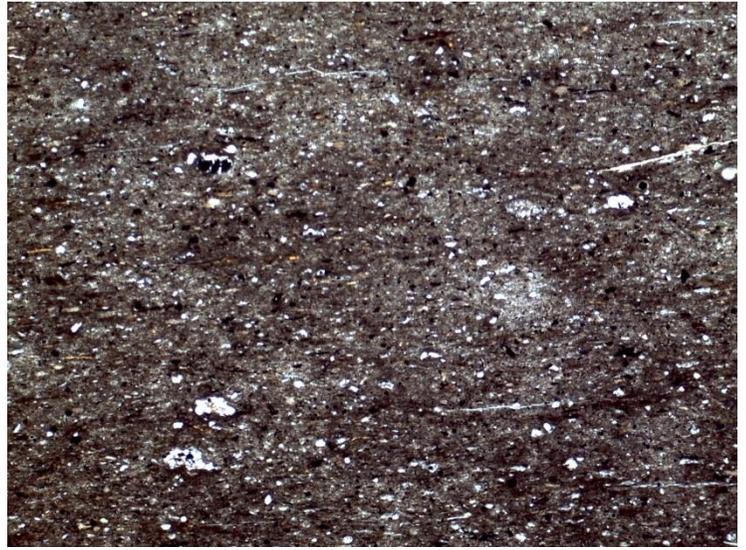
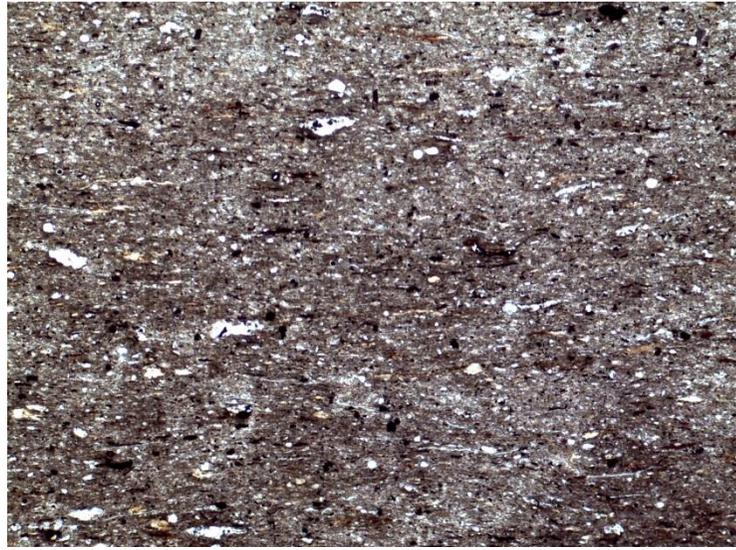
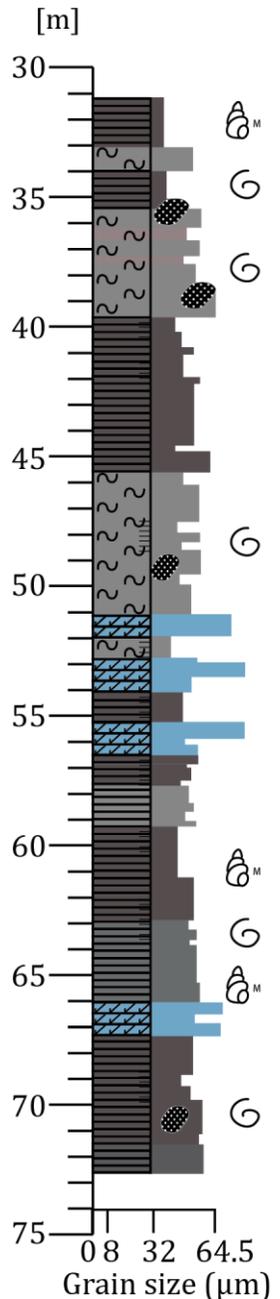
Facies: 1



Thin section preparation: Durham University

All scale bars = 500 μm

EB 50.00 m

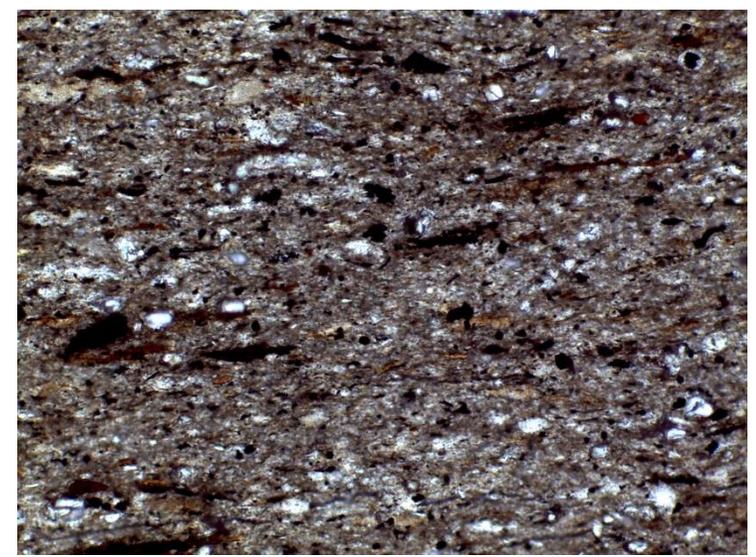
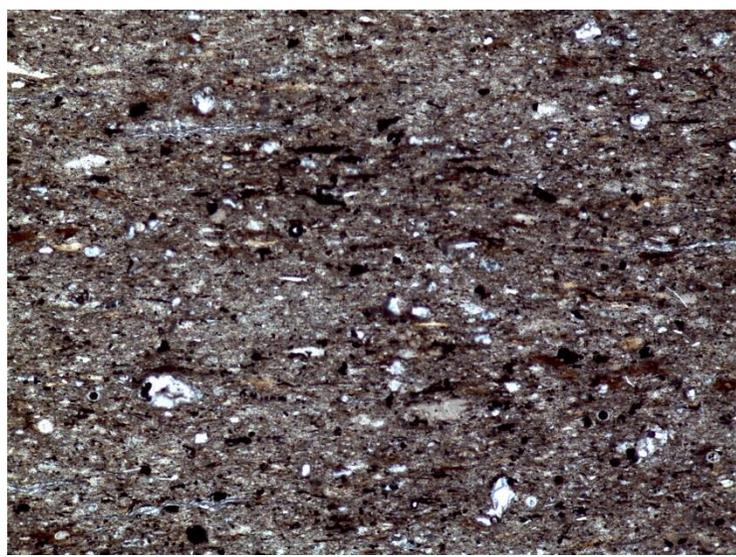
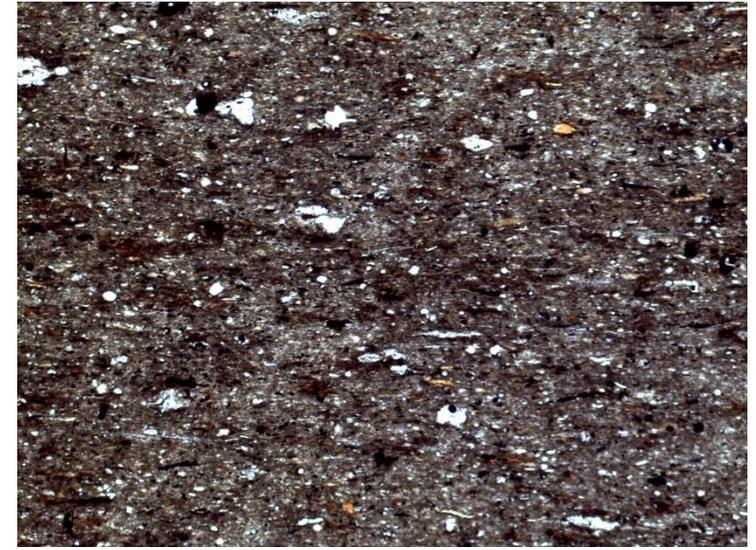
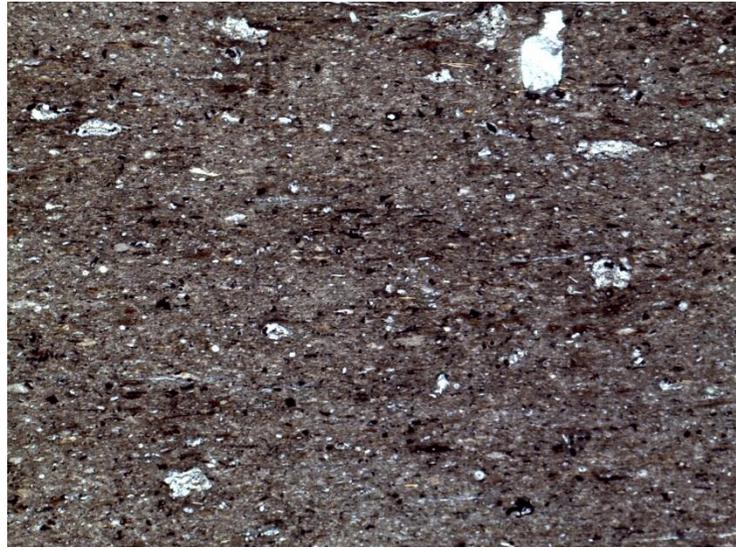
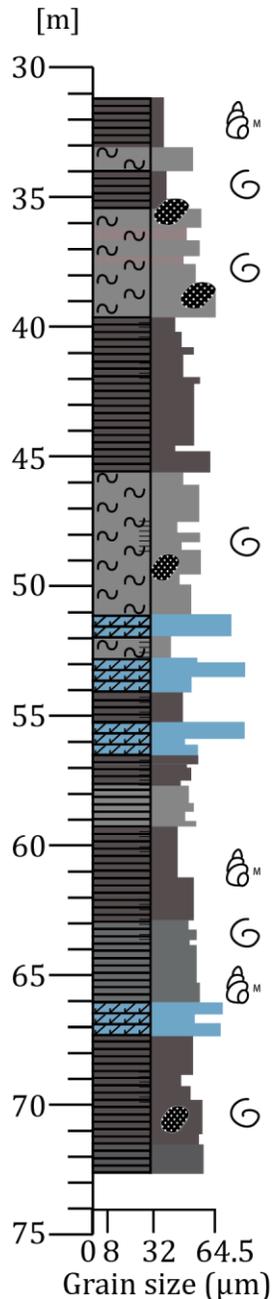


Thin section preparation: Durham University

All scale bars = 500 μm

EB 50.50 m

Facies: 1

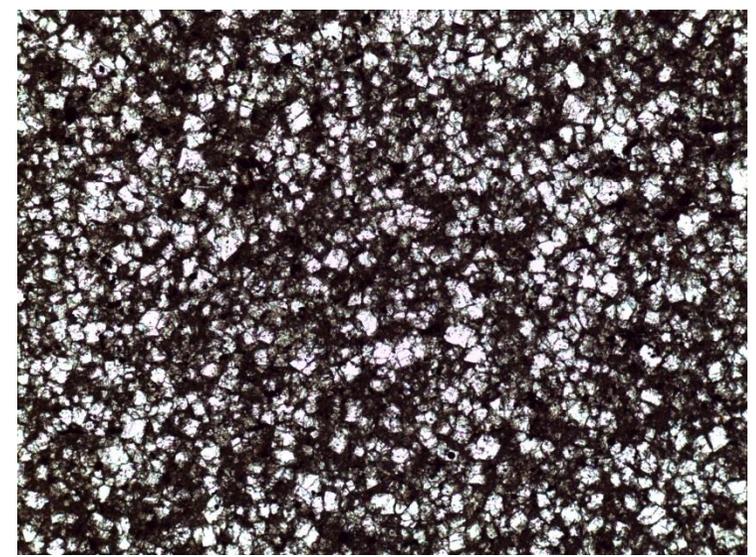
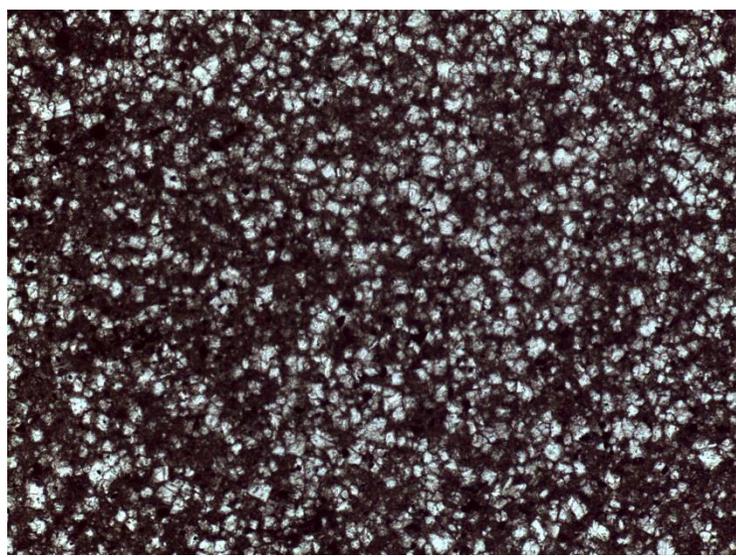
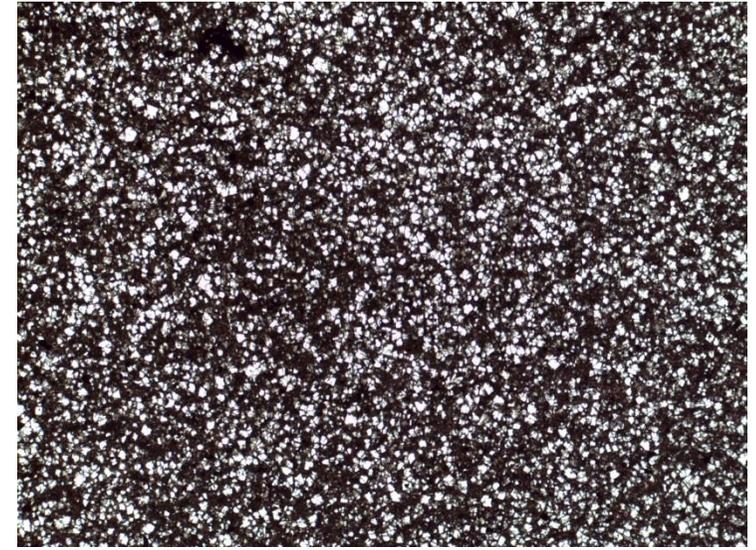
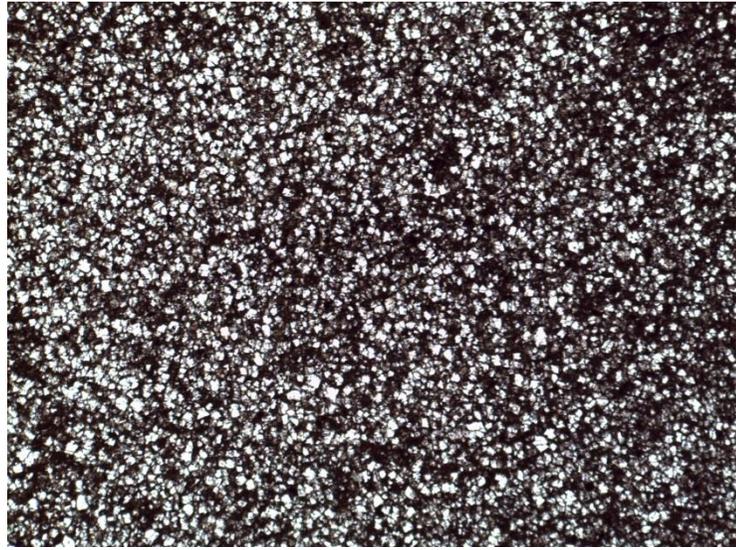
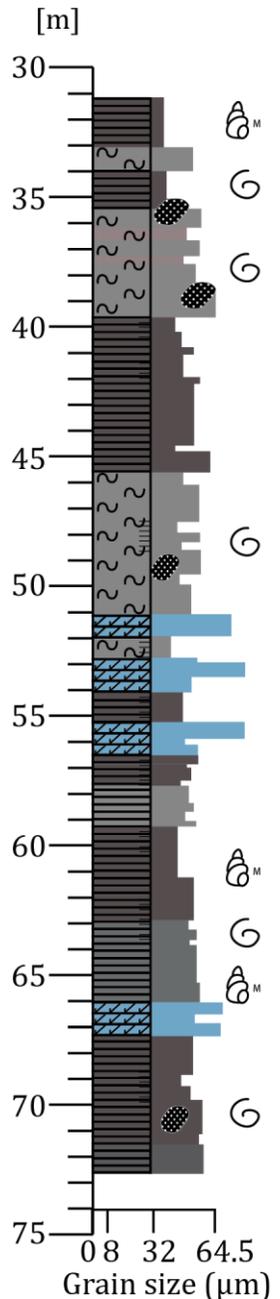


Thin section preparation: Durham University

All scale bars = 500 μm

EB 51.00 m

Facies: 5

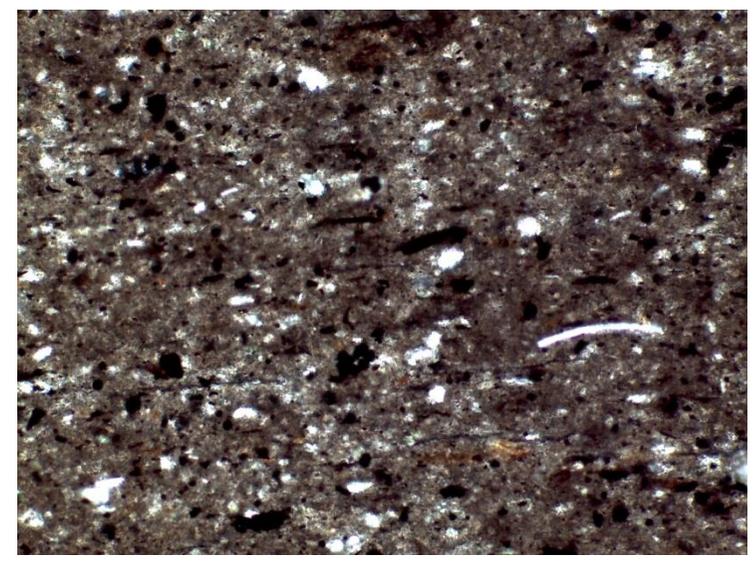
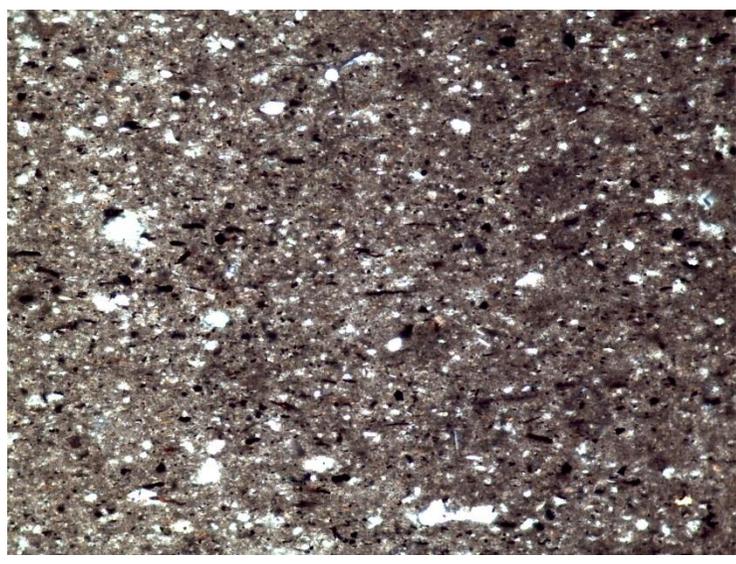
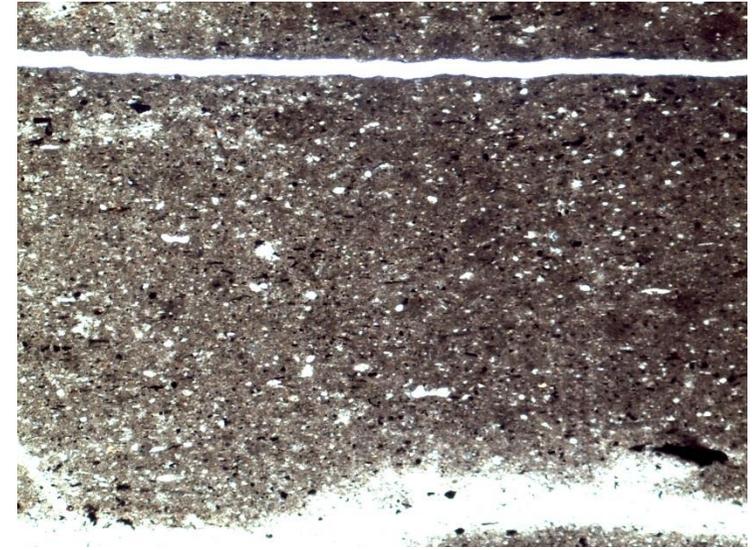
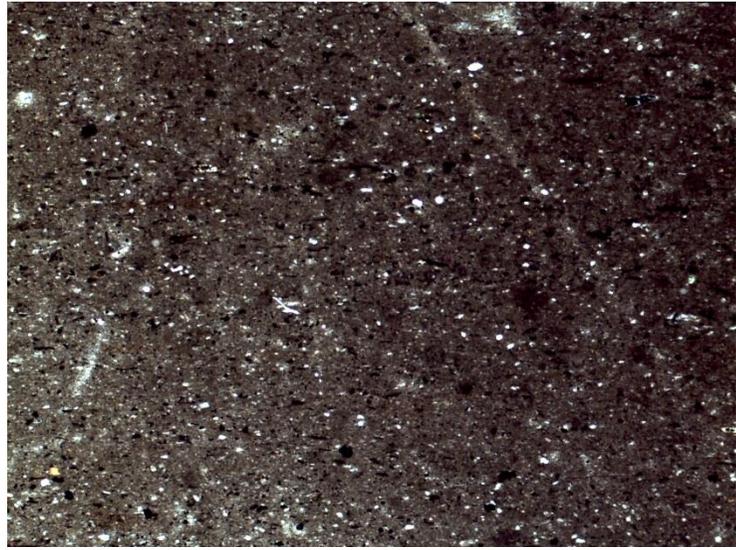
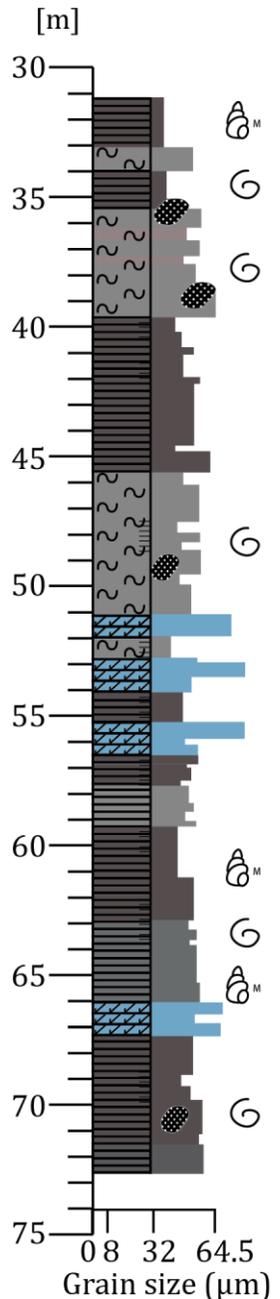


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 52.00 m

Facies: 1

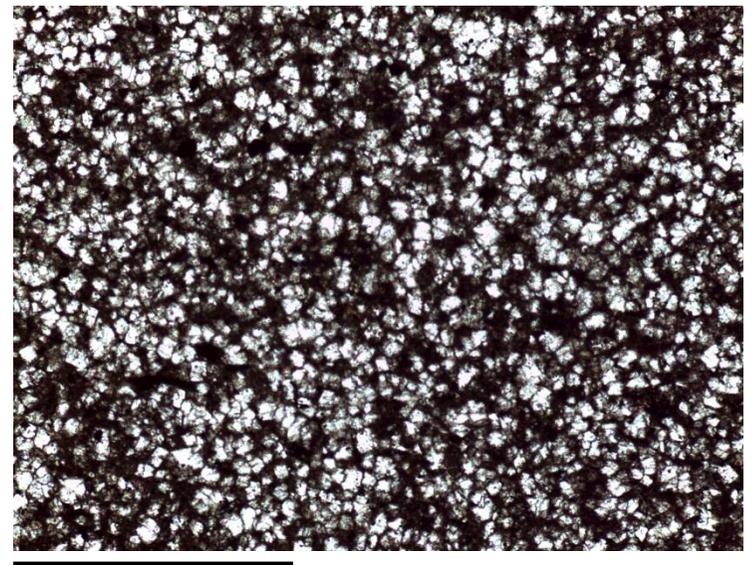
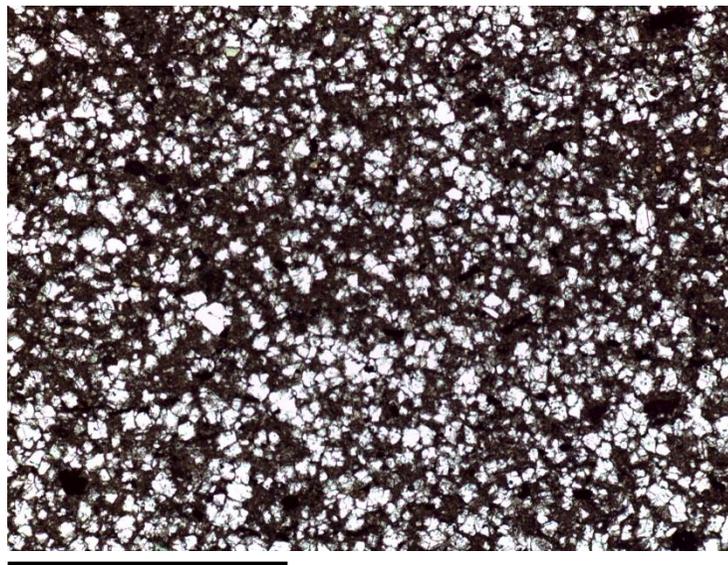
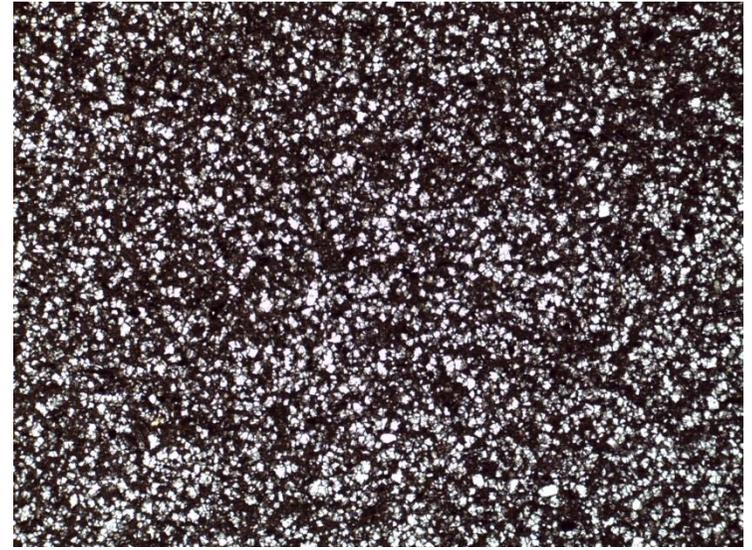
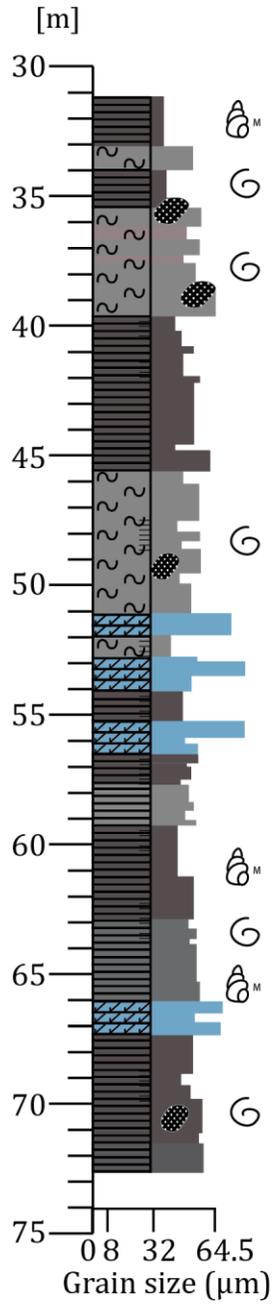


Thin section preparation: Durham University

All scale bars = 500 μm

EB 53.30 m

Facies: 5

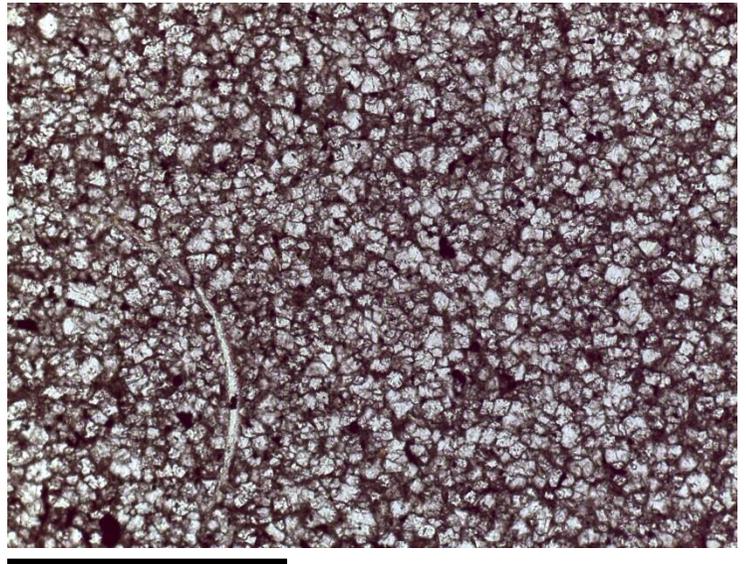
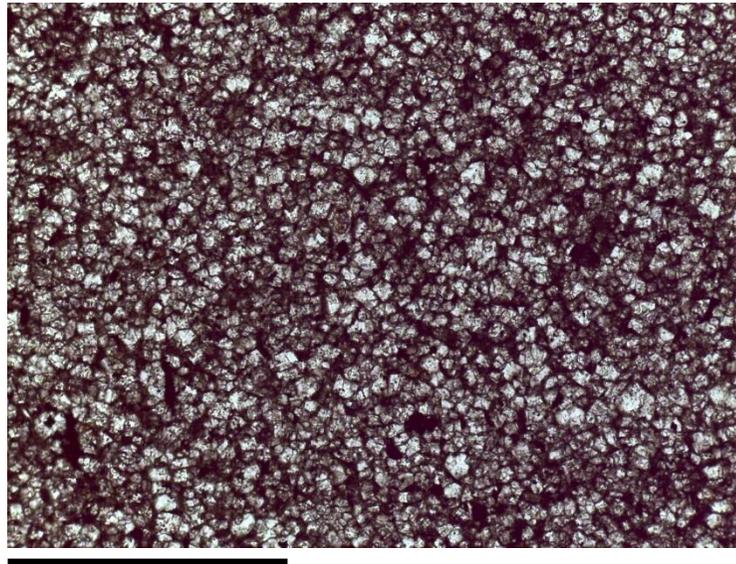
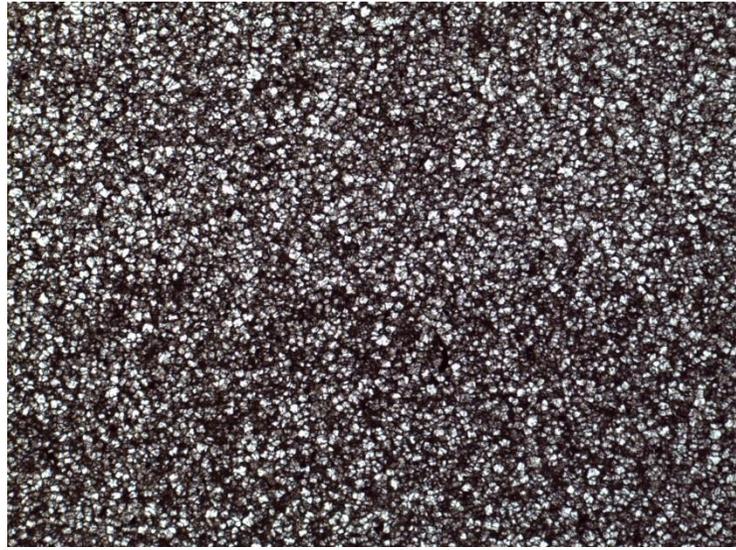
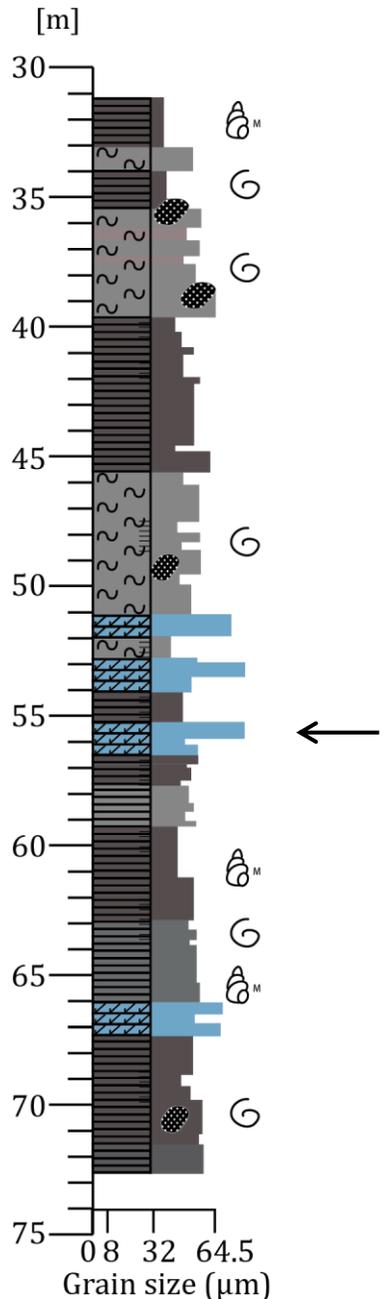


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 55.70 m

Facies: 5

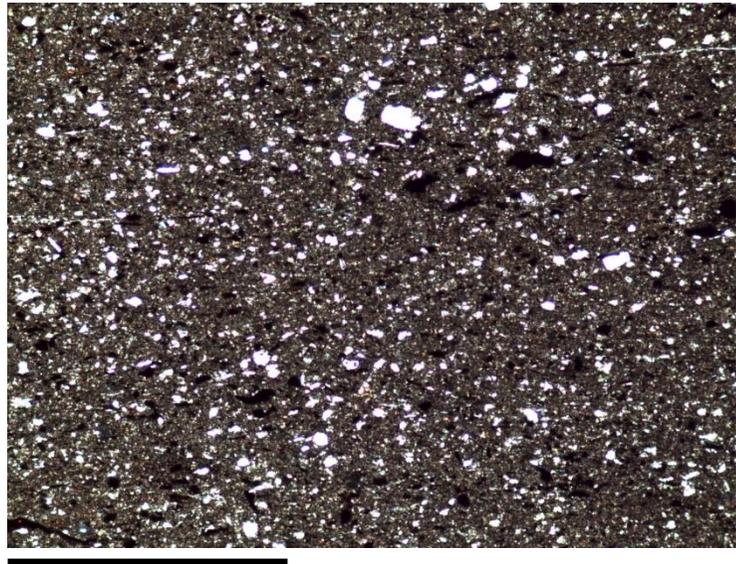
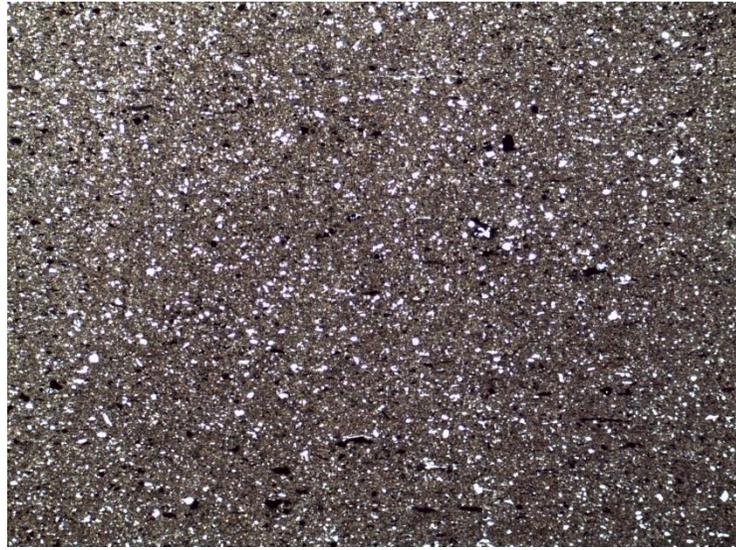
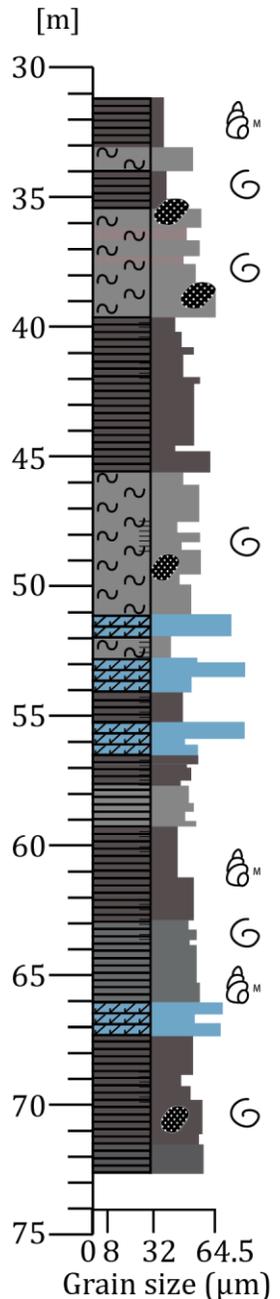


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 57.70 m

Facies: 1

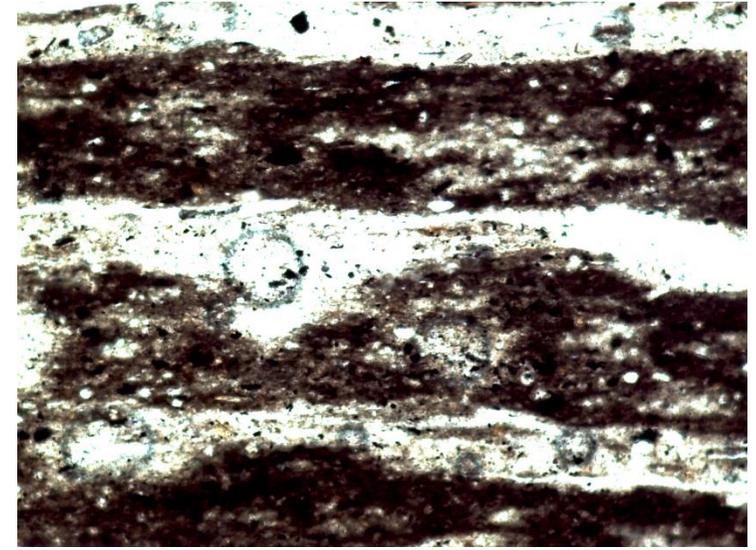
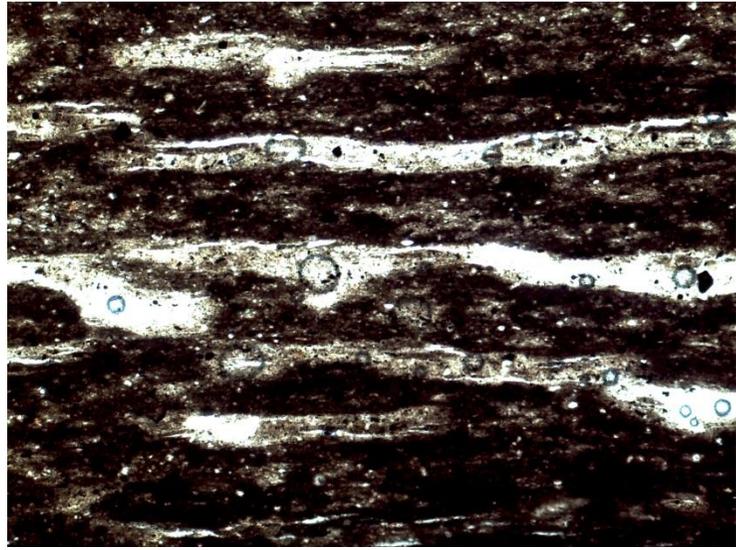
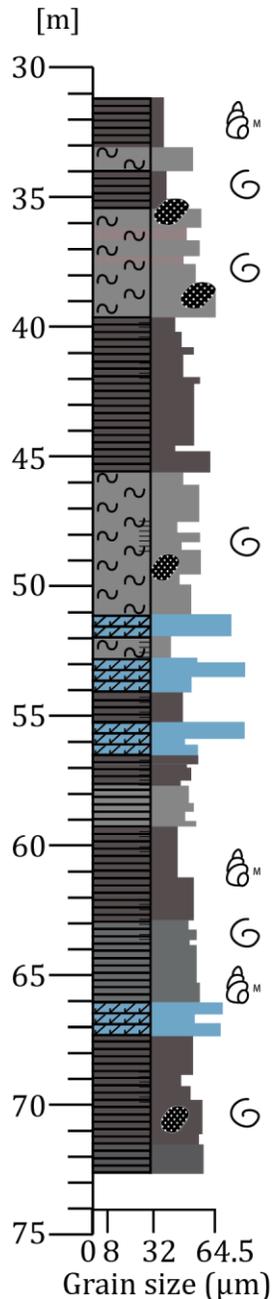


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μ m

EB 59.20 m

?Facies: 1

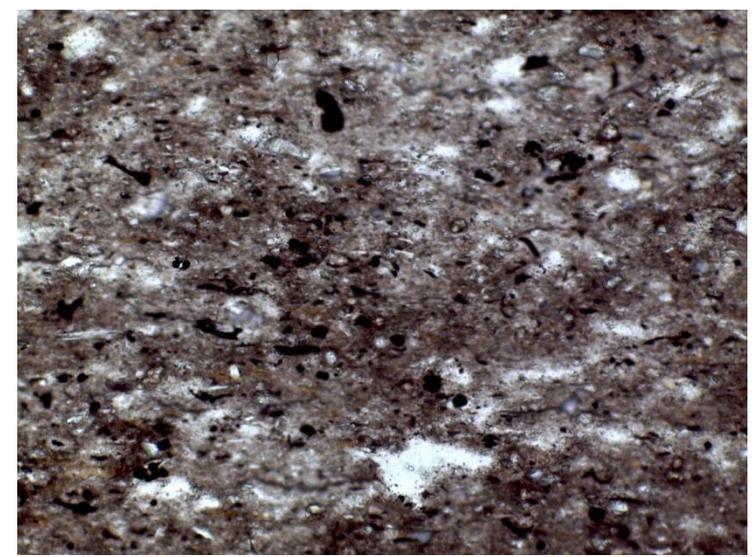
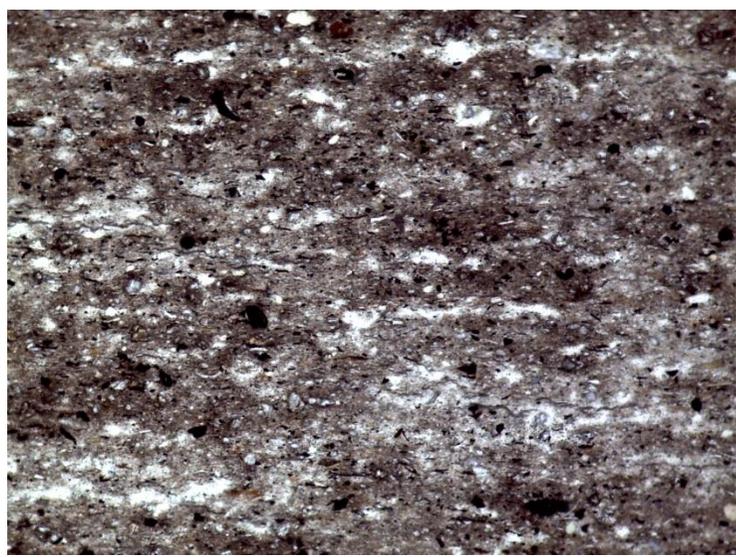
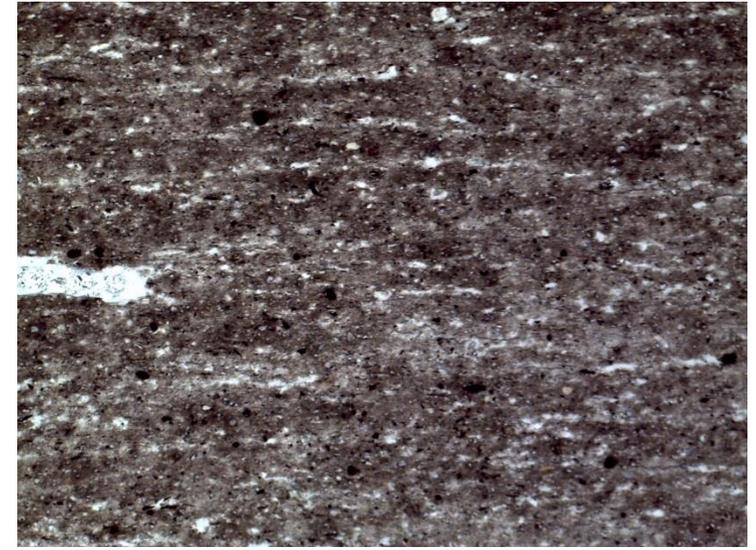
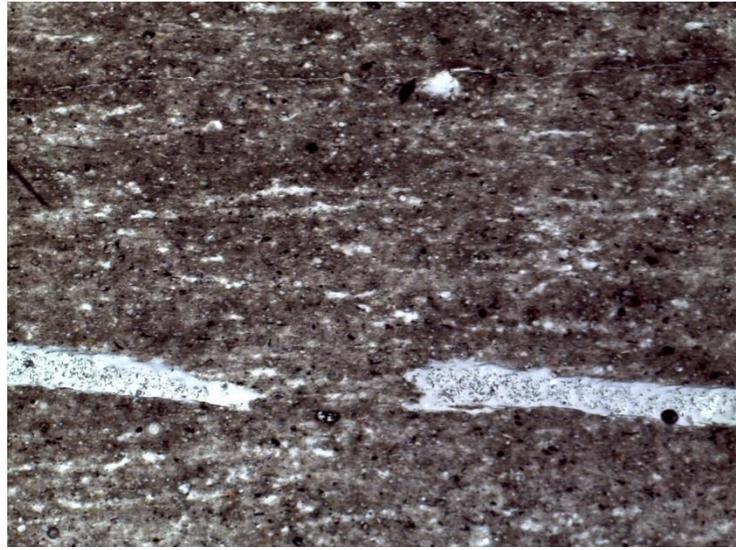
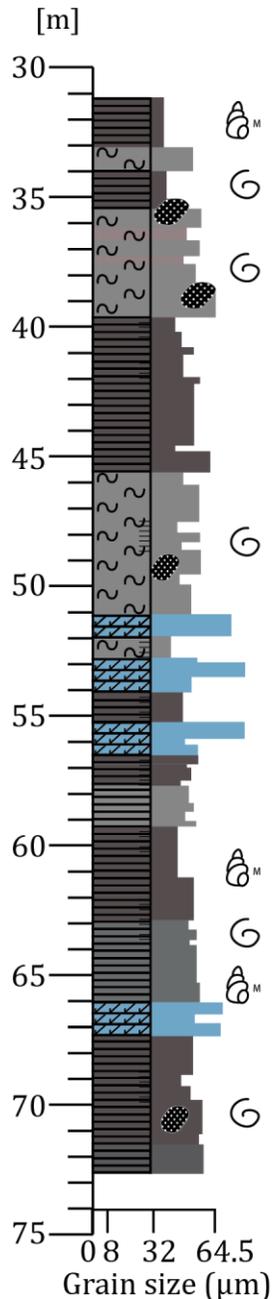


Thin section preparation: Durham University

All scale bars = 500 μm

EB 60.70 m

Facies: 1

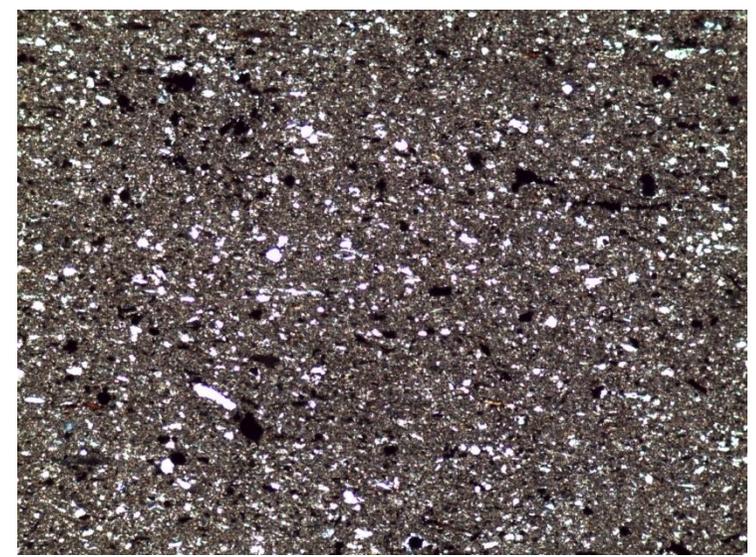
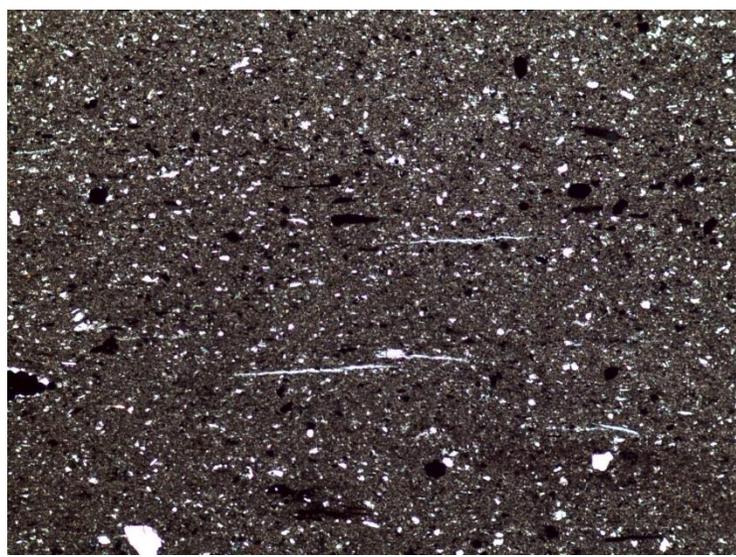
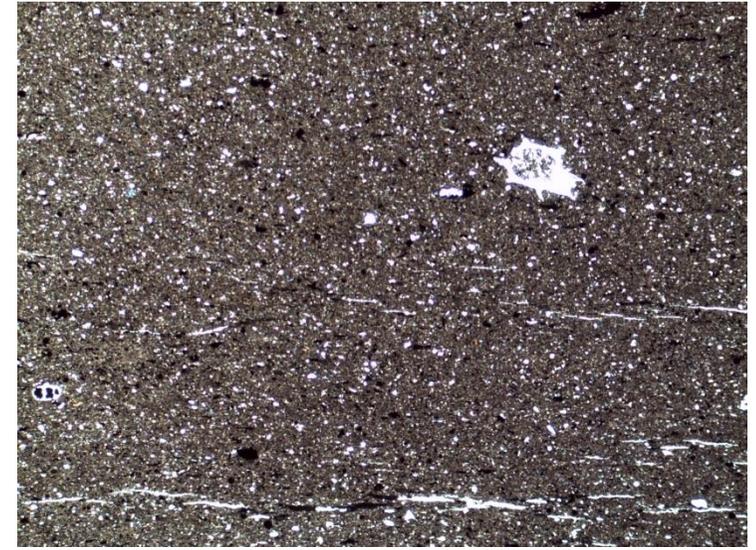
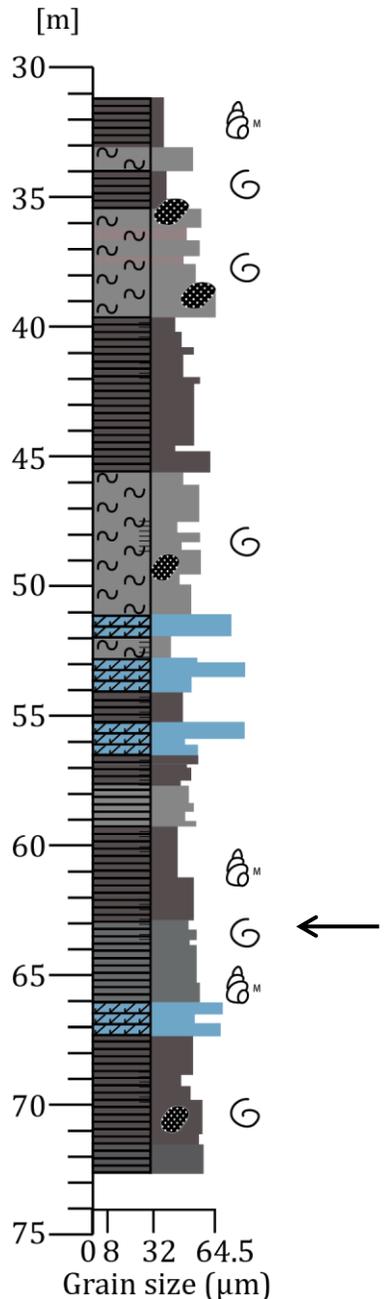


Thin section preparation: Wagner Petrographic Ltd/Durham University

All scale bars = 500 μm

EB 63.00 m

Facies: 1

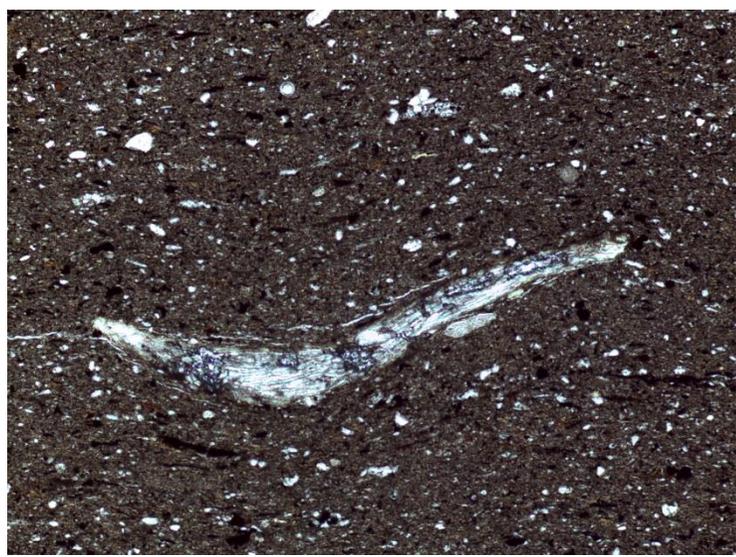
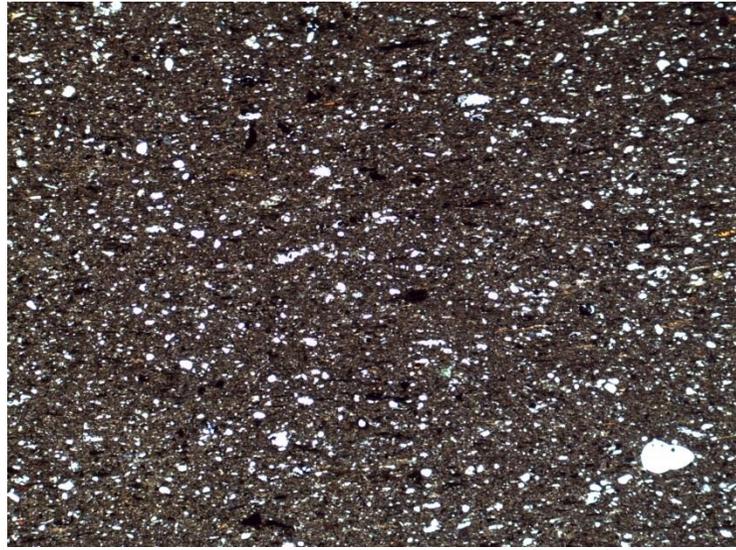
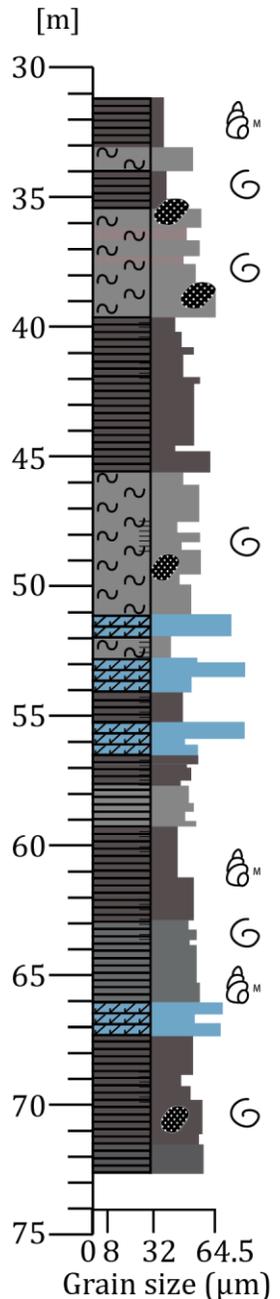


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 64.50 m

Facies: 1

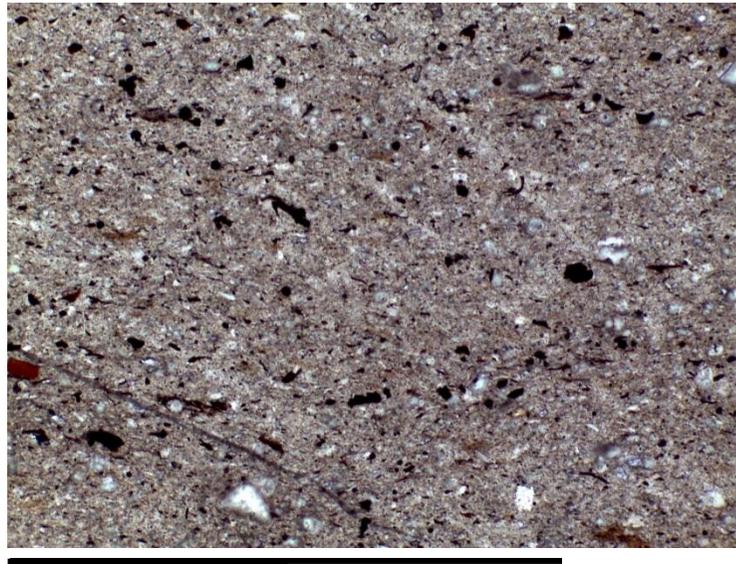
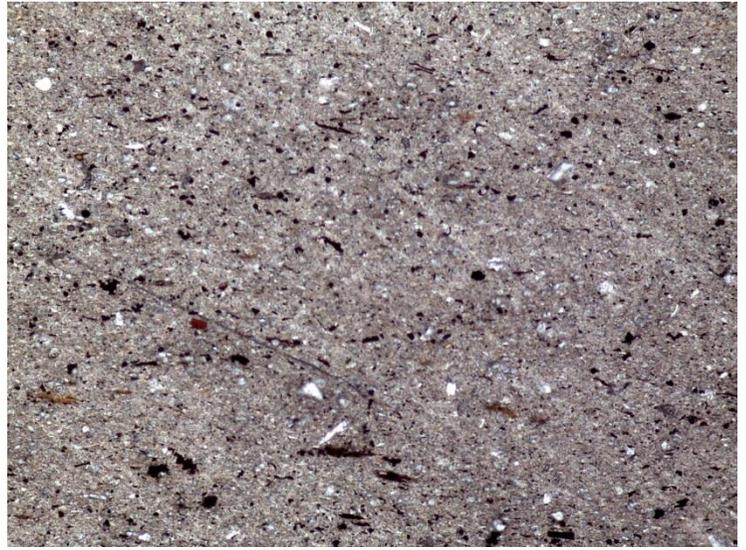
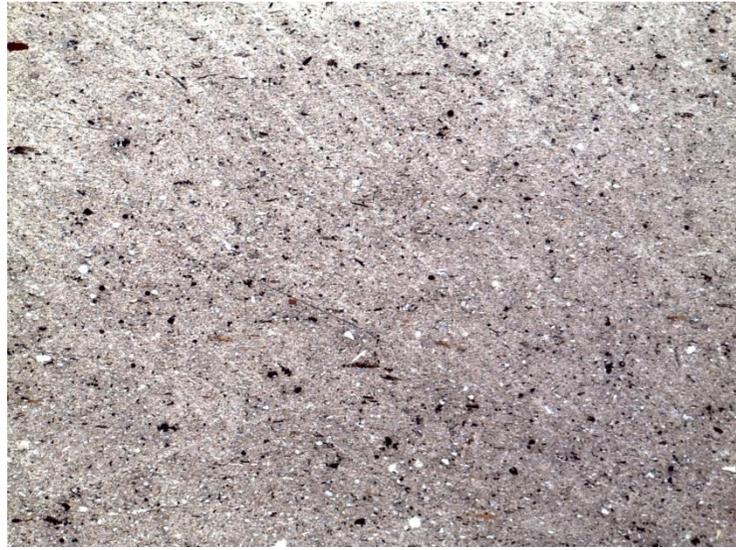
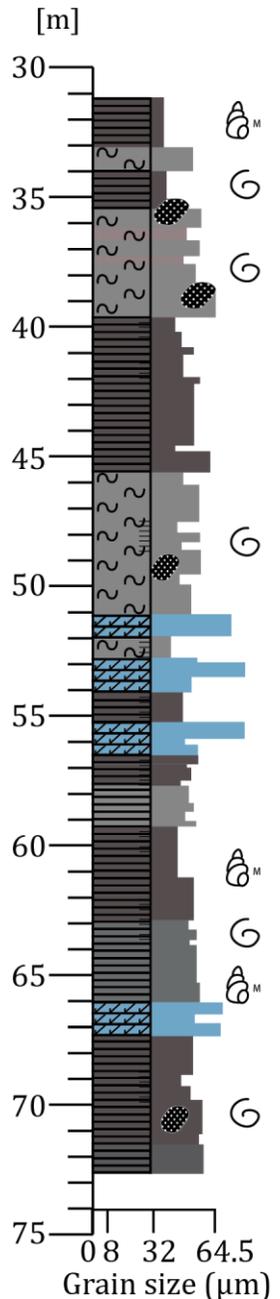


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 65.00 m

Facies: 1

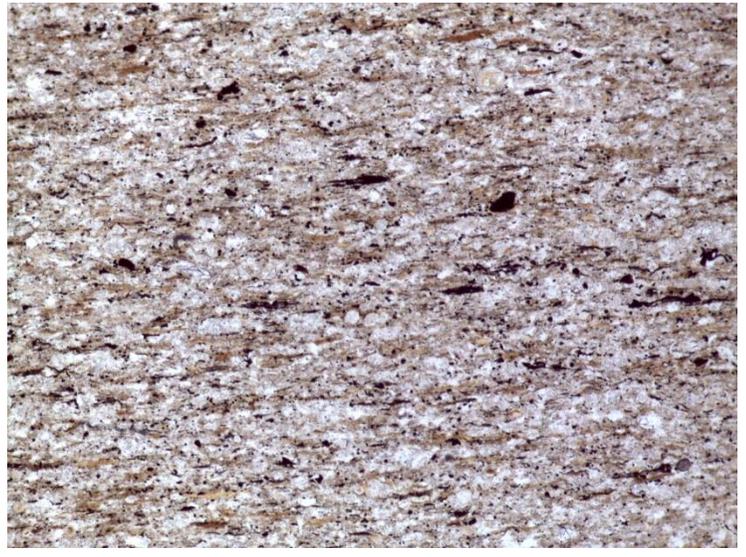
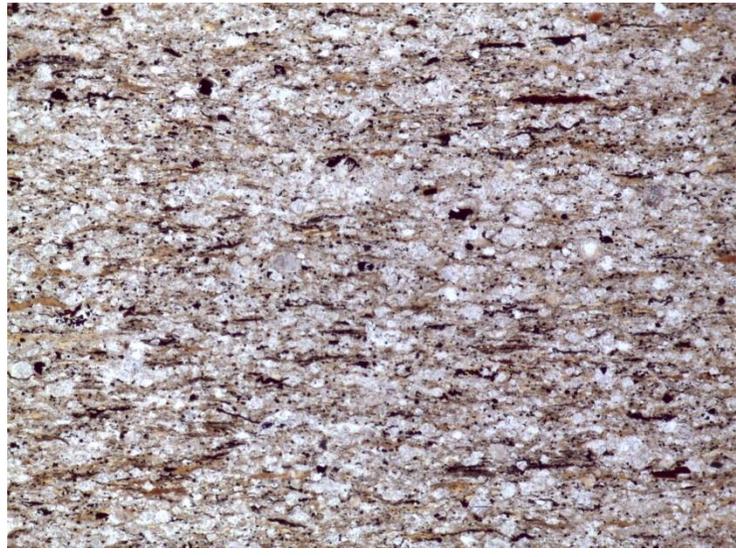
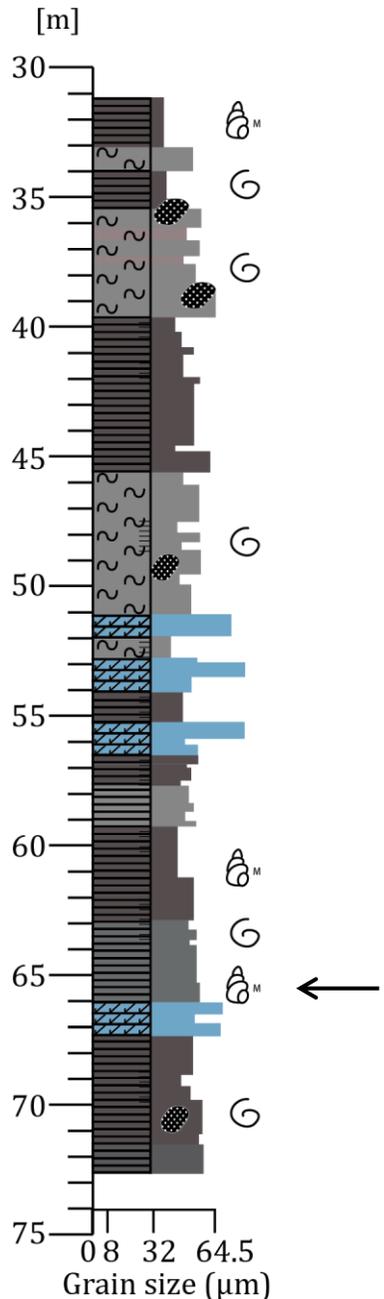


Thin section preparation: Durham University

All scale bars = 500 μm

EB 65.50 m

Facies: 3

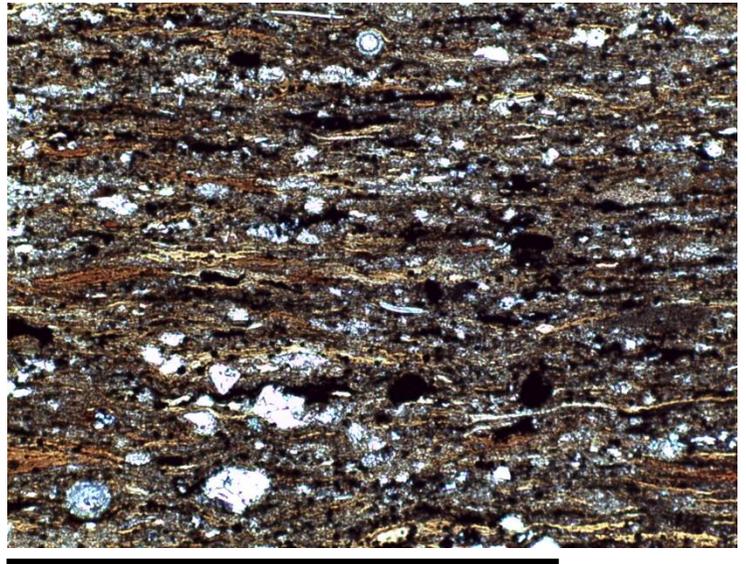
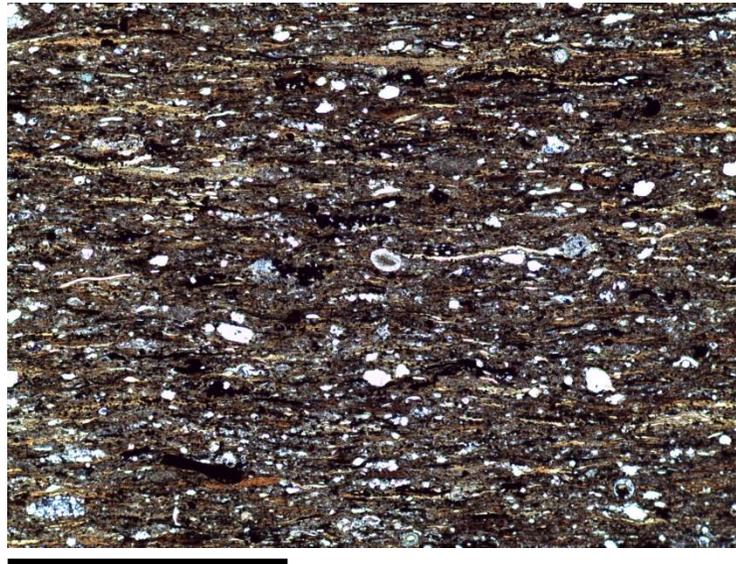
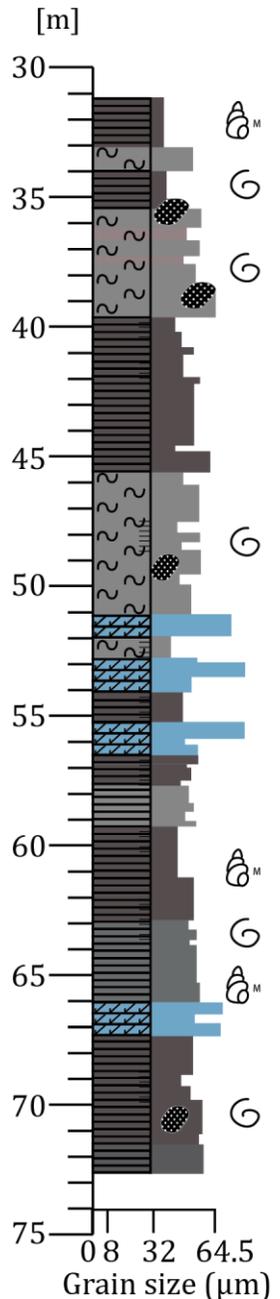


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 66.00 m

Facies: 2

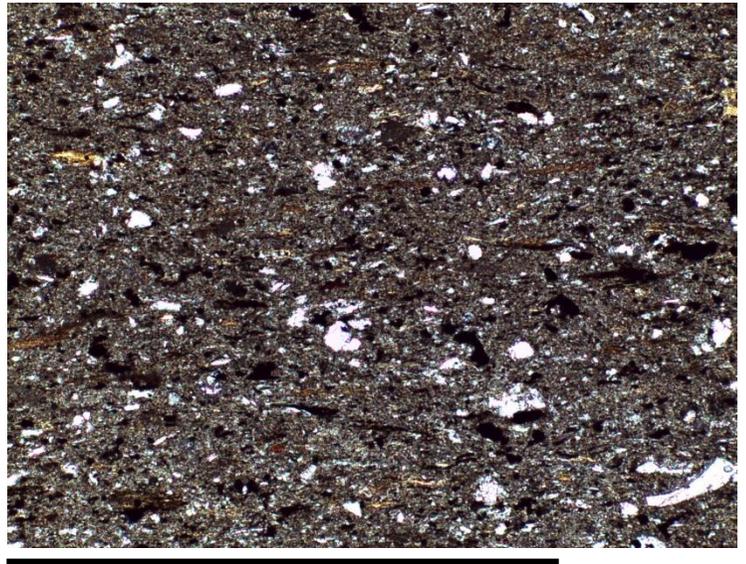
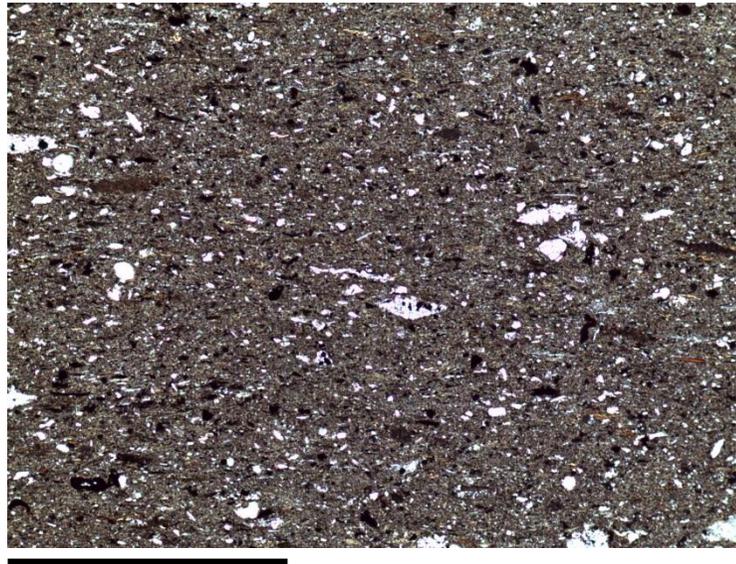
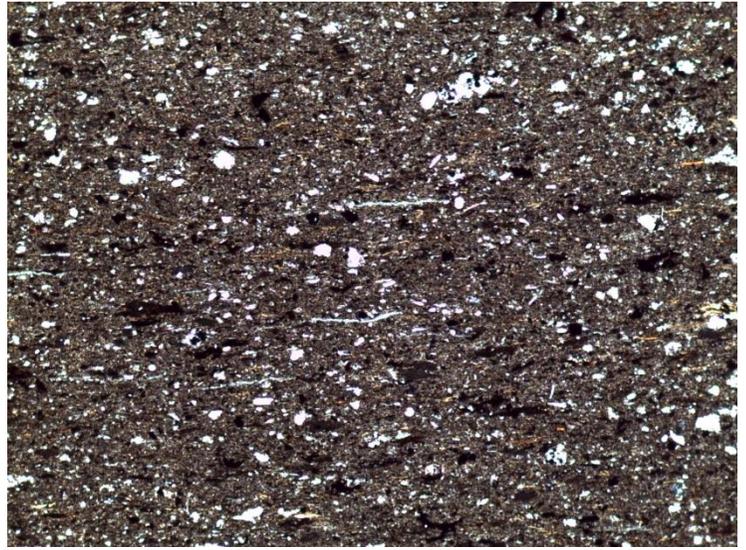
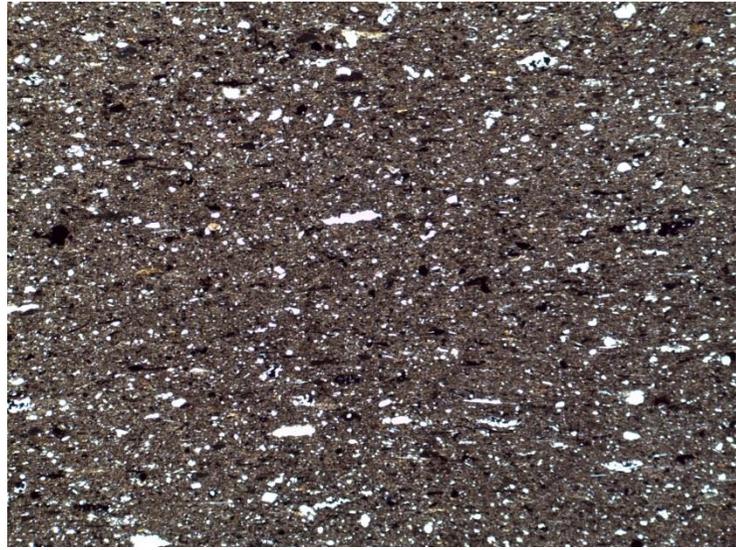
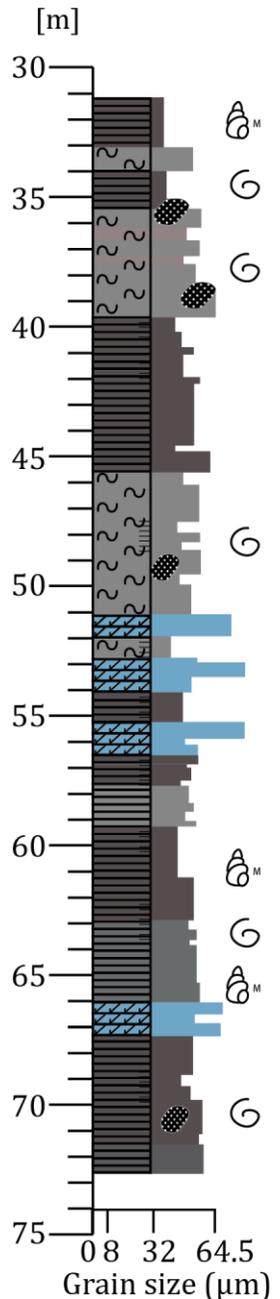


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 67.00 m

Facies: 2

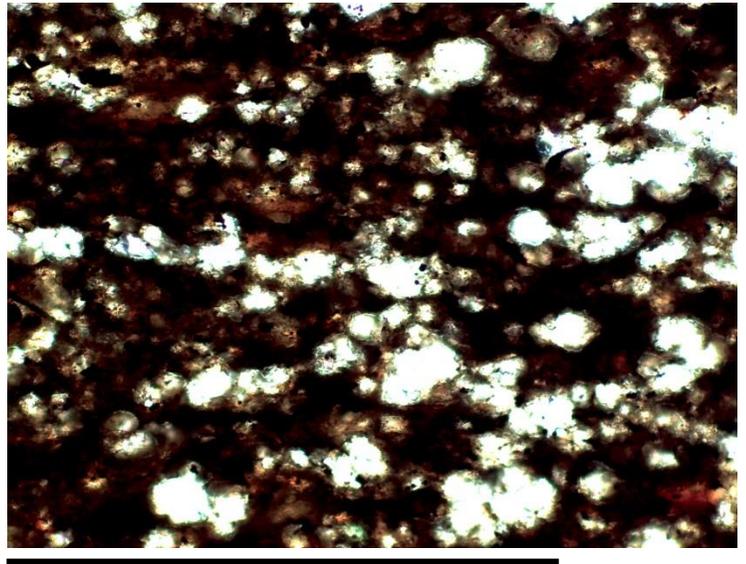
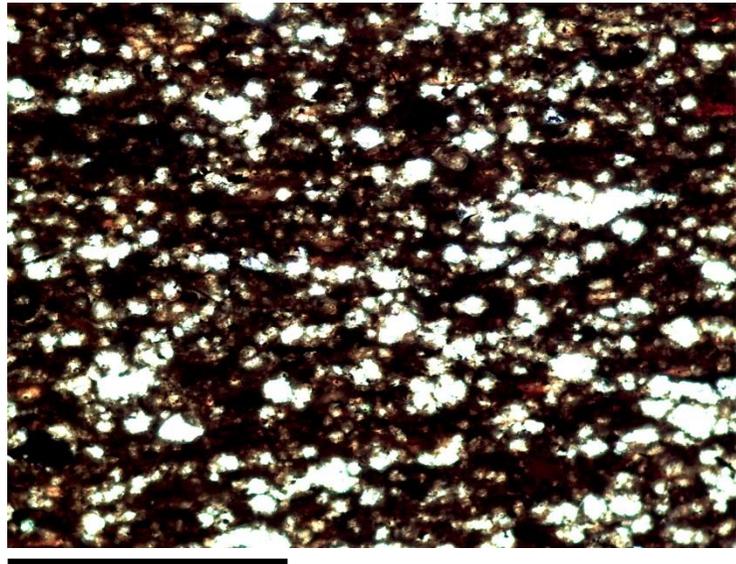
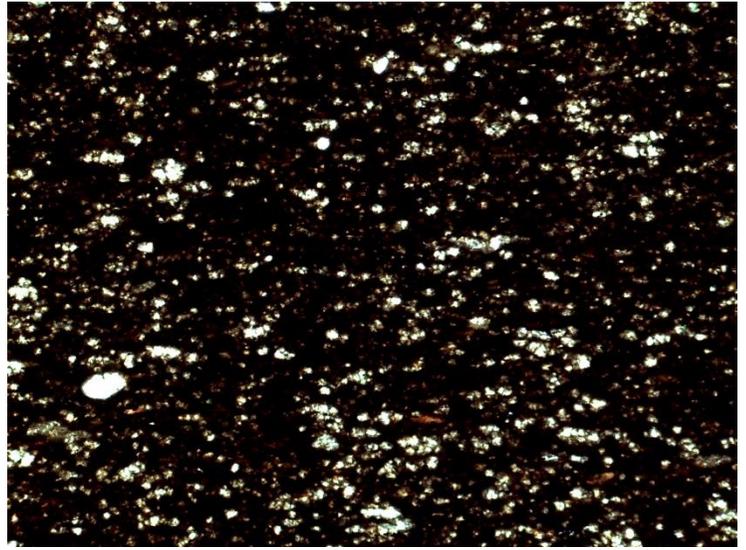
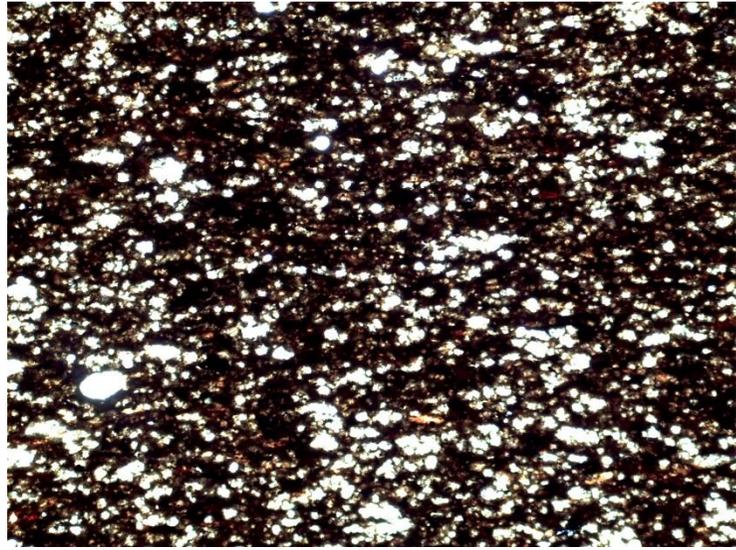
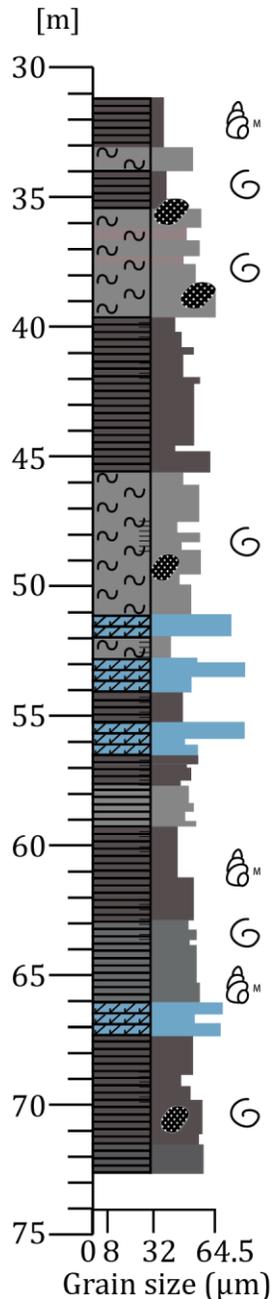


Thin section preparation: Wagner Petrographic Ltd

All scale bars = 500 μm

EB 67.50 m

Facies: 5

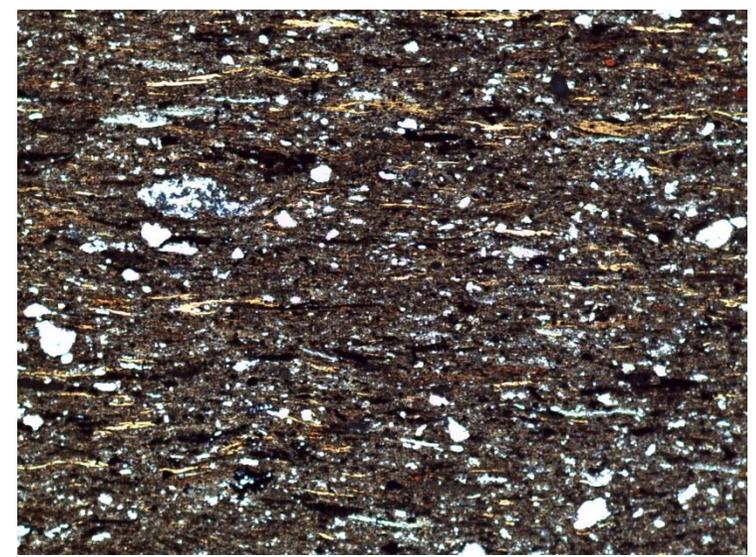
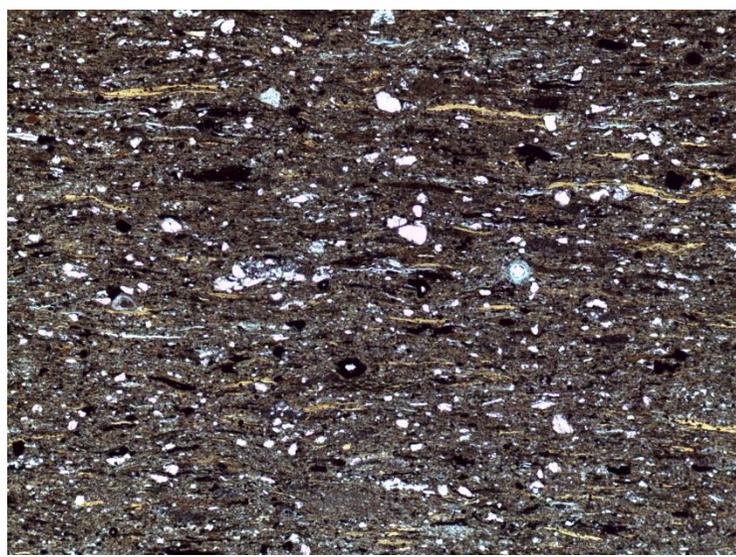
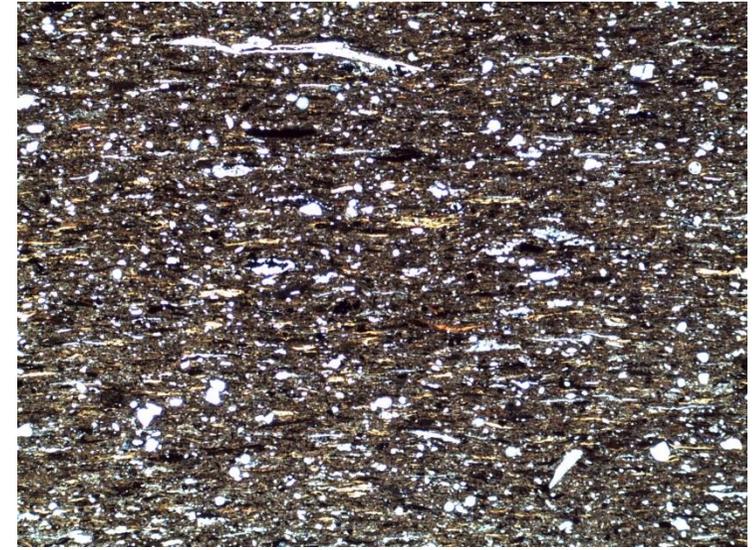
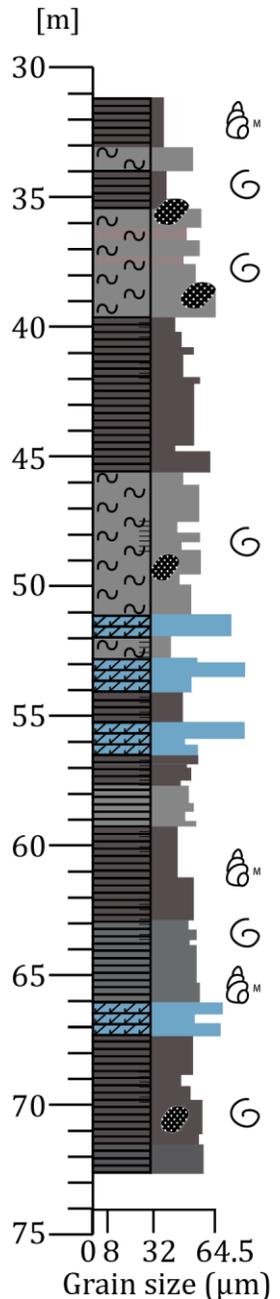


Thin section preparation: Durham University

All scale bars = 500 μm

EB 68.00 m

Facies: 2

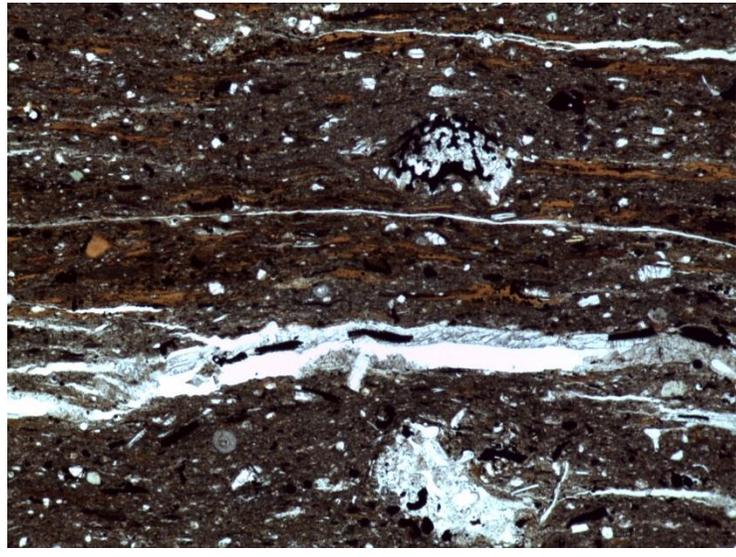
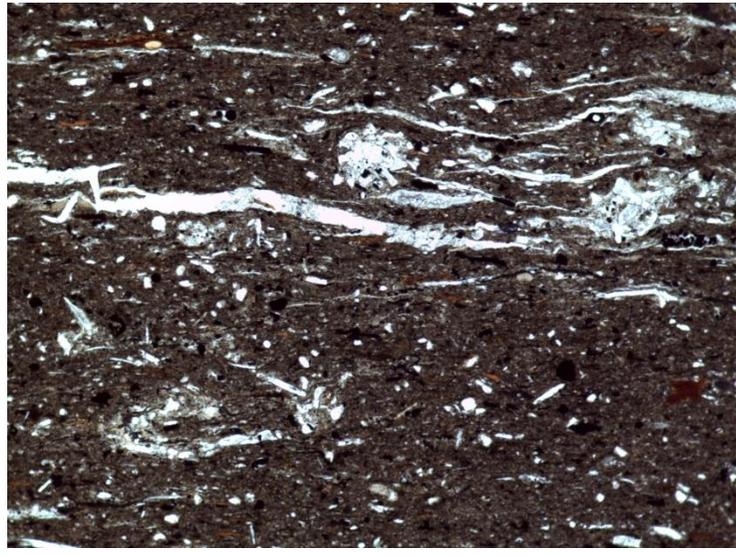
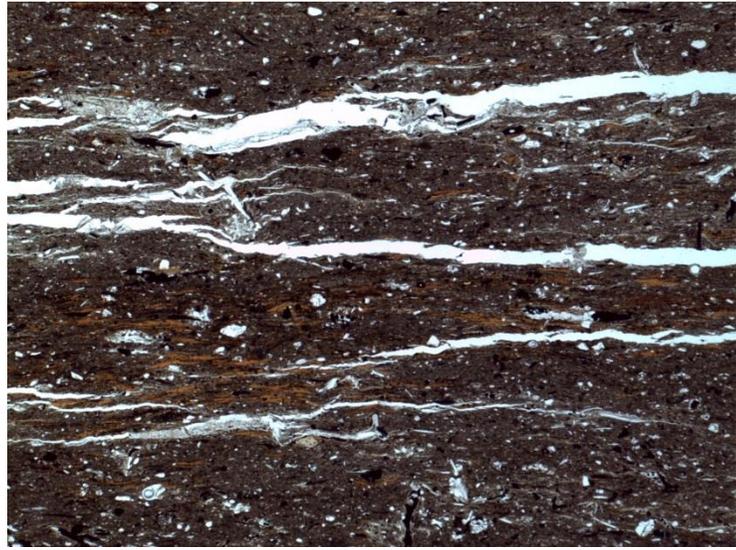
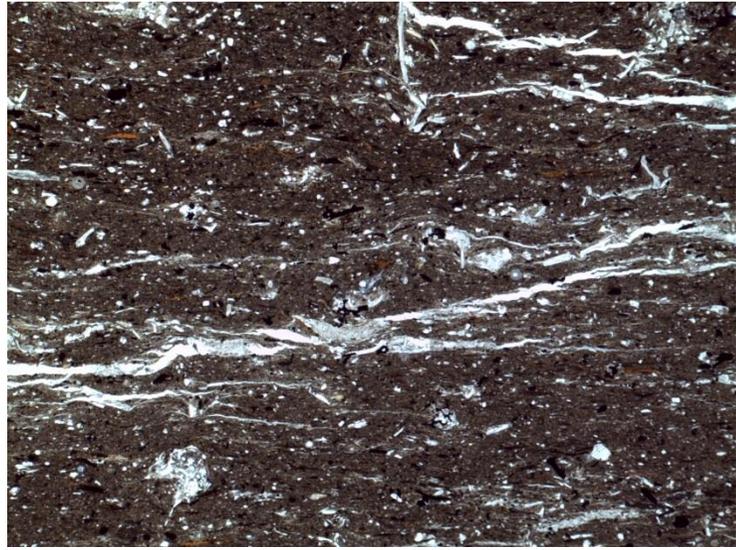
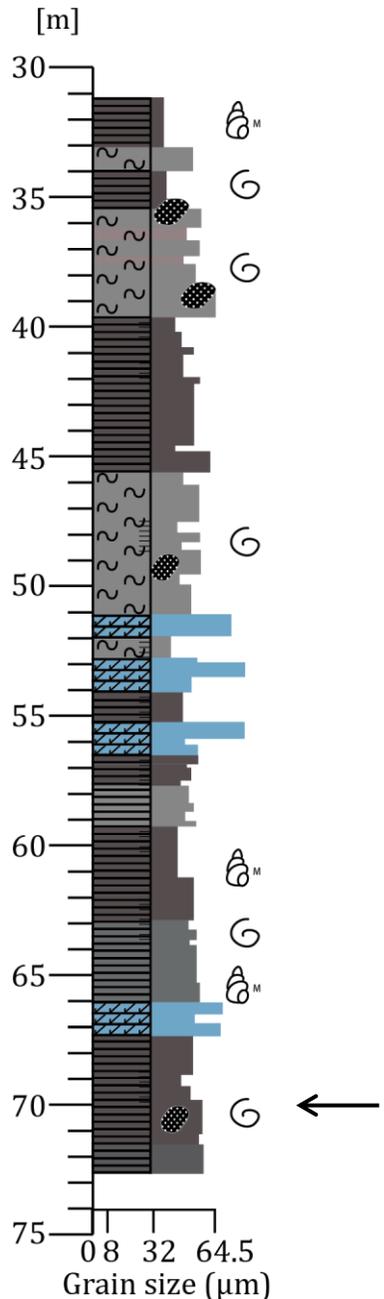


Thin section preparation: Wagner Petrographic Ltd/Durham University

All scale bars = 500 μm

EB 70.00 m

Facies: 6

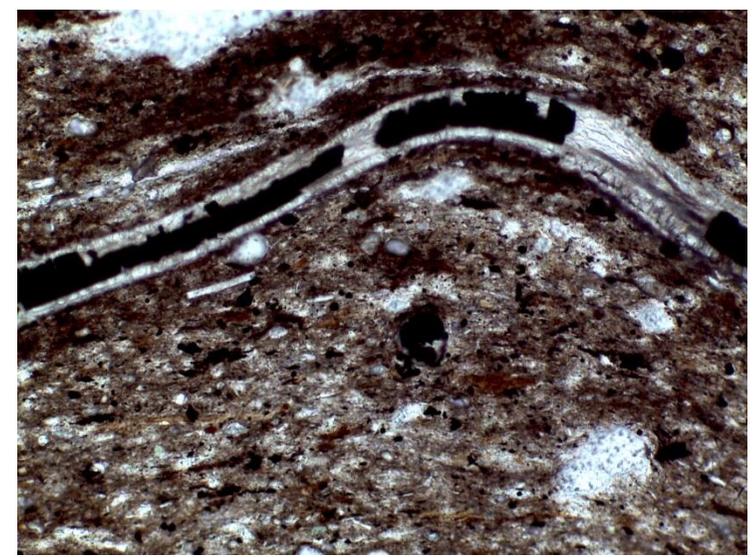
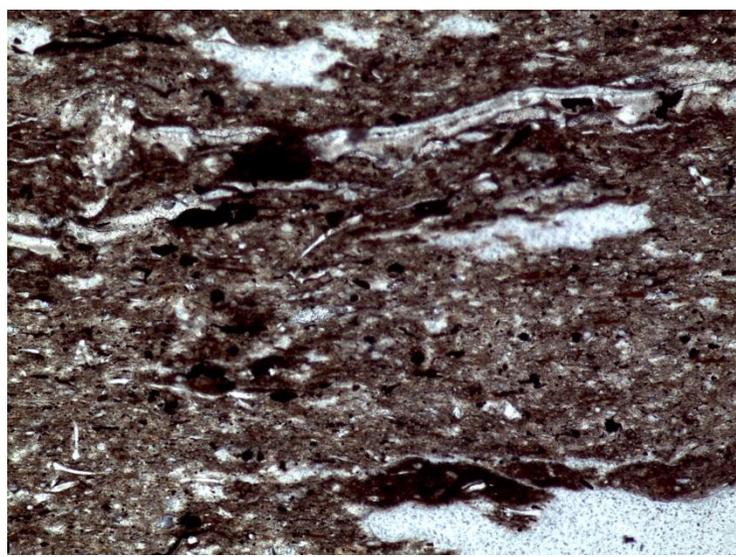
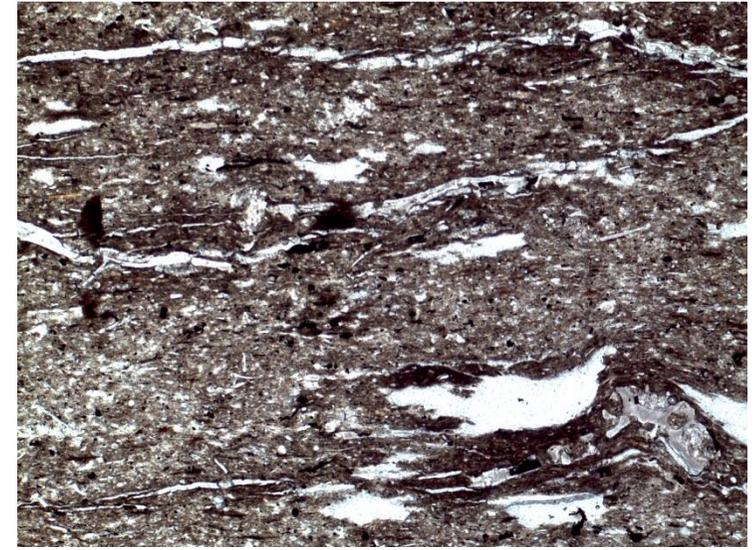
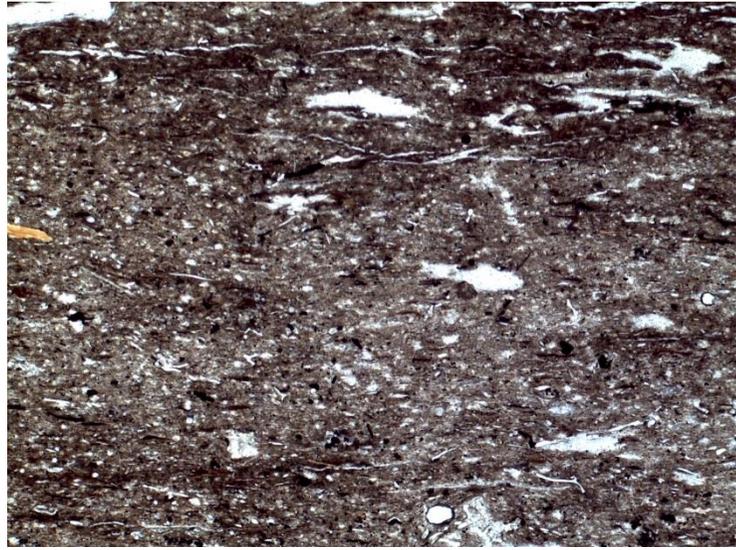
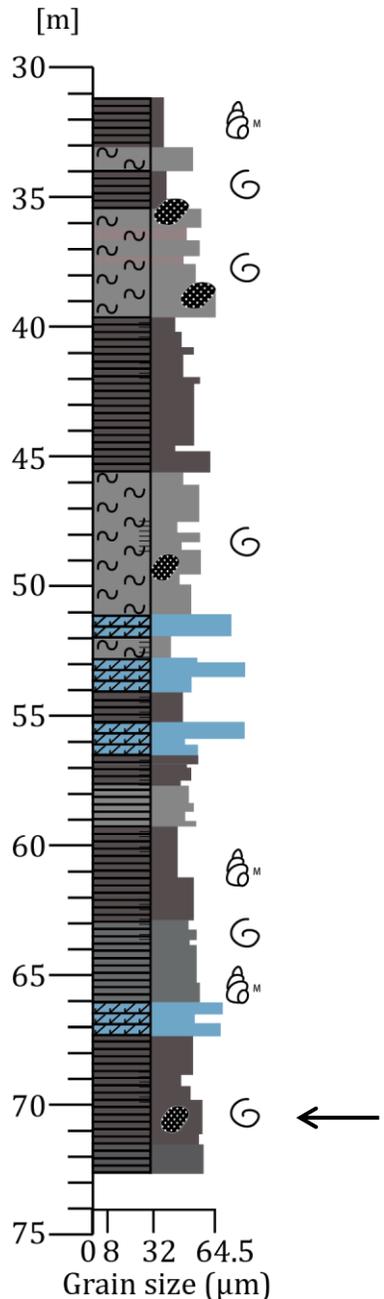


Thin section preparation: Wagner Petrographic Ltd/Durham University

All scale bars = 500 μm

EB 70.50 m

Facies: 6

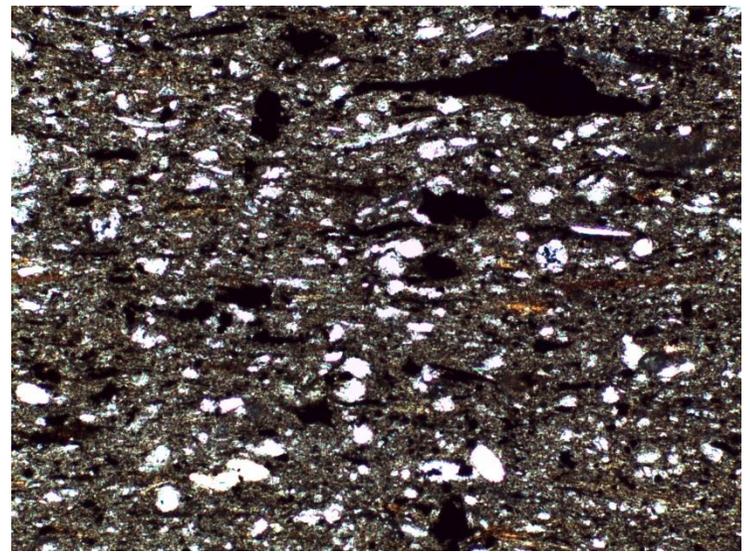
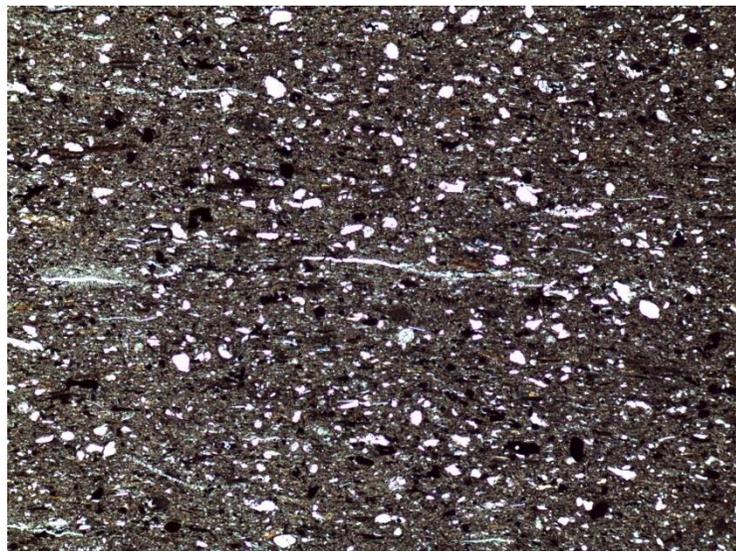
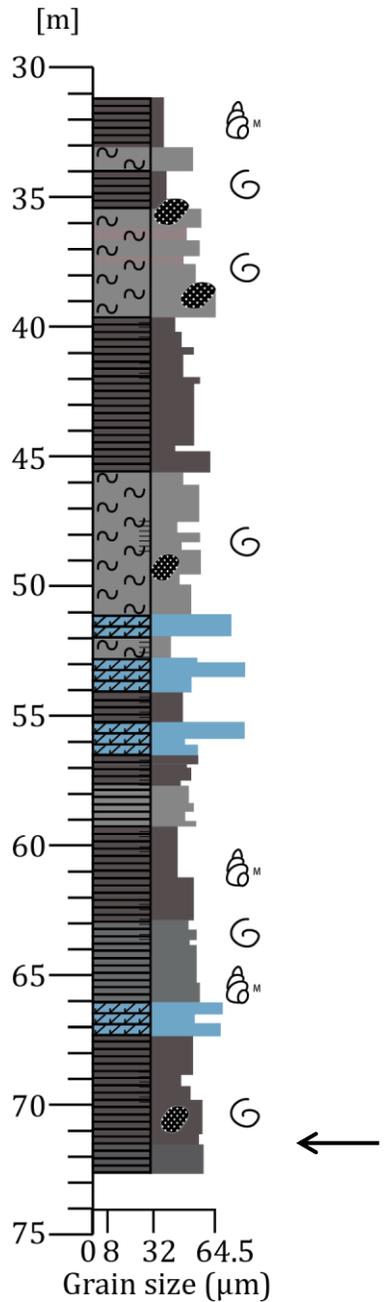


Thin section preparation: Durham University

All scale bars = 500 μm

EB 71.50 m

Facies: 1



Thin section preparation: Wagner Petrographic Ltd/Durham University

All scale bars = 500 μm