

First insights into site formation processes

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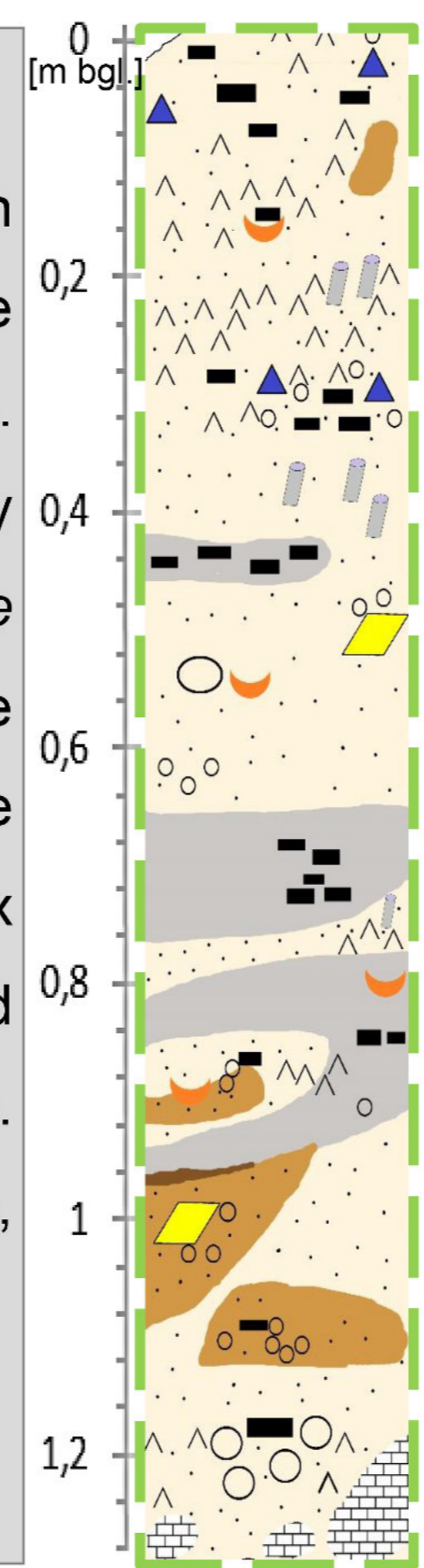
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Introduction

The archaeological sequence at Pockenbank Rock Shelter encompasses critical phases in the evolution of anatomically modern humans in southern Africa, i.e. of the Middle Stone Age (MSA) and Early Later Stone Age (LSA) technocomplexes (VOGELSANG 1998). To better understand human occupation history of – and cultural adaptation to – this very dry environment, the Cologne-based project ("At the margins of Late Pleistocene subcontinental Networks" I.S.) applies selected geoarchaeological methods to the archaeological site as well as surrounding archives. This poster presents first results of the geoarchaeological analysis of samples taken at the site. Here we focus on a selection of six micromorphological thin sections (6 x 8 cm) - prepared after BECKMANN 1997 and described after STOOPS 2003 - and supplementary sedimentological and geochemical analyses. Research questions of this Master study (E.H.) concern sediment deposition processes, post-depositional disturbance and use of the shelter by humans (GOLDBERG 2006).

Fig. 1 Legend of drafted profile column (right) as part of the western profile and sediment sampling.

fine sand, limestone, ash, charcoal, gravel, ostrich eggshell, borrow, gypsum, stains, bone, stone tool



The site Pockenbank Rock Shelter

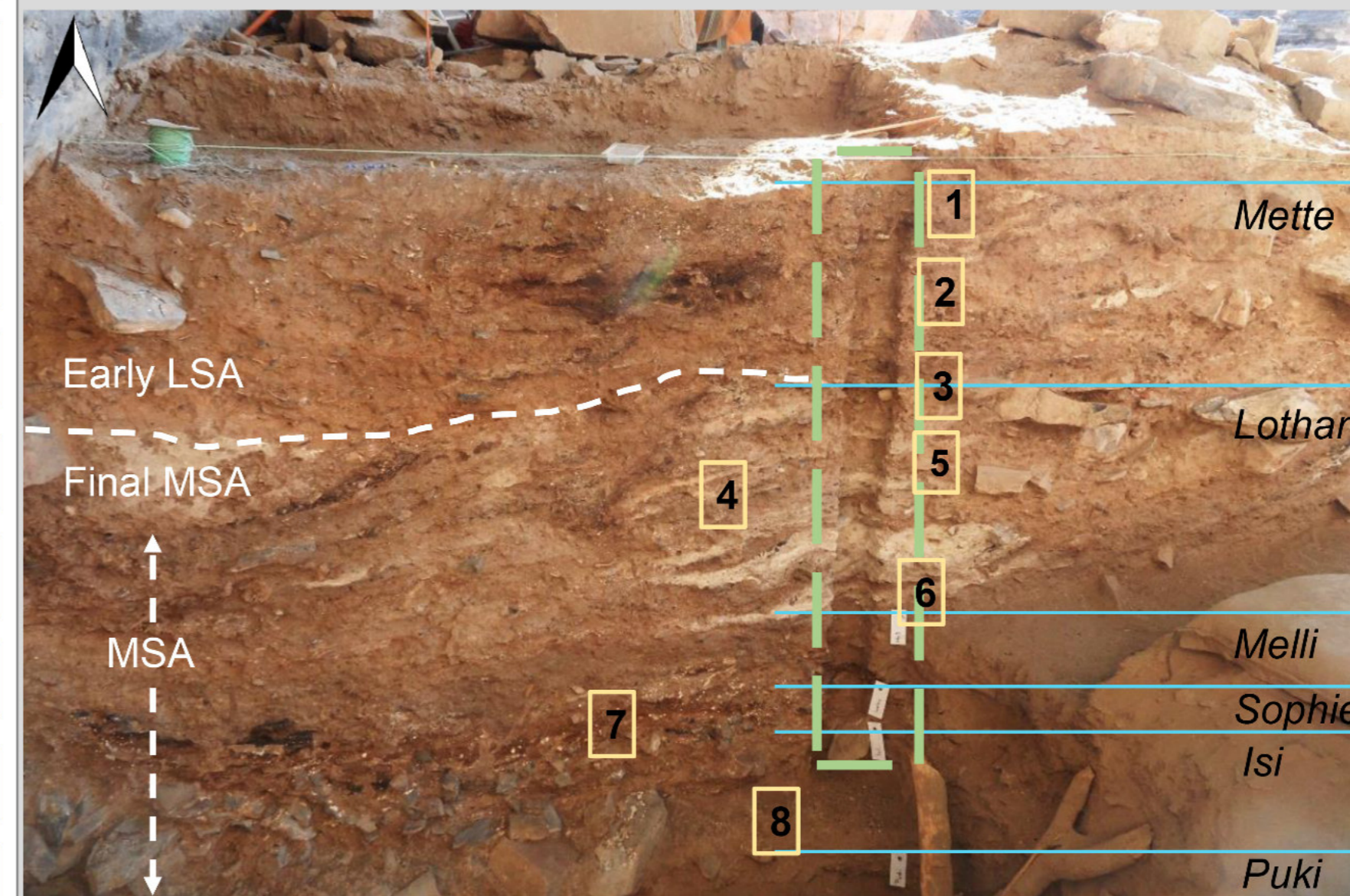


Fig. 2 Sediment sequence of square Z8 and Z7 shows a complex stratigraphy, with ash layers, charcoal, gypsum and several limestone blocks. The profile shows a hiatus, representing the boundary between the Final MSA and the Early LSA. Sedimentological sampling column is highlighted in green and represented graphically (left). Ten micromorphological monoliths were extracted; highlighted in yellow (figures: E.H.).

Fig. 3 Pockenbank Rock Shelter is situated in a calcareous black limestone terrain (Nama Group) east of the southern Namib Desert (figure E.H.; data set ACACIA Projekt E1 2012, ESA 2015).

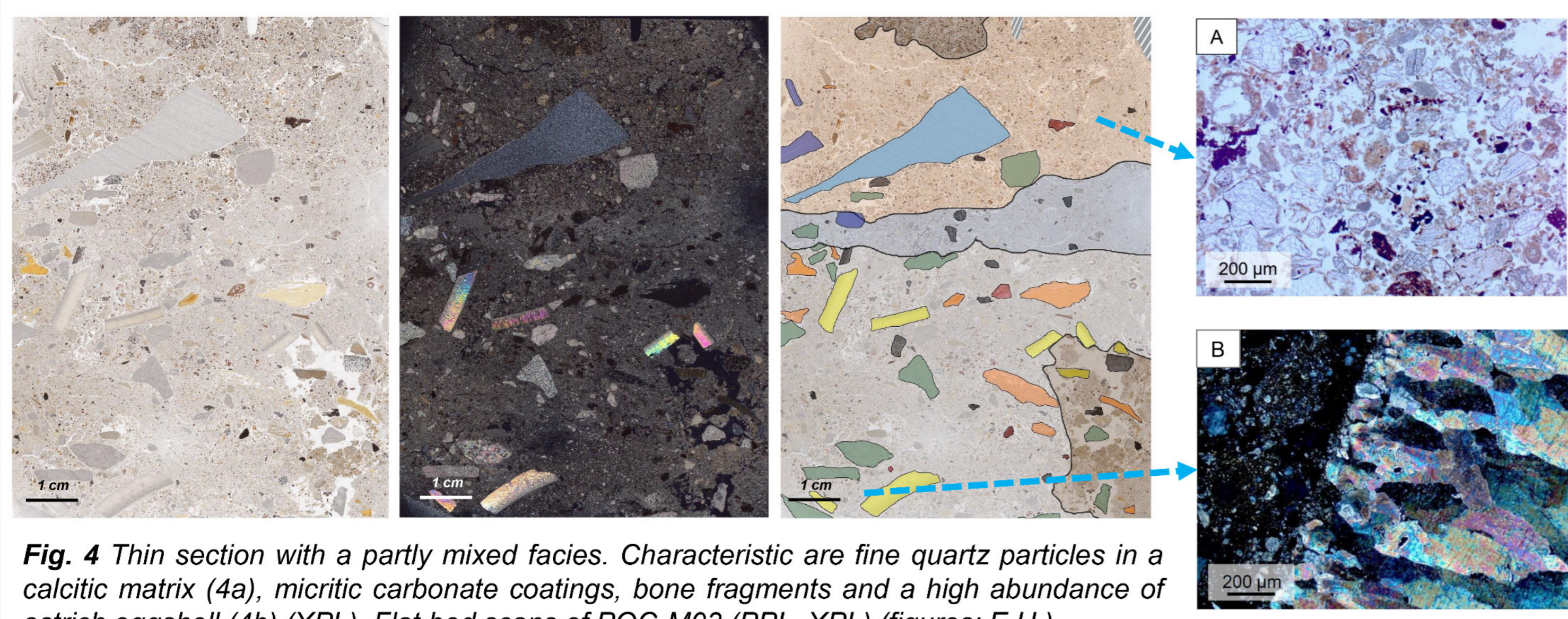


Fig. 4 Thin section with a partly mixed facies. Characteristic are fine quartz particles in a calcitic matrix (4a), micritic carbonate coatings, bone fragments and a high abundance of ostrich eggshell (4b) (XPL). Flat bed scans of POC-M03 (PPL, XPL) (figures: E.H.).

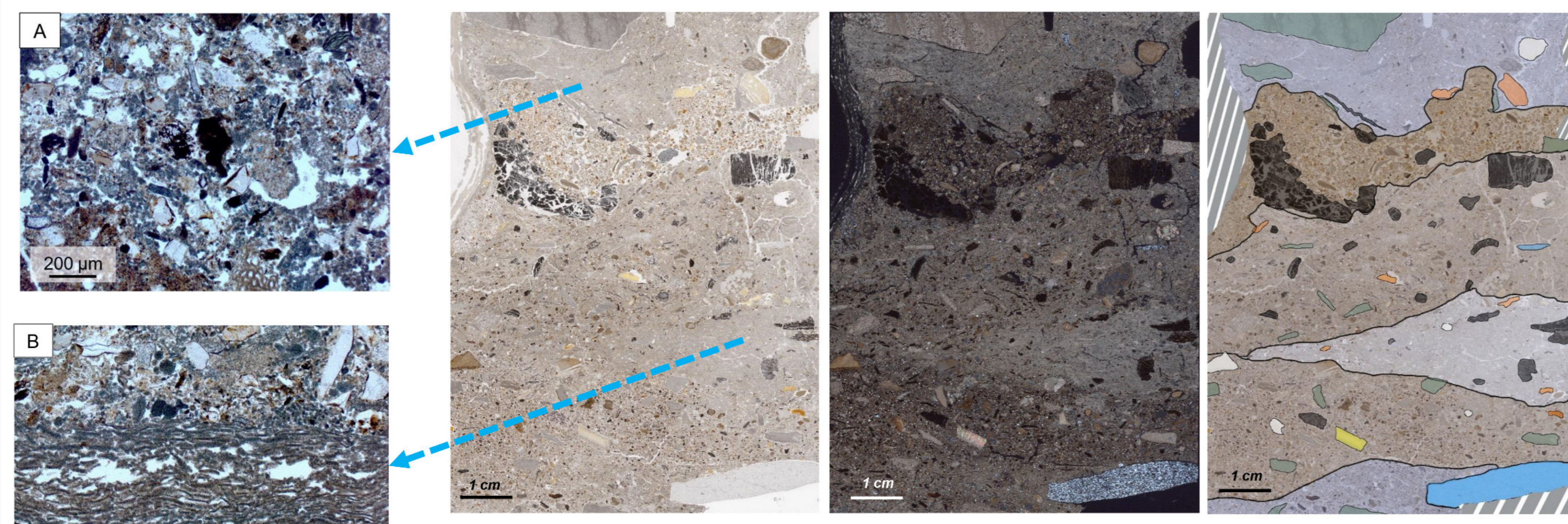


Fig. 5 Multiple ash layers with a partly mixed facies. Intact ash layers (5b) alternate with partly disturbed (5a) and completely disturbed layers, caused by postdepositional biogenic mixing. Ash lenses show fine microstratigraphy. Flat bed scans of POC-M06 (PPL, XPL) (figures: E.H.).

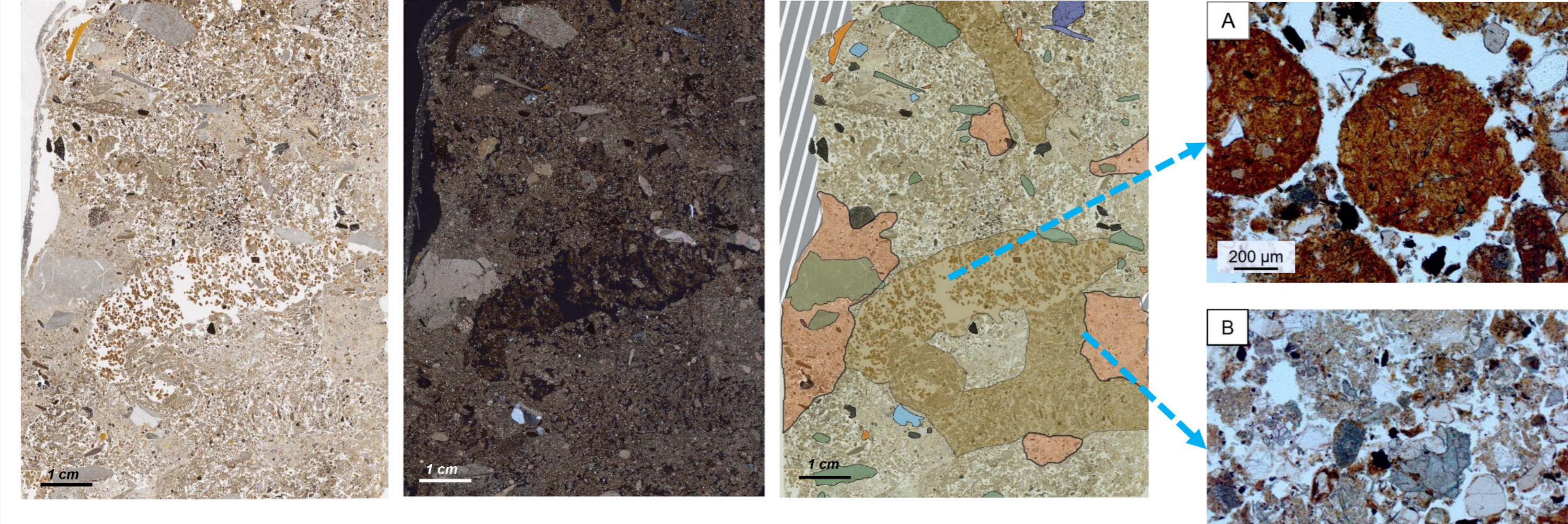


Fig. 6 A strongly mixed facies with distinct borrows and voids → caused by bioturbation (6a). Intact sediment (6b) is found in small accumulations. Flat bed scans of POC-M08 (PPL, XPL) (figure: E.H.).

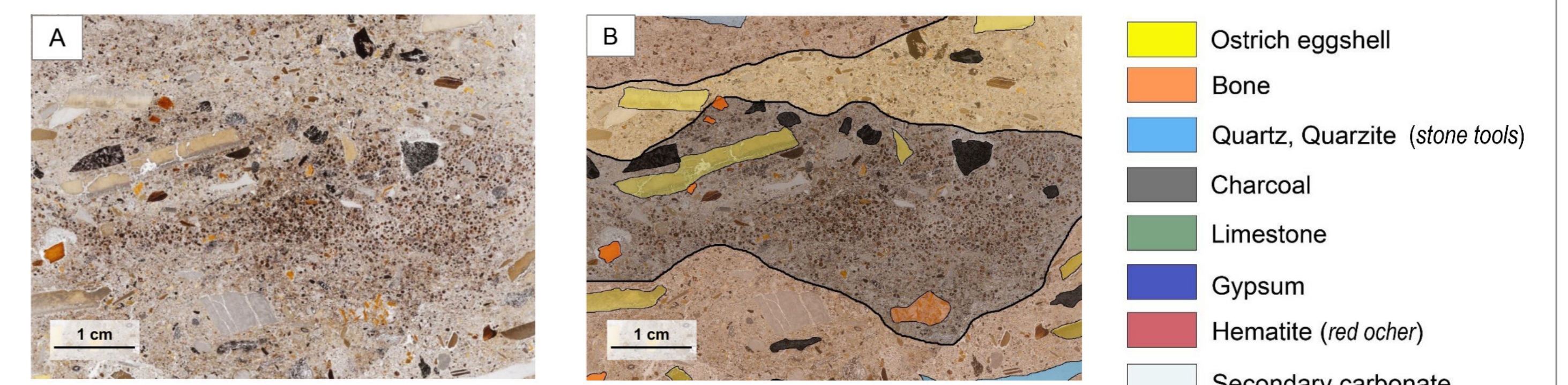


Fig. 7 Packed dark coloured coproliths (by trampling): (7a) thin section POC-M01 (PPL) and (7b) the outline of the thin section; (right) legend for coloured outline of the thin sections (figures: E.H.).

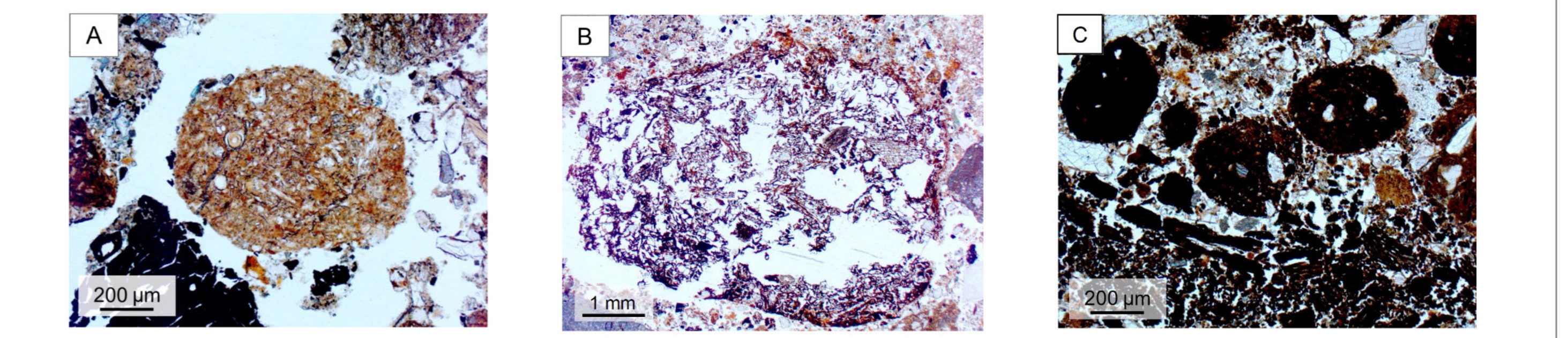


Fig. 8 Several coproliths: (8a) phosphatic coprolith (PPL), (8b) partly destroyed phosphatic coprolith (PPL), (8c) dark coprolith in organic rich matrix (PPL) (figures: E.H.).

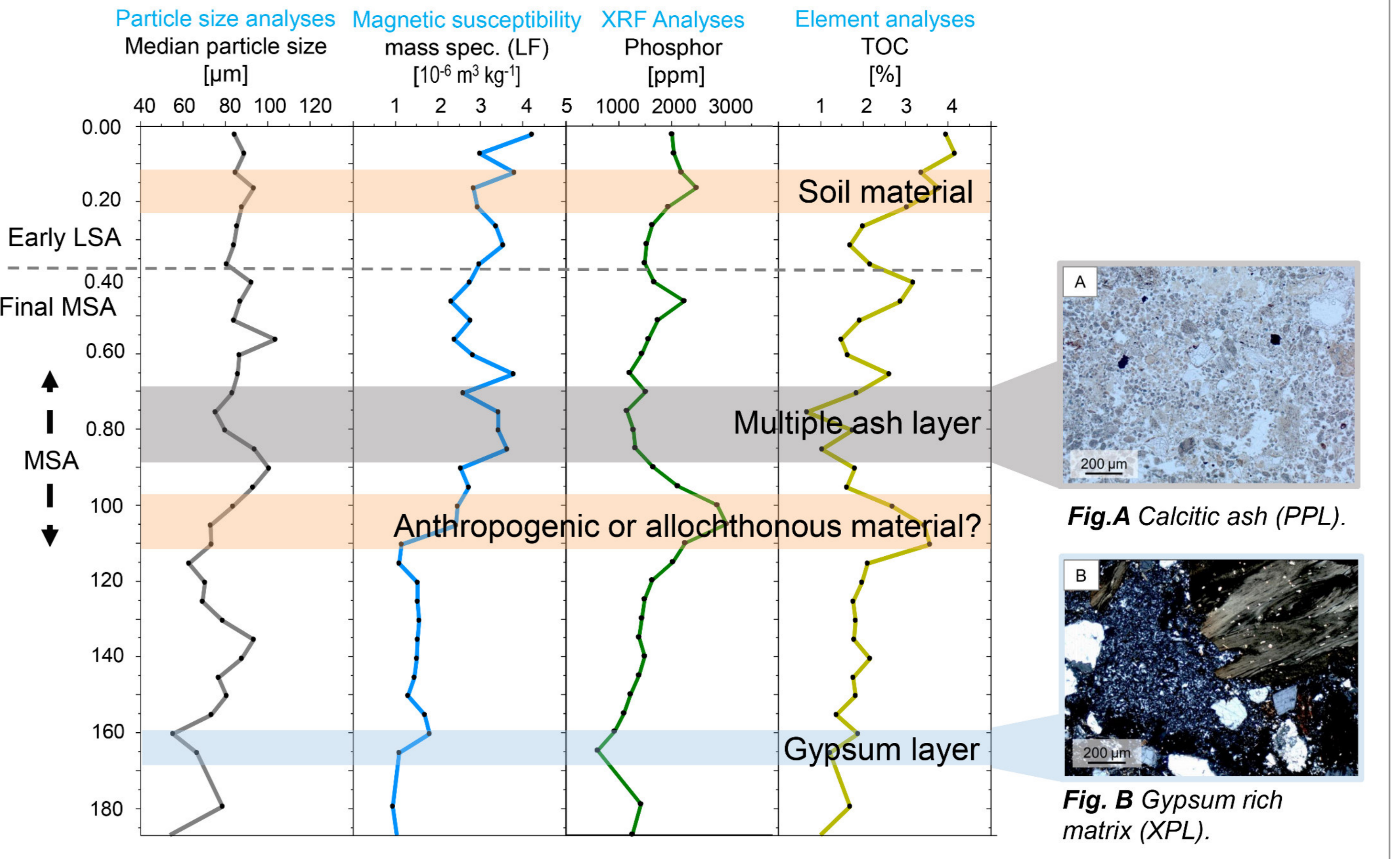


Fig. 9 Selection of sedimentological and geochemical results pointing out striking features in the sediment sequence. Layering is reflected in magnetic susceptibility, phosphor and TOC content (figure: E.H.).

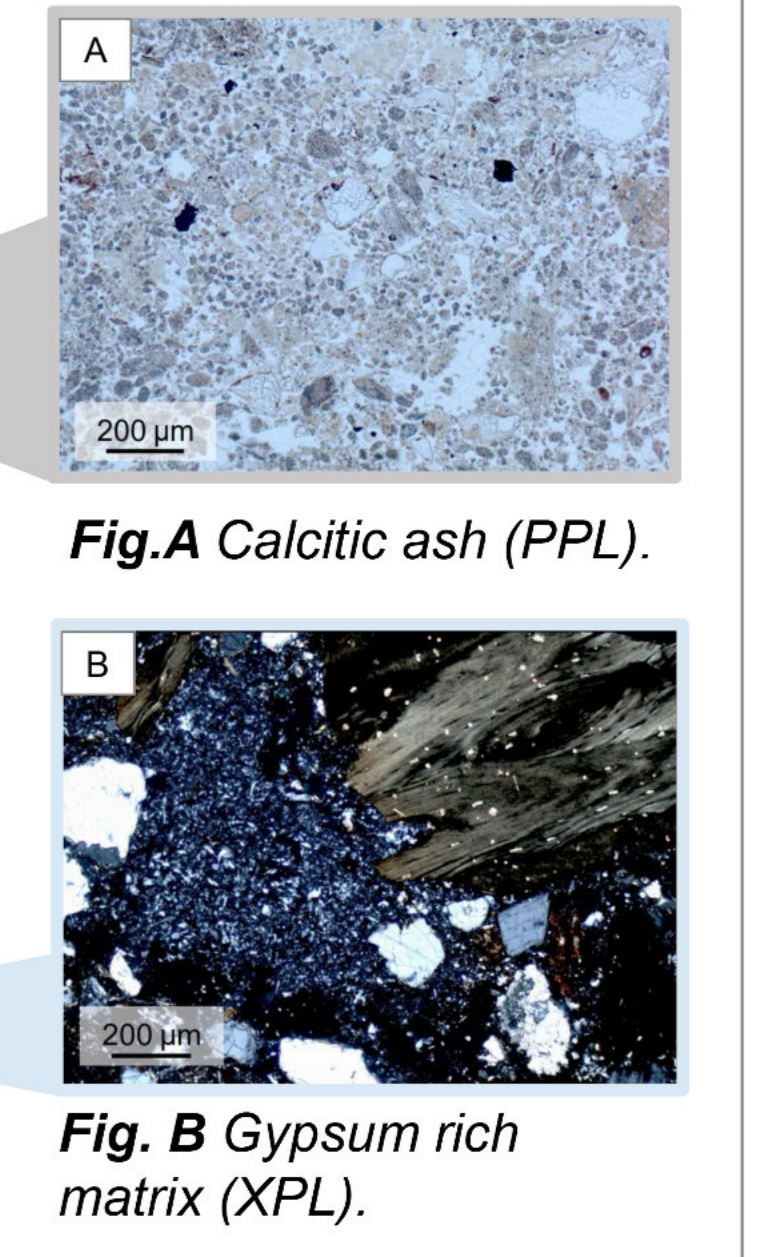


Fig. A Calcitic ash (PPL). **Fig. B** Gypsum rich matrix (XPL).

Major results and discussion

- Siliceous coarse silt and fine sand indicating aeolian input into the sequence (see Fig. 9);
- Macroscopical differentiation of ash layers, charcoal and gypsum layers is possible (see Fig. 2);
- Carbonates present in rock fragments, calcitic ash, bone and secondary carbonate (e.g. coatings);
- Local gypsum enrichment in groundmass and pedofeatures (e.g. infillings, nodules) signalize predominant aridity and low degree of water percolation (see Fig. 4 and 9d);
- Disturbed layers of intensive bioturbation, as indicated by passage features and frequent excrements alternate with intact deposits (see Fig. 6);
- Layers of human activity are numerous (e.g. sweeping out of fire residues) (MENTZER 2012);
- Archaeological artifacts, imported materials and distinct polyphase ash lenses (see Fig. 9) are signs of human occupation;
- Woody charcoal and ash as main features → palaeo-environment with shrubby flora (see Fig. 5).

Conclusion

- Humans were the most important agents for sediment accumulation at the site;
- Natural processes such as aeolian transport and roof fall were less significant;
- Multiple hearth burning, trampling & sweeping out of the ground are indicated and reflect repetitive human modifications of the sediment record;
- Although the sample collection does not reveal a complete formation history of the sequence, it delivers a detailed insight into MSA and Early LSA occupations in a dry area.

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Maps:
(1) ACACIA PROJECT E1 (2012): Atlas of Namibia Project. Directorate of Environmental Affairs, ministry of Environment and Tourism. [www.dea.met.gov.na (2003)]; (2) ESA (2015): www.esa.int/spacemanager/Images/2011/08/African