The Late Pleistocene archaeological sequence at Pockenbank Rock Shelter, Namibia: First insights into site formation processes

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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” 1.5) applies selected geoarchaeological methods to the archaeological site as well as surrounding archives. This paper 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:
- Ternite Thin section
- Gypsum
- Geode
- Bone
- Stool
- Sedimentation

Fig. 2 Candi the neated profile column (right) as part of the eastern profile and sediment sampling:
- Ternite Thin section
- Gypsum
- Geode
- Bone
- Stool
- Sedimentation

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 Project E1 2012, ESA 2015).

Fig. 4 A strongly mixed facies with distinct horizons and voids — caused by bioturbation (6a).

Fig. 5 Multiple ash layers with a partly mixed facies. Intact ash layers (6b) alternate with partly disturbed (6c) and completely disturbed layers, caused by postdepositional bioturbation.

Fig. 6 Gypsum lens with microstructure. Flat bed section of POC-M04 (PPL, XPL) (figures E.H.).

Fig. 7 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 Project E1 2012, ESA 2015).

Fig. 8 Several coprolites: (6a) phosphatic coprolite (PPL), (6b) partly destructed phosphatic coprolite (PPL), (6c) dark coprolite 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.).

Major results and discussion
- Siliceous coarse silt and fine sand indicating aeolian input into the sequence (see Fig. 9);
- Macroporosity 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. inflings, 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 excrement alternates 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 level;
- 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.

References:

Fig. 10 ACAAC Project E1 2012 (Alabia Namib Project): Deadlines of Environmental Affairs, ministry of Environment and Tourism, www.lanet.gov.na (2003); (2) ESA (2010); www.esa.int/radioimageimage/2011/02/05/somali