Conjoining sets of lithic artefacts from MGD I show that reworking was limited


Literature:

Methods

We use micromorphology to reconstruct detailed site formation histories for the sites in the Karonga district. Micromorphology is the study of oriented blocks of intact sediment in thin section using a petrographic microscope under plane polarised light (PPL), crossed polarised light (XPL), blue light fluorescence and oblique incident light (OIL). From the analyses of the composition and fabric of sediments and soils, interpretations can be made about the processes responsible for its formation and post-depositional modification. The method is especially well-suited for the study of features indicative of post-depositional processes such as pedogenesis, groundwater weathering and bioturbation. Identification of microscopic features allows us to assess the impacts of these processes on the deposits and archaeological materials. Mineral and material identifications in this section are supplemented by Fourier transform infrared (FTIR) spectroscopy.

Human response to extreme climate change

Data from sediment cores collected in Lake Malawi indicate a series of megadroughts during the Late Pleistocene (Scholz et al. 2007, 2011) (Fig. 3). Our goal is to compare the available palaeoenvironmental sequence from the drills with data obtained directly from the terrestrial record at archaeological sites. Post-depositional features observed in thin section are especially informative about the palaeoenvironment, as they are associated with an ancient water table and soil formation. This study will allow us to investigate the role that dramatic shifts in past local and regional environments played in the behavioral evolution of humans in the MSA.

Conclusions

Mwanganda Area I shows a complex relation of soil formation and groundwater processes, reflected in carbonate formation and redoximorphic features. Field observations and micromorphological analyses lead to the conclusion that the pebble and cobble layer at Mwanganda I represents an abandoned streambed, likely frequented by Stone Age people who exploited this type of location for lithic raw material and riparian resources.

Fig. 1. The study area is located near the town of Karonga at the shores of Lake Malawi, Malawi, Africa.

Fig. 2 Elevational model of Mwanganda’s Village showing the locations of the excavation areas MGD I and MGD II on the 2nd and 3rd terraces of the Chirambiru Creek. Wright et al. 2014.

Fig. 3 Key bathymetric lowstand contours (meters below modern lake level) illustrate how magadroughts reduced the water balance to ca. 3% of its present level as recently as 80 ka. Lyons et al. 2011.

Artefacts on a streambed deposit

a: The upper part of the profile at MGD I in which many lithic artefacts were found. b: Scan of a thin section (6x9 cm) from the artefact horizon with some pebbles in the lower part. Loamy sand deposits above and below the streambed are similarly affected by bioturbation (c, g), pedogenic carbonate dissolution and precipitation (h), as well as by translocation of iron oxides and clays. Below the streambed (d), a clay-rich subangular blocky microstructure, formed by repeated wetting and drying (e), is preserved where soil faunal activity has been restricted. Iron stained disorthic nodules of fine clay derive from lagoonal deposits similar to units underneath and indicate local erosion and redeposition.

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