



Hominin Sites and Paleolakes Drilling Project: A 500,000-year climate record from Chew Bahir, a key site in southern Ethiopia

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What is the environmental context of human evolution and dispersal? In order to evaluate the impact that different timescales and magnitude of climatic shifts have had on the living conditions of anatomically modern humans, the Hominin Sites and Paleolakes Drilling Project (HSPDP) has cored five predominantly-lacustrine sequences to investigate climate change in East Africa (Cohen et al., 2016). The five high-priority areas in Ethiopia and Kenya are located in close proximity to key paleoanthropological sites covering various steps in evolution. One of the five cores is from Chew Bahir. Chew Bahir is a deep tectonically-bound basin in the southern Ethiopian rift, close to the Lower Omo valley, site of the earliest known fossil of anatomically modern humans. As part of the deep drilling initiative between ICDP-HSPDP and the Collaborative Research Center (CRC806), the Chew Bahir sedimentary deposits were cored in late 2014, yielding in two parallel cores reaching 280 m depth and which cover the last 550 ka of environmental history.

We present the initial results of on-going lithologic and stratigraphic investigation of the composite core, the results of high resolution MSCL and XRF scanning data, as well as the first results of detailed multi-proxy analysis of the Chew Bahir cores. These analyses are based on more than 14,000 discrete subsamples. An initial chronology, based on Ar/Ar and OSL dating, allows the first reconstructions of dry-wet cycles during the last 550 ka. Both geochemical and sedimentological results show that the Chew Bahir deposits are sensitive recorders of changes in moisture, sediment influx, provenance, transport and diagenetic processes. The core records will allow tests of the various hypotheses regarding the impact of climate variability -from climate flickers to orbital driven transitions- on the evolution and dispersal of anatomically modern humans.

References:

Cohen, A. et al., 2016. The Hominin Sites and Paleolakes Drilling Project: Inferring the Environmental Context of Human Evolution from Eastern African Rift Lake Deposits. *Scientific Drilling* 21, 1-16, doi:10.5194/sd-21-1-2016.