



HSPDP

Hominin Sites and Paleolakes Drilling Project
Kenya and Ethiopia, East African Rift



Goal & Scientific Objective

The goals of the HSPDP drilling project are to (i) collect continuous and long paleolake cores from basins, which are close to hominin fossil and archaeological sites of global significance, spanning critical intervals in human evolutionary history, (ii) assemble high-resolution and readily datable paleoclimate/paleoenvironmental records from these cores covering much of the past ~4 Ma of East African environmental history, (iii) evaluate models of climatic and tectonic forcing of environmental processes as they affect landscape resources, and (iv) test hypotheses linking climate change and variability to physical and cultural evolutionary adaptations.

Operational Achievements

About 2 km of sediment drill core from five basins were collected in Kenya and Ethiopia. Drilling sites (cored boreholes) includes

- NA: Northern Awash (3)
- CB: Chew Bahir (2)
- WT: West Turkana (1)
- BT: Baringo Tugen Hills (1)
- MA: Lake Magadi (4)

Geophysical downhole logging data were collected by ICDP's Operational Support Group at BT, WT and MA. A multisensor core logger was deployed to the Tugen Hills/Baringo and West Turkana sites to collect mag. Susz. data on unsplit cores.

Timeline

- 2010 proposal submission
- 2013 (June) Tugen Hills/ Baringo Basin
- 2013 (June – July) West Turkana
- 2014 (February – March) Northern Awash
- 2014 (June – July) Lake Magadi
- 2014 (November) Chew Bahir

Web & Media Resources

- <http://hspdp.asu.edu/>
- <http://homininsitedrilling.icdp-online.org/>
- www.facebook.com/HSPDP/
- www.youtube.com/watch?v=B1iU0fBTfUw

Data & Sample Access

Cores are stored in the National Lacustrine Core Facility at the University of Minnesota. Data are available at ICDP website on request.

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Scientific Findings

Collectively the cores cover in time many of the key transitions and critical intervals in human evolutionary history over the last 4 Ma.

A 20 ka long paleoclimate record from the Chew Bahir basin in southwest Ethiopia shows both orbitally-driven long-term transitions from favorable to unfavorable living conditions, including several and short abrupt excursions towards drier or wetter episodes.

Despite all data limitations, the results suggest that external environmental factors merely reduce the range of possible developments, while socio-cultural conditions favor particular concepts. Further incalculable factors play a role and human behavior has not been entirely climatically triggered.



Key Publications

Foerster, V.; Junginger, A.; Asrat, A.; Lamb, H. F.; Wennrich, V.; Weber, M.; Rethemeyer, J.; Frank, U.; Brown, M.C.; Trauth, M.H.; Schaebitz, F. (2014): 46 000 years of alternating wet and dry phases on decadal to orbital timescales in the cradle of modern humans: the Chew Bahir project, southern Ethiopia. *Climate of the Past Discussions* 10 977-1023. doi:10.5194/cpd-10-1-2014

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