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309-7: THE HOMININ SITES AND PALEOLAKES DRILLING PROJECT (HSPDP): PROGRESS TOWARDS UNDERSTANDING THE PALEOENVIRONMENTAL CONTEXT OF HUMAN EVOLUTION IN EASTERN AFRICA

Wednesday, 25 October 2017
10:00 AM - 10:15 AM
Washington State Convention Center - Room 307/308

HSPDP was developed to improve our understanding of the environmental and climatic context of hominin evolution by drilling and sampling high quality cores from lake beds in close proximity to key fossil hominin and archaeological sites in Kenya and Ethiopia. Collectively, the six drilling areas span critical intervals of hominin evolutionary history over the last ~3.5Ma. These include the Tugen Hills area, Kenya (core covering ~3.5-2.5Ma), the N. Awash area, Ethiopia (~ 3.3-2.9Ma), the W. Turkana area, Kenya (~1.85-1.35Ma), the L. Magadi and Olorgesailie areas, Kenya (~1.1Ma-present), and the Chew Bahir area, Ethiopia (~550ka-present). The overarching goal of HSPDP is to test hypotheses about the role of environmental change and variability as drivers of human evolution, using the ~1.9km of high resolution drill core collected by the project, coupled with nearby outcrop and more distant marine and lacustrine archives. Each area provides a set of distinct local environmental archives for testing these hypotheses.

Drilling was successfully completed in 2014 and most initial geochemical, sedimentological, paleoecological, and geochronological analyses are now near completion. These data sets, along with preliminary age models for most of the cores, allow us to interpret the broad patterns of lake and watershed environmental history for each site, and to compare trends between basins that overlap in time, or determine similarities/differences through time across critical episodes of hominin evolution. Three important patterns emerging include: a major shift towards more more variable and probably more arid conditions (starting ~3.1Ma) coincident with the onset of northern hemisphere glaciation, the earliest Oldowan stone tools and origin of *Homo*; an absence of a directional climate shift in the W. Turkana record (but with episodes of increased variability) from ~1.8-1.35Ma, coincident with the evolution of *H. erectus* and Acheulian stone tool technology; and a directional trend towards increased aridity in the Kenyan rift between ~500-200ka (coincident with the transition from Early-Middle Stone Age technology, the origin of modern *H. sapiens*, and major faunal change in Eastern Africa). Ongoing modeling experiments are helping us understand the environmental dynamics that may underpin these relationships.

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