

# Drilling Campaign Summary and Preliminary Results of the Hominin Sites and Paleolakes Drilling Project (HSPDP)

Christopher J. Campisano, *School of Human Evolution and Social Change, Arizona State University, UNITED STATES OF AMERICA* Andrew S. Cohen, *Geosciences, University of Arizona, UNITED STATES OF AMERICA* Asfawossen Asrat, *Earth Sciences, Addis Ababa University, ETHIOPIA* Craig S. Feibel, *Earth and Planetary Sciences, Rutgers University, UNITED STATES OF AMERICA* John D. Kingston, *Anthropology, University of Michigan, UNITED STATES OF AMERICA* Henry F. Lamb, *Institute of Geography and Earth Sciences, Aberystwyth University, UNITED KINGDOM* Daniel O. Olago, *Geology, University of Nairobi, KENYA* R. Bernhart Owen, *Geography, Honk Kong Baptist University, CHINA - HONG KONG* Robin W. Renaut, *Geological Sciences, University of Saskatchewan, CANADA* Frank Schäbitz, *Physical Geography, University of Cologne, GERMANY* J Ramon Arrowsmith, *School of Earth and Space Exploration, Arizona State University, UNITED STATES OF AMERICA* Sarah J. Ivory, *Institute for the Study of Environment and Society, Brown University, UNITED STATES OF AMERICA*

Between May 2013 and December 2014, the HSPDP successfully completed all five of its drilling campaigns and collected more than 1,700m of core. Despite the challenges associated with a large-scale multinational project, we have accomplished our goal of collecting lacustrine dominated cores proximate to key paleoanthropological sites. At our oldest site, 600m of Pliocene-age core was collected from 3 boreholes at 2 sites in the northern Awash, Ethiopia. This resulted in a composite depth of ~285m with significant overlap between cores and >96% core recovery. Several unexpectedly thick basalts were interbedded with lake sediments and drilling ceased prior to reaching our original target depth when rehydrated clays made advancing impractical. A single 228m borehole with ~95% core recovery was drilled at the Plio-Pleistocene Tugen Hills, Kenya, location. Documenting both lacustrine and terrestrial environments, preliminary comparisons with outcrop records suggest that this core may cover a time interval of ~2.5–3.45 Ma, longer than our original target of 2.5–3.1 Ma. A single 216m borehole with ~93% core recovery was drilled at the early Pleistocene West Turkana, Kenya, location and documents a fluctuating paleolake. Drilling ceased prior to reaching our original target depth due to complications associated with penetrating a hydrothermal fracture system. Nonetheless, tephrostratigraphic data indicates that the core covers our original target interval of ~1.45–2.0 Ma. 202m of modern to Middle Pleistocene core was collected from 4 boreholes at 2 sites at Lake Magadi, Kenya. Challenging lithologies to core/collect (alternating trona, chert, and clay) resulted in core recovery of 55–60%. Contact with the basement trachyte (~800 ka) at each site (137m and 197m), shallower than original estimates from low-resolution geophysical surveys. Recently, 480m of modern to Middle(?) Pleistocene core was collected from 2 boreholes at Chew Bahir, Ethiopia to a maximum depth of ~281m where a zone of artesian aquifer sands halted further progress.

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