The Hominin Sites and Paleolakes Drilling Project (HSPDP): How lakebeds are reshaping our understanding of the environmental context of human origins. International Paleolimnology Association-International Association of Limnogeology Meeting, Stockholm, Sweden June 18-21, 2018

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The role that environmental, and particularly climatic change and variability may have played in regulating human evolution has been a subject of significant debate among paleoanthropologists for many years. Whereas a significant part of the uncertainty surrounding this debate is related to the general paucity of hominin fossils, the lack of continuous and high resolution paleoenvironmental records through critical intervals of hominin evolutionary history has also been problematic. HSPDP was conceived as a means to address the hominin evolution/paleoclimate debate in East Africa, through the collection of drill cores from lake deposits in close proximity to key fossil hominin and archaeological sites. Six locations were drilled between 2012–2014, resulting in ~2 km of core, spanning important evolutionary events in human prehistory over the last ~3.5 Ma. A large, international team (~150 scientists from 11 countries) has been investigating these drill cores to extract physical property, sedimentological, geochemical,and paleoecological records constrained by state-of-the-art geochronology, to understand what was happening to both the landscapes and lakescapes of Kenya and Ethiopia during that time. Significant findings are emerging from the project, particularly related to the Plio-Pleistocene transition (associated with the origin of both Homo and the robust australopithecine lineages, the earliest stone tools, and the extinction of Australopithecus afarensis), the middle Early Pleistocene (origin of H. erectus and the Acheulean hand axe technology) and the last ~600ka (transition from the Acheulean to Middle Stone Age and then Late Stone Age, origin of modern H. sapiens). Those core studies are bolstered by teams of Earth System, geomorphic and demographic modelers to better interpret the environmental and evolutionary dynamics underpinning the combined lake drill core/fossil outcrop records from this key region for human origins research.