73. Feibel, C.S., Beck, C.C., Van der Lubbe, J.H., Joordens, J.C., Sier, M.J., Beverly, E.J., Campisano, C.J., and Cohen, A.S., 2016, The Lorenyang Lake at Kaitio: Outcrop and core perspectives on an Early Pleistocene lake margin. Geo. Soc. Amer. Ann. Mtg., Denver, CO 26-29 Sept., 2016.

Sedimentary strata at Kaitio, in the West Turkana region of northern Kenya, document a dynamic lake margin from the Early Pleistocene. Environmental records preserved in these deposits hold clues to the climatic fluctuations and landscape dynamics that influenced early human evolution during a time from 1.9 to 1.3 Ma. Outcrops along the sand-bed ephemeral stream at Kaitio have been intensively studied for decades, and in 2013 a 215 m sedimentary core was collected through the same sequence. Outcrop-core comparisons demonstrate that each record provides unique insights into the environmental record, and that together they comprise a rich archive of dynamics in close proximity to important fossil and archaeological localities.

The sedimentary record discussed here comprises the Kaitio and Natoo Members of the Nachukui Formation. Age constraints are provided by complimentary macro- and crypto-tephra characterizations, along with magnetic polarity stratigraphy. The most prevalent facies signals reflect lake-level fluctuations at Milankovitch and sub-Milankovitch time-scales. Thin laminated muds alternate with massive muds and sands through much of the sequence. A major transition from mud-dominated to more sand-dominated reflects delta progradation. Pedogenic overprinting is pervasive in both core and outcrop records. More than 33 prominent paleosols were recognized in outcrop, and pedogenic characteristics, such as vertic fractures and carbonate nodules, were noted at 91 levels within the core. Well-developed paleosols show promise as additional markers for outcrop-core correlations.

The Kaitio record of environmental character and change demonstrates that the continuous high-resolution sampling of core investigations is augmented by the spatial perspective of outcrop studies. Weathered and unweathered sediments present complimentary sources of information. The fossil hominin KNM-WT 15000, the Turkana Boy skeleton, was recovered barely 2.5 km from the coring site, and along with other data critical to understanding early human evolution can be placed into this record of environmental dynamics.

This work reflects contributions from all members of the Hominin Sites and Paleolakes Drilling Project (HSPDP) and the Turkana Cyclostratigraphy Project (TCP) field and laboratory teams.