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309-10: ENVIRONMENTAL DYNAMICS ON AN EARLY PLEISTOCENE LAKE MARGIN: THE WTK13 CORE AT KAITIO, WEST TURKANA, KENYA

Wednesday, 25 October 2017

10:45 AM - 11:00 AM

📍 *Washington State Convention Center - Room 307/308*

Records of environmental history from the Turkana Basin of Kenya are of particular interest in contextualizing the setting for early human evolution, the associated African savanna community and this portion of the East African Rift System. The WTK13 core, collected as part of the Hominin Sites and Paleolakes Drilling Project (HSPDP), provides new insights into patterns of environmental development in this basin through the interval from 1.37 to 1.87 Ma. Age control on the core, which spans a portion of the Nachukui Formation, is established from numerous tephra in upper levels, and the top of the Olduvai Subchron lower down.

The WTK13 core recovered a dominantly fine-grained sequence with a complex pattern of facies alternations reflecting primary depositional character (laminites, diatomites, ostracodites) and pedogenic overprinting (vertisols). Investigations integrating lithostratigraphy, mineralogy and facies analysis have established a broad pattern of changes through the core. A diverse array of environmentally sensitive proxies (pollen, plant waxes, diatoms, phytoliths, ostracods) are developing a much more detailed perspective on short-term environmental dynamics.

The WTK13 sequence is interpreted to reflect a predominantly low-gradient lake margin setting, where sedimentation in a shallow lacustrine environment is frequently overprinted by exposure and pedogenesis. Parallel records from the Shungura Formation in Ethiopia reflect strong fluvial dominance, while the Koobi Fora Formation east of present-day Lake Turkana preserves a strong deltaic influence at this time. All record strong orbital climate signals (particularly precession), but the West Turkana record appears to be the most sensitive to high-frequency environmental dynamics.

Close proximity of the WTK13 core to the NK3 hominin site (Turkana Boy) will allow the establishment of a detailed environmental history for that unique fossil specimen, while the half-million-year record of the core expands our understanding of landscape diversity and habitats available through this important evolutionary window in the Turkana Basin.

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.

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