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# 309-11: CLIMATE VARIABILITY ACROSS THE PLIO-PLEISTOCENE TRANSITION IN EAST AFRICA AS SEEN IN AN HSPDP DRILL CORE FROM TUGEN HILLS, KENYA, AND POSSIBLE IMPLICATIONS FOR HOMININ EVOLUTION

**Wednesday, 25 October 2017**
**11:00 AM - 11:15 AM**
*Washington State Convention Center - Room 307/308*

A ~230 m drill core was collected from the Tugen Hills, Kenya as part of the Hominin Sites and Paleolakes Drilling Project (HSPDP), an international collaboration aimed at collecting high-resolution records of paleoclimate of East Africa and developing a more comprehensive understanding of the environmental context of hominin origins. $^{40}Ar/^{39}Ar$ dates indicate that the core record spans the 3.4-2.6 Ma interval, providing a rare African terrestrial record of the important Plio-Pleistocene transition, when global climate began to cool and glaciation intensified in the Northern Hemisphere. This period was marked by $C_4$ grass expansion in East Africa while African climate became more arid and variable. This time period brackets important hominin milestones such as the first appearance of both *Paranthropus sp.* and *Homo sp*. and the development of the Lomekwian and Oldowan technologies. Single spectrum analysis (SSA) and wavelet analysis were performed on total organic content, high-resolution magnetic susceptibility, and gamma density records from the core. The SSA indicates that regional environmental and climate changes reflect both high latitude and local/tropical insolation forcing on oribitally driven cycles. There are periods of increased climate instability being followed by relatively stable conditions when the amplitude of variability is muted in all three data sets. The variable influence of the orbital cycles is detected in the wavelet analysis. The onset of the Northern Hemisphere glaciation is marked by a strong obliquity signal, while subsequent lake depth cycles (represented by diatomite layers in the core) correlate with precession. Furthermore, the precession signal is much weaker during the lake depth cycle occurring prior to 3.1 Ma. This record suggests important yet complex teleconnections between Northern Hemisphere glaciation and East African climate during the Plio-Pleistocene transition.

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