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AN INTEGRATED MULTI-PROXY INVESTIGATION OF OUTCROP AND CORE RECORDS FROM AN EARLY PLEISTOCENE LACUSTRINE SEQUENCE IN WEST TURKANA, KENYA

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The complex interplay of environmental and ecological signals in lacustrine sedimentary records has long been a challenge to the elucidation of controls on ancient lakes. Difficulties in comparing core-based investigations with results from outcrop studies have further frustrated the broader understanding of these complex systems. We report here on an integrated multi-proxy investigation of a Pleistocene lacustrine sequence from the East African Rift System, utilizing a recently recovered core in parallel with high-resolution outcrop analysis. The WTK13 core was recovered in the summer of 2013 as part of the Hominin Sites and Paleolakes Drilling Project (HSPDP). It consists of

216 m of predominantly lacustrine clays, documenting an interval of ca. 2.0-1.4 Ma. Outcrop investigations along the Kaitio and Kalochoro lagas, in close proximity to the coring site, documented the same stratigraphic interval in a study by the Turkana Cyclostratigraphy Project (TCP). Initial observations from both studies noted the dynamic nature of the lacustrine record, with subtle but repetitive overprinting of soil features on lake clays. A strong contrast between core and outcrop records was reflected in diagenetic suites. Regular cycling in the outcrops is marked by prominent basal oxidation bands, and a gypsum-hematite association. Comparable cycling in the core is manifest in subtle lithologic variation, and pyrite is a common constituent of basal clays. Molluscs, ostracods and fish remains are common in both records. Siliceous microfossils tend to be partially recrystallized in outcrop samples, but the core record exhibits extremely fresh and delicate diatoms and phytoliths. Multi-proxy laboratory analyses of both sample sets currently underway promise a high-resolution dataset that will not only help resolve the influence of diverse environmental and ecological controls in this ancient lake system, but can also help bridge the gap between outcrop and core investigations. This work reflects contributions from the entire HSPDP and TCP field teams.

Handouts

- Feibel NEGSA final.pptx (28.5 MB)

Session No. 5

T16. Emerging Techniques and Applications in Paleolimnology
Sunday, 23 March 2014: 8:00 AM-12:00 PM
Heritage Salon D (Lancaster Marriott at Penn Square)

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