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SEGSA Abstract

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Minerals as Climate Change Proxies: Developing a Paleoenvironmental Interpretation of the BTB Tugen Hills Drill Core: Part of the Hominin Sites and Paleolakes Drilling Project

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Equatorial East Africa has been a region of extensive research over the past few decades due to its archeological and paleontological significance. Reconstructing paleoenvironmental conditions will help us to better understand how hominin evolution was affected by environmental change during the Pliocene and Pleistocene. Using X-ray diffraction (XRD) analysis of lacustrine sediments obtained from core material recovered during the HSPDP campaign at Lake Baringo-Tugen Hills in central Kenya, a sequence that has yielded numerous paleontological and archeological discoveries, we can reconstruct a high-resolution record of paleoclimatic and tectonic histories from the lake sediments. XRD analysis allows us to uncover the mineralogical trends from the ~227m core, which can be employed to understand the geochemical evolution of the basin. We want to test whether ~23-kyr precessional cyclicity is the primary driver of environmental change at Lake Baringo, and how that change influenced vertebrate and hominin evolution. Our goals are to identify how the paleolake basin geochemically evolved over time and how the mineralogical characteristics are related to climate change while simultaneously correlating our findings to the pre-existing hominin evolutionary timeline and the differences in solar radiation due to Milankovich cyclicity.