194-7 Exhumation History of Rift-Flank Uplift along the Amagmatic Tanganyika Rift in the East African Rift System, Tanzania

Session: Broad Applications of Thermochronology to Understanding Geologic Rates and Processes Through the Sedimentary Record (Posters)

Poster Booth No.: 186

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Abstract:

The East African Rift (EAR) system is an important geological analog for continental rifting. Despite decades of research, the precise timing of the onset of rifting and the magnitude of faulting remains opaque. This challenge is compounded in magma-poor segments of the EAR, such as Lake Tanganyika. Lake Tanganyika (LT) is a major geomorphological expression of the western branch of the EAR system. Multiple kinematic studies in LT have focused on the timing, amount of extension, and sediment accumulation within the lake axis. However, constraints on the basin-bounding fault history are needed to fully assess the kinematics of the entire rift transect. This study seeks to provide an age-elevation profile of low-temperature thermochronology data across two transects in the hanging wall blocks on the eastern side of LT (Tanzania). Preliminary thermochronology samples will be collected in the central and northern sections of LT. With an average relief of ~1550 m in the central section (Mahali National Park) and ~850 m in the northern section (Kigoma). The age elevation profiles will enable us to evaluate the onset and magnitude of tectonic exhumation. It has been hypothesized that LT experienced multiple phases of extension in the Mesozoic, Paleogene, and Miocene. Results of the timing of exhumation from the northern and southern sections will support or challenge competing hypotheses of the LT rift evolution. Similar exhumation histories from the two profiles will confirm the model of co-evolution of the LT along its strike, while a different timing of exhumation (younger in the north compared to the central region) will support the long-standing hypothesis of the rift propagation model.

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