

PATTERN AND HISTORY OF MIOCENE TECTONIC EXHUMATION IN NORTHERN KENYA RIFT: IMPLICATIONS FOR POST-RIFT SEDIMENT ACCUMULATION IN RIFT BASINS, KENYA

Liang Xue

Oklahoma State University, Boone Pickens School of Geology, Stillwater, OK, USA
xlia@okstate.edu

ABSTRACT

The East Africa Rift System (EARS) is one the earth's major active extensional tectonic regimes in the continental crust. Considerable quantity of hydrocarbons has been reported and explored within the rift basins of the EARS, including the Omo-Turkana Basin, a large lacustrine basin of the northern Kenya Rift. Oil exploration by seismic methods and deep drill have shown an up to 7 km thick sediment sequence until mid-Miocene. The shoulders of the northern Kenya Rift has been considered as a major sediment sources as well as sediment barrier during post-rift extension and exhumation. Nevertheless, data are too few and unevenly distributed in space and time to evaluate the spatial and temporal variations of exhumation rates of northern Kenya Rift. This proposed work will focus on the reconstruction of the exhumation history and distribution pattern of northern Kenya Rift to identify sediment sources and supply path to the rift basins. It will combine quantitative geomorphic analysis, available geochronological and geomagnetic data, numerical model, and various geomorphic proxies to determinate long-term exhumation rate since Miocene and their distribution pattern throughout the northern Kenya Rift. The potential results will enable the correlation between tectonic exhumation and rift basin evolution in a rift setting. Also, by quantifying the exhumation rate and pattern, the result of this work will reveal the favorable geodynamic setting and rift sediments input history in the Omo-Turkana Basin.

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