Tectonic development of the northern Tanzania sector of the East African Rift System

Author(s)

A. FOSTER
C. EBINGER
E. MBEDE
D. REX

Abstract

The Eastern Branch of the East African Rift System diverges from a single, *c.* 50 km wide rift in southern Kenya to a *c.* 200 km wide zone in northern Tanzania, where it is comprised of three distinct rifts with different orientations. The western part of this zone contains two rift branches: the Natron-Man yara-Balangida and Eyasi-Wembere rifts. Each rift contains individual basins that are defined here on the basis of structural and geophysical interpretations. These basins are shallow (<3km) and total extension across the bounding faults is small. New K/Ar age determinations on basalts from the western rift basins show that volcanism and sedimentation began in the area at *c.* 5 Ma. Major fault escarpments were present by *c.* 3 Ma and the present-day rift escarpments developed later than *c.* 1.2 Ma. Pre-rift volcanism produced large shield volcanoes of a basalt-trachyte-phonolite association that now lie on the rift flanks. Volcanism after the main phase of rift faulting produced volatile- and alkali-rich explosive centres which are active today, and have no equivalent in southern Kenya. The change in morphology of the Eastern Branch of the East African Rift System, and the style of volcanism in northern Tanzania, may be the result of the transition from the rifting of Proterozoic Mozambique Belt lithosphere to the rifting of cratonic Archaean lithosphere.