

## **Tectonic evolution of the Rukwa rift basin and interaction with the Rungwe Volcanic Province, Western Tanzania**

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The Rukwa rift basin in Western Tanzania has a long tectonic history which is related to the Cenozoic development of the western branch of the East African rift system and its interaction with the eastern branch in the Rungwe volcanic province. A recent synthesis by Roberts et al (Nature geoscience, 25 March 2012) show that rift-related volcanism started ~ 20 Ma ago, coeval with the initiation of the Eastern rift branch. Using results from field structural analysis, new Ar-Ar and U-Th dating, fault kinematics and paleostress reconstructions, we precise the tectonic evolution of the Songwe valley which links the southeastern extremity of the Rukwa depression to the Rungwe volcanic province. It currently lies in a strike-slip setting which is responsible for Quaternary pull-apart development, controlling a geothermal hot spring field and related travertine deposits. Older travertine deposits, dating back to 360 Ka formed along the margin of paleo-lake Rukwa, when its water level was much higher than the present-day one. These deposits have been uplifted together with a regional doming related to the Late Quaternary volcanic activity centered on the Rungwe and Ngozi volcanoes. Late Neogene sedimentation in the Songwe valley has been constrained between 3.7 and 1.8 Ma by Ar-Ar dating of volcanic deposits. Two older tectono-sedimentary periods have also been evidenced by apatite fission track and the work of Roberts et al. (2012). In complement to this, the middle Miocene age for the phonolites of the Usangu basin that links the eastern rift branch to the Rungwe volcanic province has been confirmed by a new Ar-Ar dating (17.7 Ma). This suggest that the Usangu basin also started to develop much earlier than the Pleistocene as previously proposed. The tectonic stress field of this area is at odd to the general stress field associated to the east African rift system. It is related to a local stress perturbation due to the interaction between different rift segments in this area which forms the triple point between the Nubia, Victoria and Rovuma tectonic plates.