

Present-day kinematics of Mozambique using continuous and episodic GPS data

Fernandes, R.M.S.¹ & Sá, A.² & Quembo, J.L.³ & Miranda, J.M.⁴ & Delvaux, D.⁵

¹ UBI/IDL, Covilhã, Portugal (rmanuel@di.ubi.pt)

² IPG/IDL, Guarda, Portugal

³ CENACARTA, Maputo, Mozambique

⁴ UL/IDL, Lisbon, Portugal

⁶ Royal African Museum, Brussels, Belgium

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On 23rd February 2006, a large earthquake stroke the central part of Mozambique. The epicenter was located at 21.259°S, 33.480°E (district of Machaze, province of Manica) with a magnitude of $M_w=7.0$. The focal mechanism was almost pure normal, with a rupture extending by several dozens of kilometers and reaching two meters of opening. This event is considered to be caused by the tectonic activities associated with the southern part of the East African Rift. This major and complex plate boundary system crosses Africa from North in the Afar region (triple junction between Nubia, Somalia and Arabia tectonic plates) into the South West Indian Ridge (boundary between the Antarctica plate and the Nubia and Lwandle(?) plates).

However, if in the Afar region, the magnitude and location of the plate boundary is nowadays clearly established (about 6-7 mm/yr of opening), the reduced number of geologic, geophysical and geodetic evidences implies that the complexity of the southern component of the East African Rift is still less understood. As an example, the existence of the Lwandle tectonic block has been up to now supported by indirect observations (modeling).

We present here a consistent velocity field derived from continuous and episodic GPS observations for Mozambique. We use data from three permanent stations in Mozambique significantly extended with episodic data acquired in the framework of the KINEMA (KINEmatics of Margins of Africa) and other projects.

The estimated angular velocities are computed with respect to ITRF2008. We intend to discuss the interactions between the Nubia and the tectonic blocks of Rovuma and Lwandle in the Mozambican region in order to better establish the plate tectonic boundaries in this region and simultaneously model the expected relative deformations.