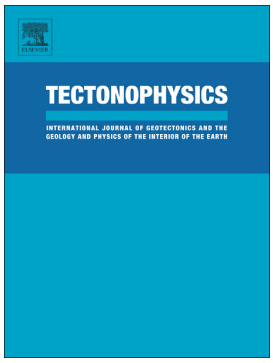
Accepted Manuscript



Evolution of the northern tip of Afar triangle: Inferences from the Quaternary succession of the Dandiero — Massawa area (Eritrea)

Sani Federico, Ghinassi Massimiliano, Papini Mauro, Oms Oriol, Finotello Alvise

PII: S0040-1951(17)30347-5
DOI: doi: 10.1016/j.tecto.2017.08.026
Reference: TECTO 127600

To appear in: *Tectonophysics*

Received date: 7 March 2017
Revised date: 18 August 2017
Accepted date: 22 August 2017

Please cite this article as: Sani Federico, Ghinassi Massimiliano, Papini Mauro, Oms Oriol, Finotello Alvise , Evolution of the northern tip of Afar triangle: Inferences from the Quaternary succession of the Dandiero — Massawa area (Eritrea), *Tectonophysics* (2017), doi: 10.1016/j.tecto.2017.08.026

Evolution of the northern tip of Afar triangle: inferences from the Quaternary succession of the Dandiero – Massawa area (Eritrea)

Sani Federico[1], Ghinassi Massimiliano[2], Papini Mauro[1], Oms Oriol[3], Finotello Alvise[2]

[1]Dipartimento di Scienze della Terra, Università degli Studi di Firenze, Italy

[2]Dipartimento di Geoscienze, Università di Padova, Padova, Italy

[3]Dept. de Geologia, Universitat Autònoma de Barcelona, Bellaterra, Spain

Abstract

The Afar region is a triangular area located at the triple junction between the African, Somalia, and Arabian plates, which are currently diverging at different rates. Currently, the extension vector is roughly oriented in a NE-SW direction in the Afar, Red Sea and Gulf of Aden, in respect to Arabia plate, whereas the Nubian–Somalian divergence, evidenced by the Main Ethiopian Rift (MER), is approximately WNW-ESE (N95-100°E).

This study focuses on the tectono-sedimentary evolution of a sector from Massawa to the north up to the continental Early-Middle Pleistocene Dandiero Basin to the south. This basin is filled with approximately 500 m thick fluvial-lacustrine deposits and includes six formations. Sedimentation occurred mainly along the basin axis and allowed accumulation of sand and mud deposits with subordinate gravels close to the basin margin. The age of the basin infill succession is well constrained through integration between paleomagnetic and paleontological data and ranges between ~1.2 up to 0.75 Ma.

The Dandiero Basin is controlled by two main roughly NNW-SSE trending, east dipping normal faults. The westernmost fault delimits the basins from the plateau, whereas the easternmost marks the limit between the basin succession and the Late Pleistocene Samoti Plain. We infer that