



Dynamics of the deforming Algerian margin: constraints from flexural gravity modelling

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The Algerian margin is located at the boundary between the African and Eurasian plates. GPS measurements suggest a ~ 5 mm/yr oblique (towards NW) convergence of Africa towards Europe at the longitude of Algiers, and the deformation along the margin is located mainly offshore, in the coastal zone and in the Tellian folds and thrusts. Previous studies (Déverchère et al. 2005, Domzig et al. 2006) have shown that the offshore margin presents active Plio-Quaternary folds and faults. Here we aim at studying the transition between the African continent and the Algerian basin that was formed at the end of the Oligocene (Frizon de Lamotte et al., 2000, Jolivet and Faccenna, 2000) behind the Tethys subduction. The offshore structure of this former passive margin as well as previous studies (Auzende et al., 1975) suggest the premises of a subduction initiation. In order to test this hypothesis, we use the Maradja 2003 cruise data, i.e. accurate bathymetric and gravity data, as well as worldwide satellite derived and BGI (International Gravity Bureau) gravity databases. We perform 2D elastic and elasto-plasto-ductile flexural modellings in several strategic places along the Algerian margin. This allows us to observe the basement deflection and to estimate the flexural rigidity of the lithosphere, as well as its elastic thickness. Our results bring new constraints on the current status and dynamics of the margin, and give new insights for the geodynamical future of this area.