

Lithospheric Structure of Maghreb and Western Mediterranean

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Topography and geoid anomalies have been inverted in the Western Mediterranean in order to obtain a large-scale image of crustal thickness and depth of the lithosphere-asthenosphere boundary (LAB). The basic assumptions for the inversion are local isostatic equilibrium, smooth (longwavelength) anomalies and thermal steady state, which have as effect to smoothen out the resulting depth variations. As has to be expected from seismic and other observations, thinnest lithosphere is obtained under the Tyrrhenian Sea. West of the Corsica-Sardinia block, a linear NE-SW trend of strongly thinned lithosphere is modelled that starts in the Ligurian Sea, continues under the eastern Alboran Sea and crosses the Mediterranean margin of Africa underneath eastern Morocco, where it continues under the Middle and High Atlas until near the Atlantic Moroccan Margin. This trend is independent of actual plate boundaries and the principal tectonic strike in northern Africa. It may be explained by the remnant effects of a retreating slab or active upwelling of the asthenosphere in this area.