

Comparison of the crust and upper mantle structure of the Algerian and Alboran domains (Western Mediterranean): Tectonic significance

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We present a comparison of the present-day crust to upper-mantle (400 km) structure in the Western Mediterranean along two NW-SE oriented transects across the Algerian and Alboran domains aiming to analyze the tectonic style of the corresponding conjugate margins. The Algerian domain transect starts in the Ebro basin and crosses the Valencia trough, the Balearic promontory and the Algerian basin, ending in the Tell-Atlas Mountains. The Alboran domain transect runs from the Iberian Massif to the Rif-Tell mountains, crosses the Betic range and the Alboran basin. The 2-D forward modeling is performed using a new version of LitMod, an integrated geophysical-petrological tool, which combines petrological, geochemical and geophysical data, to calculate the 2-D thermal and density structure compatible with the mineral composition and the seismic velocities of the mantle. The code also allows incorporating oceanic lithospheric slabs in the mantle as sublithospheric bodies with anomalous temperature or velocities, which are imaged by seismic tomography. The detailed structure along both transects is then discussed and compared in the light of prevailing geodynamic evolution models for the Western Mediterranean.

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