

## **The Lithospheric Structure across the NW Moroccan Margin. Evidences for Large-Scale Tectonic Inversion**

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We have modelled the lithospheric structure across the NW Moroccan margin using an integrated methodology that combines elevation, heat flow, gravity, geoid and seismic data. The modelled profile is 1400 km long and extends NW-SE from the Iberian Abyssal Plane to the Sahara Platform, crossing the Gorringe Bank, the west Iberian-Africa plate boundary, the Moroccan continental margin, and the Atlas Mountains. Offshore, the profile coincides with the IAM-4 seismic reflection survey and with the wide-angle and reflection survey SISMAR Profile-4. Onshore, no seismic data are available and the profile follows previous modelled lithospheric profiles. The most outstanding result is a prominent lithospheric thickening beneath the Moroccan continental margin with thickness values of around 200-220 km. This thickening, which appeared much more moderate in previous models, is the result of applying the crustal and density structure proposed from SISMAR survey. Another prominent feature is the reported existence of a high velocity lower crust beneath the margin, as imaged from SISMAR survey. We analyze the possible extend and origin of this high velocity lower crustal body and discuss the nature of the lithospheric thickening beneath the Moroccan continental margin, which seems to affect also the Riff and the central-western Betics.