



## **3D lithospheric mapping of the Iberian Peninsula and surrounding Atlantic and Mediterranean margins from 3D joint inversion of potential field and elevation data.**

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We investigate the lithospheric density structure of the Iberian Peninsula and the surrounding Atlantic and Mediterranean margins from a 3D joint inversion of free-air, geoid and elevation data, based on a Bayesian approach. In addition, the crustal structure has been further constrained by incorporating about 750 Moho values from DSS investigations and RF analysis covering the entire region. Our preliminary results shows a significant lithospheric deformation along the plate boundaries, the Bay of Biscay-Pyrenees to the North and the Azores-Gibraltar to the south, where the CMB and LAB are located at depths more than 45 and 150 km, respectively. Noteworthy is the arcuate lithospheric thickening located at the westernmost end of the Gibraltar Arc system showing the presence of the NW-to-Westward retreated Gibraltar Arc slab that has given rise to the formation of the Betics-Rif Alpine belt system and the back arc Alboran basin. To the west, the stable-slightly deformed Iberian massif shows a quasi-flat CMB and LAB topography (30 to 32 km and about 110 km, respectively). The crust and mantle lithosphere thin towards the Mediterranean and Atlantic margins, with the exception of its northern margin where lithospheric thickening extends offshore to the Gulf of Biscay. In the western Mediterranean the SE-Neogene slab retreat has resulted in a significant thinning of the crust and mantle lithosphere. Thin lithosphere is also observed in the Tagus-Horseshoe abyssal plain region where the LAB shallows to less than 90 km.

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