



Crustal structure and tectonic framework of central Iberia: A geological and geophysical approach.

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Central Iberia constitutes one of the best natural laboratories to study Alpine intraplate deformation of the older Variscan basement because of far field effects of plate boundaries. During the last decade, a great effort has been made to explain the tectonic evolution of the area by different approaches such as, geological mapping and section balancing, intraplate stress field studies and modeling, apatite fission-track thermochronology and several geological data integration. Nevertheless, little attention has been paid to gravity and magnetic crustal studies since the publication of the potential field anomaly maps of the Spanish mainland. These scarce studies have focused more on the qualitative interpretation of the anomalies rather than quantitative solutions to concrete tectonic or structural problems.

The aim of this work is to show how the processing and enhancement of previously published aeromagnetic and gravity data by classic Fourier domain transformations could be a powerful tool for regional crustal studies in central Iberia. The crustal structure of central Iberia is inferred from the integration of pseudogravity, Bouguer gravity, isostatic residual gravity and reduced to the pole magnetic maps. Forward modeling, depth to the source estimators (eg, Euler deconvolution) and field geological data, are used to quantitatively constrain our results. This integrated approach shed light on the crustal configuration of the Variscan basement, which may have influenced the Alpine tectonic framework and evolution of the Iberian interior.