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From the Bay of Biscay to the High Atlas: completing the anisotropic characterization of the westernmost Mediterranean region.

Jordi Diaz and Josep Gallart
ICTJA - CSIC, Barcelona, Spain (jdiaz@ictja.csic.es, 34 934110012)

The knowledge of the anisotropic properties beneath the Iberian Peninsula and Northern Morocco has been dramatically changed since late 2007 with the analysis of the data provided by the dense TopoIberia-Iberarray broad-band seismic network, the increasing number of permanent stations operating in Morocco, Portugal and Spain and the contribution of smaller scale/higher resolution experiments.

The first TopoIberia deployment in the Betics-Alboran zone has evidenced a spectacular rotation of the fast polarization direction (FPD) along the Gibraltar arc following the curvature of the Rif-Betic chain, from roughly N65E beneath the Betics to close to N65W beneath the Rif chain. (Díaz et al, 2010). This result, confirmed latter on by the analysis of the PICASSO experiment data (Miller et al., 2013), has been interpreted as an evidence of mantle flow deflected around the high velocity slab identified by tomographic methods beneath the Gibraltar Arc.

Data from the second TopoIberia deployment and from additional deployments in the Moroccan Meseta and the western High Atlas, allowed expanding the investigated area and obtaining a larger scale image of the mantle flow around the region. Diaz et al. (2014) have shown that SW Portugal and the western High Atlas regions have a small degree of anisotropy and a large number of "null" measurements, which suggest the presence of vertical flow in the mantle associated to small-scale edge-driven convective cells. The rather uniform N100ºE FPD retrieved beneath the Variscan Central Iberian Massif is consistent with global mantle flow models taking into account contributions of surface plate motion, density variations and net lithosphere rotation.

The last Iberarray deployment covers the northern part of the Iberian Peninsula and has been coeval with the deployment of a similar seismic network in southern France in the framework of the Pyrope project. Even if data from short term experiments in the Pyrenees and northern Iberia have previously provided a first insight on the anisotropic properties of this region, the ongoing analysis of the new dataset will allow to investigate in further detail the possible differences in anisotropic signature between the stable areas of Western Iberia and those reworked during the Alpine orogeny in the East.