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Detailed characterization of the anisotropic parameters beneath Iberia and Northern Morocco.

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The knowledge of the anisotropic properties beneath the Iberian Peninsula and Northern Morocco has been dramatically improved since late 2007 with the analysis of the data provided by the dense IberArray broad-band seismic network deployed in the Topo-Iberia project, the increasing number of permanent stations operating in Morocco, Portugal and Spain, and the contribution of smaller scale/higher resolution experiments. The first Topo-Iberia 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. This result has been interpreted as an evidence of mantle flow deflected around the high velocity slab beneath the Alboran Sea Arc. Data from the second Topo-Iberia deployment and from additional deployments in the Moroccan Meseta and the western High Atlas have shown a rather uniform N100ºE FPD beneath the Variscan Central Iberian Massif, consistent with global mantle flow models taking into account contributions of surface plate motion, density variations and net lithosphere rotation. The results from the last deployment of the IberArray network presented here cover the northern part of the Iberian Peninsula and also show a rather uniform FPD orientation close to N100ºE, confirming the previous interpretation. However, the degree of anisotropy changes significantly, from delay times values around 0.5 s beneath NW Iberia to values reaching 2.0s in its NE corner. The anisotropic parameters retrieved from single events providing high quality data also show significant differences for stations located in the Variscan units of NW Iberia, suggesting that the region includes multiple anisotropic layers or complex anisotropy systems.