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SKS splitting in Southern Iberia and northern Morocco; first contributions of the IBERARRAY broadband seismic network.

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The region formed by the Betic and Rift belts and the extensional Alboran basin, located in southern Iberia and northern Morocco, is one of the most complex and controversial geological zones in Western Europe. There is still not a commonly accepted hypothesis about the mechanism responsible for its formation, as models including lithospheric delamination, convective removal or subduction have been proposed by different authors. In this context, the knowledge about the presence and properties of upper mantle anisotropy provided by SKS splitting measurements can provide valuable information. Until few years ago, very scarce data regarding the presence of anisotropy in the Southern part of the Iberian Peninsula were available. The installation of new permanent and semi-permanent broadband stations in the region has allowed obtaining a first insight into the anisotropic properties (Buontempo et al, 2008). Those data have evidenced the presence of geographical variations in the anisotropic parameters, with fast velocity directions parallel to the mountain belt in the Internal Betics and a rotation on fast split directions towards NS around the Gibraltar arc. However additional data, especially in the Northern part of Morocco, seem to be necessary to discern between the different geodynamical models proposed.

During summer 2007, in the mainframe of the large-scale TOPOIBERIA project, the first leg of the IBER-ARRAY broad-band seismic network was deployed over this region. This array, still operating, is formed by up to 55 new generation dataloggers equipped with broad-band seismometers and covers the southern part of Iberia (35 stations) and northern Morocco (20 stations) with a density of 60 km x 60 km. Data from the permanent broadband stations maintained by different institutions installed in the region is also compiled to produce a complete dataset.

Events with epicentral distances between 85 and 120º and magnitude greater than 5.8 are systematically extracted from the continuous dataset and SKS, SKKS and PKS phases are inspected for anisotropy using the SplitLab software. Even if only preliminary SKS splitting results are available at present, we expect that the analysis of this dataset will improve significantly the spatial resolution of SKS measurements, providing new assets to the ongoing geodynamical discussion on this area.