



SKS splitting beneath the Pyrenees domain: an insight on the upper mantle deformation from central Iberia to French Massif Central

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We performed shear-wave splitting analysis for 270 permanent (French RLPB, CEA and Catalan) and temporary (PyrOPE and IberArray) broadband stations around the Pyrenees range. These measurements considerably enhance the spatial resolution and regional extent of seismic anisotropy pattern in that region. In particular, we determine the small-scale variations of splitting parameters ϕ and δt along three dense (5 km inter-station spacing) transects crossing the western, central and eastern Pyrenees.

The anisotropy pattern in the Pyrenees is in good agreement with those in previous studies, with relatively constant N100°E directions of polarization of the fast waves and delay times around 1 s. However, the new stations from the PyrOPE experiment installed in the Aquitaine basin indicate a sharp transition both in directions (from N100°E to \sim N60°E) and delay times (from 1 s to \sim 0.5 s) just north of the North Pyrenean Fault. This could indicate the presence of the Iberian lithospheric "slab" beneath the North Pyrenean Zone. This transition also suggests that the main contribution to anisotropy is located inside the lithosphere.

Further East, the analysis of the French permanent broadband stations complete the anisotropy map beneath western Alps. These new observations, especially in Savoie, confirm the overall N-80°E to N40°E smooth rotation of the directions of polarization following the curvature of the belt.