



Tomography of the upper mantle beneath the African/Iberian collision zone

Mickael Bonnin (1), Guust Nolet (1), Christine Thomas (2), Antonio Villaseñor (3), Josep Gallart (3), and Alan Levander (4)

(1) Université de Nice Sophia-Antipolis, GéoAzur, Valbonne, France (mbonnin@geoazur.unice.fr), (2) Institut für Geophysik, Universität Münster, Germany, (3) Institute of Earth Sciences "Jaume Almera", CSIC, Barcelona, Spain, (4) Rice University, Houston TX, USA

In this study we take advantage of the dense broadband-station networks available in western Mediterranean region (IberArray, PICASSO and MOROCO-MUENSTER networks) to develop a high-resolution 3D tomographic P velocity model of the upper mantle beneath the African/Iberian collision zone. This model is based on teleseismic arrival times recorded between 2008 and 2012 for which cross-correlation delays are measured with a new technique in different frequency bands centered between 0.03 and 1.0 Hz, and interpreted using multiple frequency tomography. Such a tomography is required to scrutinize the nature and extent of the thermal anomalies inferred beneath Northern Africa, especially in the Atlas ranges region and associated to sparse volcanic activities. Tomography is notably needed to help in determining the hypothetical connection between those hot anomalies and the Canary Island hotspot as proposed by geochemistry studies. It also provides new insights on the geometry of the subducting slab previously inferred from tomography, GPS measurements or shear-wave splitting patterns beneath the Alboran Sea and the Betic ranges and is indispensable for deciphering the complex geodynamic history of the Western Mediterranean region. We shall present the overall statistics of the delays, their geographical distribution, as well as the first inversion results.