



Teleseismic tomography beneath Gulf of Cadiz based on seafloor and land recordings: preliminary results

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Teleseismic data recorded by the NEAREST (Integrated observation from NEAR shore sourceS of Tsunamis: towards an early warning system) temporary array are inverted for the 3-D upper mantle P-wave velocity structure beneath the SW margin of Iberia including the Gulf of Cadiz. In this area, the convergence between the European and African plates plays a crucial role in the evolution of tectonic process such as lithospheric subduction. During the experiment, the GEOSTAR multi-parameter deep-sea observatory and 24 seafloor stations were deployed in the Gulf of Cadiz for 11 months (September 2007-August 2008). Two broadband stations were also installed on land near the coast of Portugal. All seafloor stations were equipped with a 3-component broadband seismometer and an hydrophone (all sampled at 100 Hz with a 24 bit digitizer). For the tomography, we collected waveforms from (over 100) teleseismic events ($M \geq 5.5$) recorded by both the NEAREST marine stations and the land stations belonging to the Portuguese, Spanish, and Morocco national networks. The P-wave velocity model is obtained by using an iterative non-linear inversion scheme which includes a grid based wavefront tracking to solve the forward problem.

In this study we present the data quality analysis, the travelttime residual pattern, and preliminary inversion results. This 3-D model is the first for the area coming from integration of seafloor and land data.