Geophysical Research Abstracts
Vol. 15, EGU2013-5774-1, 2013
EGU General Assembly 2013

Outstanding Moho-depth variations in the Iberian Peninsula, NW Africa and surrounding margins, revealed from controlled-source seismic surveys

Josep Gallart and Jordi Diaz
Earth Structure and Dynamics, ICTJA-CSIC Barcelone, Spain (jgallart@ija.csic.es)

The complex tectonic interaction processes between the European and African plates at the Western Mediterranean since Mesozoic times have left marked imprints in the crustal architecture of this area, particularly as regarding the lateral variations in crustal thicknesses. We document here such variations by presenting an updated compilation of Moho-depth results in Westernmost Mediterranean domains (Iberian Peninsula, NW Africa and surrounding margins), inferred from extensive academic seismic exploration performed there since more than 3 decades. We have extended the area investigated in Diaz and Gallart (2009) to the NW Africa and surrounding waters, and incorporated results from all documented surveys performed in the last few years. A new geo-referred database will be shown, as well as a continuous Moho-depth map obtained by interpolation using kriging algorithms. Results will be also summarized along large N-S and E-W transects (each one of about 1500 km length) crossing main tectonic domains. Outstanding, rather sharp lateral variations in crustal thickness are found in several domains within the study area. For example, Moho-depth values about 50 km found along the underthrusted Cantabrian-Pyrenean crusts coexist with values around 15 km in continental margins nearby (Cantabrian margin and Valencia Trough), as well as crustal roots of 50 km beneath the external Rif domain relayed by 30 km Moho-depths, just 25 km eastwards. Moreover, when looking at Moho depths versus topography, although at overall many areas appear to be isostatically compensated, significant anomalies are also apparent in other zones, such as the Cantabrian range in North Spain or specially the Rif and Atlas ranges in Morocco. This illustrates the need of taking into account carefully these Moho-depth results, checked against other seismic methodologies such as receiver functions,.. wherever possible in further geodynamic evolutionary modeling.