Geophysical Research Abstracts
Vol. 14, EGU2012-11994, 2012
EGU General Assembly 2012

Structure of the Palomares margin from preliminary results of the TOPOMED-GASSIS seismic survey (Algero-Balearic basin, Western Mediterranean)

F. Giaconia (1), M. Guzman Vendrell (2), G. Booth-Rea (1), C.R. Ranero (2), E. Gràcia (3), C. Lo Iacono (3), and the TOPOMED survey party Team

(1) University of Granada, Geodinámica, Granada, Spain (flavio@ugr.es), (2) B-CSI, Instituto de Ciencias del Mar-CSIC, Centre Mediterrani d'Investigacions Marines i Ambientals, Passeig Marítim de la Barceloneta 37-49, 08003, Barcelona, Spain, (3) B-CSI, Unidad de Tecnología Marina-CSIC, Centre Mediterrani d'Investigacions Marines i Ambientals, Passeig Marítim de la Barceloneta 37-49, 08003, Barcelona, Spain

We present two deep seismic reflection lines acquired during the TOPOMED-GASSIS seismic survey across the Palomares margin at the northwestern side of the Algero-Balearic basin. Simultaneously 3.5 kHz multi parametric echo-sounder profiles and bathymetric data were acquired, in order to obtain information of the most recent sedimentary/tectonic records, to relate tectonic structure with seafloor features and find out a possible tectonic control on them. The deep seismic reflection and the 3.5 kHz multi parametric echo-sounder profiles evidence anticlines and synclines affecting the Quaternary sediments. The southeastern limbs of the anticlines are cut by reverse faults suggesting a fault propagation origin for the folds. The recent to present character of these structures is confirmed by the congruence between structural and bathymetric highs and lows. Indeed, the submarine channels that cut across the margin are deflected by the folds flowing parallel to the major synclines, although cutting and incising into one of the anticlines. The folds have a N40-50ºE orientation oblique to the Palomares active N20ºE sinistral strike-slip fault zone. The data obtained from the TOPOMED-GASSIS seismic survey highlight the presence of contractive structures along the Palomares margin oriented perpendicular to the present NW-SE shortening stress field and according with the present GPS geodetic displacements. This preliminary result depicts a contractive Palomares margin where NW-SE shortening is accommodated by Quaternary NE-SW folds and thrusts. In the coastline and on land the shortening is also accommodated by reverse faults that cut both limbs of the Sierra Cabrera anticline. These faults and folds accommodate the sinistral displacement of the more northerly striking Palomares fault zone. Thus, the Palomares fault zone probably terminates close to the coast line to the south of the Vera basin by merging into these more northeasterly oriented structures. These folds probably nucleated upon previous extensional tilted blocks formed during the late Miocene development of the Algero-Balearic basin.