Geophysical Research Abstracts
Vol. 17, EGU2015-8941, 2015
EGU General Assembly 2015

Structure and activity of the imbricated wedge of the Gulf of Cadiz from MCS images

Alcinoe Calahorrano Betancourt, César R. Ranero, and Eulàlia Gràcia
Institute of Marine Sciences- CSIC, Barcelona Center for Subsurface Imaging. Spain (acalahor@icm.csic.es)

In this work we present new results on the structure and activity of the imbricated wedge of the Gulf of Cadiz based on $\sim$ 3000 km of multichannel (MCS) profiles acquired off NW Moroccan margin.
Seismic images indicates that the imbricated wedge is bounded between the Gulf of Cadiz margin at the north, the Kenitra margin at the south and the Rharb margin at the east. It is imaged as a sedimentary body with variable seismic amplitude, and structured by imbricated thrust sheets similar to an accretionary prism. Its maximum thickness is located at the east region of the gulf. It gradually thins toward the center and south of the gulf, where it is buried by $\sim$0.3 twts of sedimentary deposits, indicating that the imbricated wedge is actually not growing. It probably stops it s activity at $\sim$5-6 Ma. The imbricated wedge is overlaid by sedimentary sequences whose oldest unit is uppermost Tortonian. No evidences of gravitational (olistostrom) origin were founded.
Active deformation related to plate convergence corresponds mainly to strike-slip faulting and minor thrusting. Mud diapirism is imaged intruding both the imbricated wedge and the overlaying sediments.
At the south, the seismic images show normal faulting probably related with an extended continental crust or a continent-ocean transition crust. The age of this extension is probably Triassic-Jurassic, and we propose it as the conjugated margin of the Gulf of Cadiz.
Toward the east, MCS profiles image high-amplitude continent-verging reflections corresponding to pervasive normal faulting. These deformation related to a extended terrain, named Rharb margin, seems to act as the backstop of the imbricated wedge, and it is over-thrusted by Prebetic/Flysh sequences off the Strait of Gibraltar.