

Geophysical Research Abstracts, Vol. 6, 05031, 2004  
SRef-ID: 1607-7962/gra/EGU04-A-05031  
© European Geosciences Union 2004



## **FLUID ESCAPE STRUCTURES IN THE GULF OF CADIZ. EVIDENCE OF STRUCTURAL CONTROL FROM COMBINED SEISMIC REFLECTION AND SIDESCAN SONAR INTERPRETATION**

**V.H. Magalhães** (1,2), L.M. Pinheiro (1,2), P. Van Rensbergen (3), C. Roque (2), R. León-Buendía (4), S. Bouriak (2), A. Kopf (5), J. Gardner (6) and M. Ivanov (7)

(1) Dep. Geociências, Universidade de Aveiro, 3800-193, Aveiro, Portugal; (2) Dep. de Geologia Marinha, Instituto Geológico e Mineiro, Alfragide, Portugal; (3) Renard Centre for Marine Geology, Univ. Ghent, Belgium; (4) Div. Geología Marina, Instituto Geológico y Minero, Madrid, España; (5) Fachbereich Geowissenschaften, Univ. Bremen, Germany; (6) Naval Research Laboratory, Washington DC, USA; (7) UNESCO Center for Marine Geology and Geophysics, Moscow State University, Russia. (Email: vitor.magalhaes@igm.pt)

The Gulf of Cadiz is situated in a tectonically complex and active region, close to a major plate boundary. The tectonic regime in the area is characterized by a combination of important strike-slip movement and compressional tectonics related to the Africa-Eurasia NW-directed convergence, responsible for the formation of the Gibraltar Arc. Extensive mud volcanism, pockmarks, mud diapirism and carbonate chimneys related to hydrocarbon rich fluid venting are observed throughout the area.

There is an extensive coverage of seismic reflection profiles in the area that includes industry data, a few deep-multichannel lines (IAM, ARRIFANO and BIGSETS) and many single-channel lines (both Sparker and Airgun data). During the TTR-12 (July/2002) and the GAP (Nov-Dec/2003) cruises, several single and multi channel seismic lines were acquired in this area that complement the existing database collected during previous TTR Cruises. These lines have re-processed to enhance the deeper structure.

A combined interpretation of the available side-scan sonar imaging obtained by the Naval Research Laboratory in 1992 and the available seismic lines (both single channel and multichannel) shows clear evidence of the structural control of the mud volcanism in the study area. In particular, it appears that some of the mud volcanoes are

located at the intersection between NW-SE strike-slip faults and thrusts of variable orientation, reflecting the curvature of the Gibraltar Arc.