



Gulf of Cadiz mud volcanoes: ROV-ready sites

A. Akhmetzhanov (1), M. Ivanov (2), D. Masson (1), C. Berndt (1), L. Pinheiro (3)

(1) National Oceanography Centre, Southampton, UK, (2) Moscow State University, Russia,
(3) University of Aveiro, Portugal

(Andrey.Akhmetzhanov@noc.soton.ac.uk / Fax: +44 23 8059 6554 / Phone: +44 23 8059 6575)

The major objective of the EU-funded FP6 Integrated Project HERMES (Hotspot Ecosystem Research on the Margins of European Seas), coordinated by the National Oceanography Centre, Southampton is to understand how environmental variables affect the biodiversity, structure, function and dynamics of faunal communities on the continental slope.

Mud volcanoes and areas of active fluid escape at the seafloor are among the 'hotspots' to be targeted by HERMES. Improving our understanding of the processes involved in transporting organic-rich fluids from the geosphere into the biosphere is an important HERMES goal, because these fluids have a profound impact both on benthic ecosystems and the deep biosphere. Flux rates within passive margin fluid flow systems vary by several orders of magnitude from small, episodically active cold seeps to continuously active mud volcanoes.

The mud volcanoes in the Gulf of Cadiz are more active and more numerous than anywhere else on the European Atlantic margins because they are located in a compressional tectonic province. They are found in water depths between 200 and 4000 m and show considerable variations in dimensions, morphology and composition of erupted material and fluids.

Recent survey work was undertaken during CD166 and TTR-16 cruises in 2006 on several key mud volcanoes from different waterdepths as an essential prerequisite for the HERMES ROV cruise. The surveying was done using multibeam echosounder, high resolution 3D seismic system and deep-towed high resolution sidescan sonar. The geophysical data were groundtruthed by near-bottom video and sampling with gravity

corer and tv-guided grab. The newly acquired data show that nowadays fluid escape sites on mud volcanoes are found in very localised areas (0.8-2.5% of the total area of MV) where evidences such as authigenic carbonates, chemosynthetic communities and gas hydrates were encountered.

The detailed mapping established key differences between surveyed mud volcanoes and will result in much more efficient use of the ROV during 2007 campaign which, amongst other tasks, will characterise the impact of these differences on benthic ecosystems.