

## **MOMAR seafloor observatory experiments**

J. Escartín

CNRS/IPGP, Paris, France

Mid-ocean ridges are an active environment in which tectonic, magmatic, hydrothermal and biological processes interact, and feedback with each other. It has been recognized, that in order to understand these active systems, which expand from the upper mantle to the seafloor and the water column, it is necessary to monitor temporal variability of active processes at scales of 5-10 years and longer. Such studies require a coordinated, multidisciplinary effort focused on a limited number of sites. The Mid-Atlantic Ridge immediately south of the Azores islands (MOMAR area, MOnitoring the Mid-Atlantic Ridge) was identified during the I MOMAR Workshop (Lisbon'98) as the preferred area for such integrates studies. A II MOMAR Workshop (Horta'02), following several field programs on the area, has provided an implementation plan to study the MOMAR area, generating funding efforts at European and national levels. These efforts and the perspectives will be updated as developments are occurring at the present time.

The MOMAR area is designed for a multi-scale approach, from large scale studies (ridge segment processes, ~100 km) down to local studies at individual hydrothermal sites or vents (scales of <1 km to meters). This area encompasses several hydrothermal sites (Menez Gwen, Lucky Strike, Saldanha, Rainbow) that show large variations in the water depth, tectonic location, crustal composition and structure, distribution and chemistry of hydrothermalism, and diverse fauna and ecosystems. The variability in the nature of hydrothermal systems allows both the characterization of the Mid-Atlantic Ridge near the Azores, and provides a natural laboratory for comparative studies among the different hydrothermal sites found in the area. The recently deployed North Atlantic hydrophone array has also shown that this area is seismically active, with events that may be associated with faulting and magmatism at the Lucky Strike segment. Lucky Strike was also recognized as the first target to initiate in situ vent- and segment scale monitoring experiments, with the deployment of seafloor instrumentation.