

## **OBJECTIVES OF THE CRUISE MOMARSAT2010**

The MoMAR (Monitoring the Mid Atlantic Ridge) initiative aims at providing multidisciplinary time-series data sets for hydrothermal systems in the Azores region of the Mid-Atlantic Ridge.

MoMAR is a component of the ESONET project (European Seafloor Observatory Network). The ESONET Network of Excellence (NoE, coordinated by R. Person, Ifremer) was launched by the EC in March 2007. The MoMAR-Demo project is partly funded by ESONET and concerns the 1 year deployment of an acoustically-linked multidisciplinary observing system at the Lucky Strike hydrothermal vent field, with satellite connection to shore. MoMARSAT 1 and 2 are the cruises planned to implement this MoMAR-Demo project. These ROV cruises, one in 2010 and one in 2011, will deploy, then recover, the acoustically-linked multidisciplinary observing system.

Lucky Strike is a large hydrothermal field in the center of one of the most volcanically active segments of the Mid-Atlantic Ridge. Monitoring therefore offers the best chance of capturing evidence for volcanic events, and for interactions between faulting, magmatism, hydrothermal circulations and their impact on the ecosystem at a slow-spreading mid-ocean ridge. Our project addresses five main themes and their links : seismicity and hydrothermal activity, vertical deformation of the seafloor, chemical fluxes at Lucky Strike vents, ecology at Lucky Strike vents, and physical oceanography.

We plan to use the SEAMON technology, with two nodes acoustically linked to a surface buoy that will ensure satellite communication to a land base station. This system has been developed during the ASSEM-EC project and successfully tested since. Specific solutions will be developed with our ESONET partners for sensor interoperability, shore-sensor interactive communication, and data management and dissemination.

This observatory infrastructure will acquire a synchronized multidisciplinary data set, a subset of which will be transmitted to shore in near real time (images of the seafloor, pressure and tilt at seafloor, a subset of fluid chemistry and seismicity data). The rest of the data (fluid chemistry, temperature, oceanographic data, OBS data, microbiological experiments) will be stored locally over the one year duration of the experiment. We will also acquire discrete measurements, and fluid and biological samples, during the 2010 and 2011 cruises.

The near real time data will allow us to detect seismic, volcanic or hydrothermal events. We will have the capability to respond to these events by changing sampling rates on some of our sensors, and, if needed, by mobilizing a ship of opportunity.

The study area belongs to the Portuguese ZEE and is part of a planned OSPAR “Marine Protected Area”.

Project : REX ESONET, coordinateur R.Person Ifremer, FP6-ESONET-CT036851- 2007-2011