

A PERMANENT SUBMARINE OBSERVATORY IN ALBORAN AND THE LONG TERM OBS FOMAR NETWORK: NEWS.

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The Eurasian-African plate boundary crosses the called "Ibero-Maghrebian" region from the San Vicente Cape (SW Portugal) to Tunisia including the south Iberia, Alboran Sea, and northern of Morocco and Algeria. The low convergence rate at this plate boundary produces a continuous moderate seismic activity of low magnitude and shallow depth, where the occurrence of large earthquakes is separated by long time intervals. In this region, there are also intermediate and very depth earthquakes. In this area there are several seismic networks deployed, as for example the WM BB network. But, due to the fact of that many events are located at marine areas and the poor geographic azimuthal coverage at some zones provided by land stations, earthquakes parameters (location, depth,...) are poorly determined. To solve these problems, two ROA initiatives have been funded by the Spanish "Ministerio de Educación y Ciencia": The ALBO project (RIOA05-23-002) and the FOMAR net project (CGL2005-24194-E).

The ALBO project consists to install a permanent ocean bottom observatory in the surrounding of the Alboran island. This submarine observatory will be installed about 1800m away from the island on the ocean bottom, with a 40 meters depth, and will be linked to the surface by a fiber optic submarine cable. The surface equipments will collect all data and transmit them to ROA by Navy intranet facilities and by satellite. In the submarine part several instruments will

be deployed: a broad band seismic sensor (CMG-3T BB) and a pressure gauge are integrated in the Güralp system, but also a current meter will be installed. Also, several TCP-IP connections and power will be available for future additionally instruments. Complementary on the island, a permanent geodetic GPS, a mareograph and a meteorological station will be installed. The Alboran island is declared as a Natural Park and also as an underwater reserve, so authorizations for the installation was needed from several autonomic and national institutions. Now a day, all permissions are approved, a previous submarine survey (with divers) was done thanks to the collaboration of the Spanish navy and the permanent GPS is already installed and linked to ROA using the Navy intranet. Also, the whole submarine system is finishing and testing at Güralp Laboratories, so the ROA are going to install the main system on September 2009.

The FOMAR net project consists to deploy four long term (three years) temporal OBS's at the Gulf of Cádiz and Alborán sea. The OBS's are being manufactured in KUM Laboratories with a 3D BB seismic sensor (CMG-40T), an Hydrophone (HTI-04-PCA/ULF) and a KUM compass, and the recorder is a GEOLON-MCS (manufactured by SEND). All system is contained in titanium pressure tubes including batteries.

TEMPO-MINI: A CUSTOM-DESIGNED INSTRUMENT FOR REAL-TIME MONITORING OF HYDROTHERMAL VENT ECOSYSTEMS

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TEMPO-Mini is a new custom-designed instrument package created by IFREMER for real-time monitoring of hydrothermal faunal assemblages (J. Sarrazin et al. 2007).

TEMPO-Mini integrates a 2 megapixel streaming video camera with embedded event detection, 4 LED lights, an oxygen sensor, and a 10m-long 10-sensor temperature probe. An efficient and innovative biofouling protection system is set on the camera porthole, on the lights and on the optical oxygen sensor (L. Delauney et al.).

IFREMER collaborated with NEPTUNE Canada and VENUS Canada networks to acquire live data from the seafloor in Saanich Inlet near Sidney, BC, Canada. VENUS has provided the cabled network and node connections for an instrument platform including TEMPO-Mini, which was tested, deployed and connected in late September 2008. NEPTUNE has provided a junction box to allow the connection on VENUS network. After this test in shallow water TEMPO-Mini has

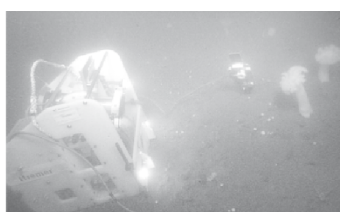


Fig. 1: TEMPO-Mini during the test deployment in Saanich Inlet, BC, Canada



Fig. 2: A view of the scene in Saanich Inlet, BC, Canada

been recovered in February 2009.

In May 2010, TEMPO-Mini, up-dated with a CHEMINI Fe (Vuillemin et al. 2009), a new generation of in-situ chemical analyzer, will descend to 2300 m. Linked to the NEPTUNE network, the camera, lights, sensors and probes will help scientists to study the dynamics of deep-sea hydrothermal ecosystems of the Endeavour vent field in the North-East Pacific Ocean.

In this paper, we present the architecture and functionality of the system and zoom into the operational perspectives.

IFREMER extends our sincere thanks to NEPTUNE Canada, VENUS Canada, CCGS John P. Tully, ROV ROPOS team and all the other partners who made this successful deployment possible.