



Integration of a permanent OBS offshore NE Iberian Peninsula to the Catalan Seismic Network

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On August 2005 a permanent ocean bottom seismometer (OBS) and a differential pressure gauge (DPG) were installed inside the security perimeter of the Casablanca oil platform (40 km offshore Tarragona, NE Spain), within the framework of a project which has the aim of improving the knowledge of the seismicity and seismic risk in the region. This project is being carried out by the Institut Geològic de Catalunya (IGC) and the Observatori de l'Ebre, in collaboration with the Spanish oil company Repsol Investigaciones Petrolíferas. The sensors were submerged at about 400 m to the SW of the oil platform and were deposited at about 150 m in depth. Data are digitized on-site and are transmitted through a submarine cable to the platform, where they are recorded. In July 2007 via satellite signal transmission was implemented to have continuous and real time data, which allowed integrating the OBS into the Catalan Seismic Network.

Since 1999 the objectives of the Catalan Seismic Network are, on the one hand, providing rapid information for Civil Defence Services and society in general and, on the other hand, to obtain systematically high quality data for the scientific community. This real time system is based on a VSAT seismic network and it has been implemented in Catalonia (Spain) by the IGC. The project of the network was planned to create robust, high performance field infrastructures through the installation of up to 21 stations equipped with three component broad band sensors and a high dynamic range and it has been developed in several steps. In 2009, 18 stations are operative: 14 broad band and 3 accelerometers on land and one broad band OBS. The stations are based on VSAT platforms that are transmitting continuously almost real time seismic data via satellite to the IGC hub. Once at seismic data reception centre data are continuously archived and processed with an automatic system.

A study of the OBS signal in terms of noise has been made and compared to the ambient noise levels of the other Catalan Seismic Network sites, which are on land. It has been observed that the OBS, like most of the ocean floor stations, has a quite noisy behaviour in comparison to land stations. Nevertheless, since the OBS is operative it has recorded a number of teleseismic, regional and local events.

At this moment the implementation of the OBS to the seismic network has only been made partially. Despite the data provided by the sea floor sensor do not contribute to the automatic location system, they allow a whole waveform analysis and are used to perform the manual locations, which can be improved for local offshore epicentre events that would have a larger station gap without these data. (http://www.igc.cat/web/gcontent/ca/sismologia/igc_sismologia.html)