



## **NEMO-SN1 real-time cabled seafloor observatory (southern Italy): operation assessment after two years from the deployment and next perspectives.**

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The NEMO-SN1 multiparameter real-time cabled seafloor observatory is sited in the central Mediterranean basin, offshore east Sicily island (Italy) at 2100 m w.d.. It is jointly managed by Istituto Nazionale di Fisica Nucleare (INFN), owner of the underwater cable, and Istituto Nazionale di Geofisica e Vulcanologia (INGV).

The observatory has been operating since January 2005 and from 2006 it is the first seafloor station of the INGV seismic surveillance network, the observatory sending the acquired signals to the Seismological Alarm Center in Rome.

During the first two years of life of NEMO-SN1, some maintenance operations were needed to restore the cable functionalities and also to change the cable path near shore, in order to improve its safety from heavy sea.

Meanwhile, a project submitted jointly by INGV and INFN was approved by the local governmental authorities of Sicily in order to enhance the observatory. The project, named PEGASO, is aimed at developing infrastructures for the management of deep seafloor scientific experiments in the NEMO-SN1 site.

In particular in the framework of PEGASO, a Deep-Sea Shuttle (DSS) will be developed to deploy and recover observation systems and devices, and to host a ROV and its garage.

The DSS will be designed to be operated from on-board ship via a telemetry system. For a complete control of the operations from the sea surface it will be equipped with thrusters for horizontal and vertical movements, lights, cameras, and sensors (e.g. al-

timer); besides, DSS will include an appropriate interface to host and operate a ROV. This latter will be a commercial model customised with respect to the DSS requirements and equipped with appropriate tools (e.g. manipulator) to perform maintenance operations at seafloor.

The development of the DSS infrastructure and the acquisition of a ROV will considerably increase the potentiality of NEMO-SN1 site and will allow to make an important step toward the establishment of a seafloor open laboratory at disposal of the international scientific community.

An overview of the activity on the observatory during its first two years of life will be given and the PEGASO project developments will be presented in details.