

INFRASTRUCTURE/FACILITY	<i>Multidisciplinary shallow water seabed observatory</i>
INFRASTRUCTURE/FACILITY	<i>PEGASO</i>
LOCATION OF INFRASTRUCTURE/FACILITY	<p><i>Panarea (Aeolian Island)</i></p> <p><i>23 meter depth</i></p> <p><i>Lat 38°38'13" N; Long15°06'18" E,</i></p> <p><i>(incl geographic. coordinates Lat, Lon, Depth for fixed installations)</i></p>
LEGAL NAME OF OWNER ORGANIZATION	<i>INGV</i>
COUNTRY	<i>Italy</i>
CONTACT	<p><i>Gianluca Lazzaro</i></p> <p><i>Via Ugo la Malfa, 153</i></p> <p><i>90145 Palermo</i></p> <p><i><u>gianluca.lazzaro@ingv.it</u></i></p> <p><i>(RI Responsible/PI name, address, ph., email)</i></p>

DESCRIPTION

A fixed seafloor observatory cabled to a pole beacon is located off the coast of the volcanic island of Panarea, which hosts the one of the most active submarine hydrothermal system of the Mediterranean sea. Extreme environmental conditions such as high CO₂ flow rate, temperatures up to 140°C, pH less than 3 and electrical conductivity higher than the normal seawater, make the hydrothermal field of Panarea a natural laboratory for multidisciplinary seafloor observation. Despite being installed at shallow depth (23 meters), the module working off Panarea is able to operate down to a maximum water depth of 4000m in extreme marine environments. The observatory, initially equipped with a set of multiparametric sensors, has been upgraded along the years to integrate third-party equipment and that can be shared with the scientific community with the aim of providing an easy-to-access facility to the extreme marine environment, where any kind of submarine device can be connected to a power source and to a network cable.

SCIENTIFIC OBJECTIVES

The suite of multidisciplinary sensors (dissolved CO₂, H₂S, O₂, CH₄ conductivity, turbidity, pH, temperature, pressure and passive acoustics) equip the seafloor observatory, allowing the detection of both slow and fast parameter variations to evaluate the performances of the system in different operational settings. Alongside, the long-term monitoring may gain a better insight into the processes occurring in the marine environment and their relationships with natural and anthropogenic hazards. The collected dense data series can support the monitoring and the evaluation of the volcanic activity of the island.

DESCRIPTION OF THE INFRASTRUCTURE

The monitoring system is composed of two main modules: a pole beacon and the seafloor lander. The pole beacon provides the power to the whole system by solar panels and a battery pack. The control unit is also equipped with GPS tracker, meteorological sensors, HD IP Cameras, and 4G LTE modem for data transmission. An umbilical cable brings power and Ethernet/Serial connection to the seafloor station, composed by a main junction box, equipped with 12 underwater connectors, able to host and supply scientific instrumentation. An optimized multiparametric, high resolution, low-power electronics, is connected to one of the outputs.

RI/ Facility participating in an ERIC	NO	
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ANALYTICS/EXPERIMENTAL INFRASTRUCTURES/FACILITIES

TYPE	SERVICE DESCRIPTION	ADDITIONAL
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		INFORMATION	
<i>Marine environment (geochemical, geophysical parameters)</i>	<i>Long-term data series continuously acquired.</i>		
<i>Marine technological laboratory</i>	<i>Available to host and supply power and internet connection to external devices/equipment</i>		
<i>Rubber boat</i>	<i>Available 7.5 meters rubber boat able to logistically support instrumentation and personnel during the deployment/sampling</i>	<i>A fully qualified team will support during the activities involving diving and boat management</i>	
<i>Discrete underwater sampling</i>	<i>Discrete sampling can be performed along the surrounding area along the seafloor or the water column</i>	<i>A qualified team of scientific divers is available to support the activities</i>	

ACCESS PROVIDED

Definitions

- Remote: the requested facility is operated by the owner's staff the presence of the user team is not required,
- Physical (In person/hands-on): the presence of the user team is required/recommended during the whole operation period
- Partially remote: the presence of the user team is required at some stage (depending on the user team's activity).

*Remote to have data access only;
Physical to have data access, instruments deployment/integration to the fixed observatory and samples collection.*

SPECIAL REQUIREMENTS

Num of access/Call;	2
Max period granted in the year:	15 days
Exclusion Periods in the year:	From November to April and August

Max period granted per single user team (working day; days for R/V)	one week
Max num of user team members admitted	3
Admin/Safety requirements for the user team	personal insurance
Min # days/months of notice to the RI Resp/PI for preparing the access	3 months of notice
Geographical Areas where RI/facility access is granted to user teams	Panarea hydrothermal field