

The EARTHCRUISERS project (EARTH CRUst Imagery for investigating SEismicity, volcanism and marine natural Resources in the Sicilian offshore)

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The EARTHCRUISERS project was developed for the MIUR's call "Progetti Premiali 2015" by the "Istituto Nazionale di Oceanografia e di Geofisica Sperimentale" (Trieste, Italy) in collaboration with the "Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo" (Catania, Italy) and "Stazione Zoologica Anton Dohrn" (Naples, Italy).

The main goals of the project are: (i) to identify and characterize the main crustal tectonic structures offshore Sicily and the Aeolian Islands, (ii) to better understand the geodynamic processes controlling seismicity and volcanism affecting this region, and (iii) to furnish a useful tool to estimate seismic, tsunamigenic and volcanic hazard in the highly populated coastal sectors. Furthermore, in order to contribute at the Blue Growth objectives, the project aims to analyze some relevant issues related to mineral prospecting offshore, such as the characterization of the hydrothermal systems in the Tyrrhenian Sea and the impact of the exploitation of oil and gas fields on the marine environment in the Sicily Channel.

To achieve these objectives the acquisition of multibeam and sidescan sonar, multichannel seismic reflection, magnetic and gravimetric data is planned. Nearly 2500 km of multichannel seismic reflection lines will be acquired during the project in the Marsili Basin (Tyrrhenian Sea) and Mt. Etna offshore. This large amount of data will allow to: better understand the relationship between tectonics and evolution of volcanism; identify active faults and volcanic bodies; better constrain the seismostratigraphic and structural setting of the study areas, and investigate the eventual occurrence of unstable volcanic slopes which could lead to landslide and tsunamis.

Finally, the deployment offshore southeastern Sicily of a temporary Ocean Bottom Seismometer (OBS) network will carry out for monitoring the natural seismicity in the area of VEGA platform, the largest oil extraction site in Italian seas. Data collected will be used to study the eventual correlation between local seismicity and oil extractive activities.