Geophysical Research Abstracts
Vol. 12, EGU2010-11830, 2010
EGU General Assembly 2010

Geophysical exploration of the Southeast Tyrrhenian Sea (Italy): Seamounts batimetries

Salvatore Passaro (1) and Girolamo Milano (2)

(1) IAMC - CNR, Napoli, Italy (salvatore.passaro@iamc.cnr.it), (2) Osservatorio Vesuviano - INGV, Napoli, Italy (girolamo.milano@ov.ingv.it)

The Tyrrhenian Sea is a young extensional basin in the Central Mediterranean that formed within a complex convergent boundary between Africa and Eurasian Plates. Its opening, associated to the west dipping subduction of the Ionian lithosphere, started about 11 My ago and was marked first by an EW and successively by an ESE directed extension. This last mainly affected the Southeast Tyrrhenian Sea and led to the formation of the Marsili ocean-like basin. This large-scale extension produced the onset of volcanism throughout the Tyrrhenian Sea and the formation of several seamounts. High values of heat flow (>150 mW m-2) and the thin crust (7 km on average) and lithosphere (30 km on average) testify the young age of formation of oceanic crust in the Southeast Tyrrhenian Sea.

On November 2007, a multidisciplinary oceanographic survey was carried out in the Southeast Tyrrhenian Sea by a group of researchers of the IAMC-CNR (Naples), Osservatorio Vesuviano (INGV, Naples), NOAA (Seattle) and GNS (New Zealand) on board of the R/V Urania. The main aim of the survey was the identification and the exploration of potential active volcanic and/or hydrothermal vents on the seamounts located in the Southeast Tyrrhenian Sea. Twelve Tyrrhenian seamounts have been explored with a modified CTD system, in order to acquire "tow-yo" profiles in dynamic mode (real time monitoring of physical and chemical parameters of seawater along vertical/horizontal profiles). In addiction, Multibeam swath bathymetry was carried out over fifteen seamounts. The strategy for the achieving of the aim consisted in two phases: i) row multibeam acquisition of the sea floor morphology to verify, confirm or review all available data, ii) tow-yo activity and seawater sampling. Here, we show the main results of bathymetric data acquisition carried out over fifteen seamounts with the use of the Reson Seabat 8160 multibeam sonar system mounted on keel of the R/V Urania. The most interesting morphostructural characteristics are found on the summit of the Marsili and Palinuro seamounts, that are the major features of the Southeast Tyrrhenian Sea. The morphology of the Marsili Seamount shows a linear summit region, approximately bounded by the 1000 meters isobath, stretches about 20 km along the main axis of the volcanic complex. Throughout the summit framework, crater-like items are not identifiable whereas cone-like items are revealed. The morphology of the Palinuro seamount reveals a very articulated summit consisting in a group of overlapped and/or coalescent volcanic cones inside collapsed calderas. Relic domes of calderic collapses are identifiable both in the western and in the central sectors of the Palinuro Seamount. The continuation of the Palinuro seamount toward the mainland is marked by the Glabro seamount. Magnetic data constrain the interpretation of several volcanic features detected on both the Palinuro and the Marsili seamounts.