



Workshop IODP-Italia “Lo stato delle proposte di perforazione nell’area mediterranea”
Scientific Drilling in the Mediterranean Sea
Roma, 15-16 gennaio 2018

Abstract
Nuove idee per la perforazione scientifica

Tectonic and volcanism in Central Mediterranean area: two possible key zones for future IODP drillings

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Abstract

The Central Mediterranean area is characterised by the convergence between the African and Eurasian plates. Geometry of plate margins kinematics and tectonic processes of the convergence have been largely investigated in recent years on the basis of seismic tomographic imaging, geodetic measurement, marine seismic reflection data and onland geological studies. Similarly, the related volcanism has also been subject of major attention of the scientific community. In this context, it is worthy to deepen the knowledge on two crucial zones. The first is the western Ionian Basin, characterized by active geological processes related to the subduction of the Ionian plate under the Calabrian Arc, possibly reactivating structural boundaries inherited from the Mesozoic Tethyan domain and the diffuse volcanism affecting Eastern Sicily since Triassic (Hyblean-Etnean volcanism). The second zone is the Sicily Channel where the collision between the African and Eurasian plates produced a Neogene-Quaternary NW-trending rift in the northern margin of the African continental plate. The presence of an intraplate rift in a foreland area, in front of a collisional belt, is not a common tectonic scenario, and the geodynamic mechanism producing the Sicily Channel rift as well as the relationships between tectonics and magmatism in this area have not yet been completely clarified. On both areas, while a large number of seismic profiles with variable quality exist, a restricted number of rock samples, collected through dredgings or gravity cores, are available. For the above-mentioned reasons, we believe that these two zones might be the candidate as future IODP drilling sites and deserve a large discussion within the interested scientific community.

Possible scientific objectives for both areas are the understanding of:

- the relationships between tectonics, volcanism and sedimentation and related paleogeographic-paleoenvironmental implications;
- the nature and physical properties of the crustal rocks useful to calibrate of the seismic reflection data





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Specific objectives for the proposed key zones are:

- for the Western Ionian Basin: characterizing nature and evolution of Calabrian Arc accretionary prism; temporal evolution of the volcanism including partial collapse of edifices and associated landslides; subsidence and sedimentation rate of Ionian Basin; structure of the continental-oceanic transition in the Sicilian margin of the Paleo-Tethys Ocean.
- for the Sicily Channel: characterizing the evolution of volcanism and rifting; volcanism, sedimentation, erosion and morphological changes related to LGM; crust-mantle transition in a dry continental rift.

