



TOMO-ETNA MED-SUV.ISES an active seismic and passive seismic experiment at Mt. Etna volcano. An integrated marine and onland geophysical survey.

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An active seismic experiment to study the internal structure of Etna Volcano is going to be carried out on Sicily and Aeolian islands. The main objective of the TOMO-ETNA MED-SUV.ISES experiment, beginning in summer 2014, is to perform a high resolution seismic tomography, in velocity and attenuation, in Southern Italy, by using active and passive seismic data, in an area encompassing outstanding volcanoes as Mt. Etna, and Aeolian volcanoes. The achievement of this objective is based on the integration and sharing of the in-situ marine and land experiments and observations and on the implementation of new instruments and monitoring systems. For the purpose, onshore and offshore seismic stations and passive and active seismic data generated both in marine and terrestrial environment will be used. Additionally, other geophysical data, mainly magnetic and gravimetric data will be considered to obtain a joint Upper Mantle-Crust structure that could permit to make progress in the understanding of the dynamic of the region.

This multinational experiment which involves institutions from Spain, Italy, Germany, United Kingdom, Ireland, France, Malta, Portugal, Russia, USA and Mexico. During the experiment more than 6.600 air gun shots performed by the Spanish Oceanographic vessel “Sarmiento de Gamboa” will be recorded on a dense local seismic network consisting of 100 on land non-permanent stations, 70 on land permanent stations and 20-25 OBSs. Contemporaneously other marine geophysical measures will be performed using a marine Gravimeter LaCoste&Romberg Air-Sea Gravity System II and a Marine Magnetometer SeaSPY.

The experiments will provide a unique data set in terms of data quantity and quality, and it will provide a detailed velocity and attenuation structural image of volcano edifice. The results will be essential in the development and interpretation of future volcanic models. It is noteworthy that this project is fully transversal, multidisciplinary and crosses several societal sectors. It is transversal since we apply marine and terrestrial sciences and merge the observations to address multiple scientific problems in order to obtain an unified Earth Crust and Upper Mantle model. It is multidisciplinary because we combine different Earth Science disciplines such as Seismology, Gravimetry, Geomorphology, Magnetic Field and others. Additionally we integrate experiments, technical development and numerical modelling. Several societal sectors will benefit from the outcomes of the project such as Volcanology, Civil Protection, Risk Management and Educational levels.