Geophysical Research Abstracts
Vol. 19, EGU2017-10693, 2017
EGU General Assembly 2017

Mt. Etna: rationale and implementation of a Supersite

Giuseppe Puglisi
Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Catania - Osservatorio Etneo, Catania, Italy
(giuseppe.puglisi@ingv.it)

Mt. Etna is one of the most active volcanoes on Earth and, in the past few decades, has erupted virtually every year. The volcanism of Mt. Etna results from the interaction between magma ascent in the rather complex plumbing feeding system and the local tectonic regime controlled by the volcano edifice's eastern flank instability, whose driving conditions (e.g., structural setting, tectonic forces) and cause-effect relationships are not yet completely understood. At the surface, the combination of the two factors produces eruptions that might consist of either strongly explosive (e.g., 2002; 2011) and produce volcanic ash plumes likely to disrupt air traffic for hours to weeks (e.g., 5 January 2012), including powerful summit paroxysms in the 2012-2013 time span or lava flows capable of invading the populated sectors, that can threat human property and vital infrastructures.

Mt. Etna presents many characteristics that make it prone to be a Geohazard Supersite. The volcano consists of an open-vent system characterised by continuous degassing from the volcano summit craters and frequent eruptive summit and flank eruptions. Eruptions can be of different kinds passing from violent short-lasting explosive events to long-lasting lava output, thus producing different kinds of impacts on the surrounding environment, and especially on the large number of people living around the volcano foot. Over time, the frequency and variety of Mt. Etna's eruptive activity have made the volcano one of the most well-studied and monitored worldwide. At Mt. Etna volcanic activity produces a wide spectrum of signals, spanning from seismic and geodetic to geochemical and radiometric signals, which are tracked in continuous and in real-and quasi-real time by the automatic multi-disciplinary monitoring systems deployed by INGV. The huge amount of ground-based collected data sets enforces the vision of Mt. Etna supersite as a Geohazard Supersite where applying the overarching criteria of the Geohazard supersite initiative of enriching the knowledge on geohazards, and promoting the co-operation between space and in situ data providers and data cross-domain sharing. In particular the Mt. Etna volcano supersite offers the chance to:

• achieve new scientific results based on the use of available unprecedented data sets;
• develop and transfer timely scientific knowledge on volcanic crises;
• develop sustainable long-term Earth observation strategies following eruption.
• establish user requirements for the Global Earth Observation System of Systems (GEOSS)

The interest of the international volcanological community on Mt. Etna, as well as the growing role as laboratory for hazard assessment during the 20th century, is testified by the inclusion of Mt. Etna in the list of "Decades Volcanoes" identified by the IAVCEI commission during the International Decade for the Natural Disaster Reduction of the UN, and by the great amount of scientific publications (e.g., more than 70 per year, on average, on Mt. Etna over the last ten years).

The EC FP7 MED-SUV project allowed making operational the Mt. Etna Supersite by integrating in-situ and EO data sets, by fostering cut-crossing research activities on the internal and superficial volcanic processes, by improving the capability of the hazard assessment and by implementing an e-Infrastructure for the sharing of the data and products.