

## Shifts in eruptive dynamics of Vulcano island, Italy

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### Context

*La Fossa cone (Island of Vulcano, Southern Italy) is a 391 m-height composite cone that has been active for the last 6000 years. Volcanic activity has included phreatic, phreatomagmatic, Vulcanian and subPlinian style eruptions. Since the last eruption on 1888-90 the quiescent La Fossa volcano has been characterized by the occurrence of "crises" with strong increases of the fumaroles temperatures, of the gas flux and characterized by variations of the chemical compositions toward more magmatic signatures caused by the release of magmatic gas from the magmatic reservoir.*

### Objectives and Methods

*We plan to study in detail the eruptive shifts from Vulcanian cycles to sustained subplinian eruptions based on textural, chemical and petrological characterisation of volcanic products. In particular, we will carry out field work to sample selected tephra layers, characterise the textures of juveniles and analyse the specimens using secondary electron microscope to gain insights into magma fragmentation. The chemical composition of minerals and matrix glass will be analysed using electron microprobe and LA-ICP-MS to gather insights on the architecture of the magma plumbing system and assess the role of reservoir dynamics and magma chemistry on eruptive dynamics. The final goal is to provide a better understanding on eruptive behaviour of La Fossa volcano in order to better constrain future eruptions and identify magma chamber conditions that favour medium versus high intensity explosive eruptions.*

### Literature

- Di Traglia F., Pistolesi M., Rosi M., Bonadonna C. (2013) Growth and erosion: the volcanic geology and the morphological evolution during the last 1000 years of the eruptive activity at the La Fossa cone volcano (Island of Vulcano, Southern Italy), *Geomorphology*, 94–107
- Peccerillo, A., Frezzotti, M. L., De Astis, G., & Ventura, G. (2006). Modeling the magma plumbing system of Vulcano (Aeolian Islands, Italy) by integrated fluid-inclusion geobarometry, petrology, and geophysics. *Geology*, 34(1), 17–20. <http://doi.org/10.0030/G22117.1>



View of the island of Vulcano from Lipari showing the two main volcanic centres: Gran Cratere of the La Fossa Cone and Vulcanello.

### Sites WEB

[http://cms.unige.ch/sciences/terre/research/Groups/physical\\_volcanology/physical%20volcanology.php](http://cms.unige.ch/sciences/terre/research/Groups/physical_volcanology/physical%20volcanology.php)

<http://www.unige.ch/sciences/terre/en/research/petrology-and-volcanology/>

### Choice of orientation :

GATO, RGEOL