

**TITLE: Characterization of the ash produced during the 1888-90 eruption of La Fossa volcano, Vulcano island (Italy)**

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**Context**

*The Fossa cone (Island of Vulcano, Southern Italy) is a 391 m-height composite cone that has been active for the last 6000 years. The current activity is characterized by intense fumarolic emissions in the Fossa summit crater, on the northern and southern flanks of the edifice and in the area of the Porto di Levante harbour. The Vulcanian cycle of the 1888-90 represents the last eruption of La Fossa that consists of an intercalation of coarse-and-fine ash beds with the presence of distinctive bread-crusted bombs that occur within no other cycle of the Fossa edifice. Since 1890 the quiescent 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 uprising of magmatic gas.*

**Objectives and Methods**

*Even though the activity of La Fossa volcano has been studied and well characterized by many authors, the last eruptive cycle of 1888-90 still remains fundamentally unconstrained. In fact, regardless of the importance of such an eruptive event which gave the name to the “Vulcanian eruptions” and that is crucial to the understanding of the volcanism of La Fossa also in light of potential future eruptions, the 1888-90 has been roughly characterized to date only in terms of physical parameters (e.g. eruptive volume and ash dispersal). With this project, we will carry out dedicated field work at Vulcano in order to characterize the 1888-90 eruption in terms of grainsize distribution, textural features of the products and their changes along the eruptive sequence. Analyses will be carried out thanks to laser diffraction, image analysis (e.g. bubble and crystal size distributions) and Scanning Electron Microscope investigations. The outcomes will provide a better understanding of the pulsating activity associated with the 1888-90 eruption and of the eruptive dynamics (e.g. possible influence of water on magma fragmentation which is commonly investigated on fine ash particles) that will help constrain the behavior of La Fossa volcano and mitigate the associated risk.*

**Literature**

- Cioni, R, Pistolesi M, Bertagnini A, Bonadonna C, Hoskuldsson A., Scateni B. (2014) Insights into the dynamics and evolution of the 2010 Eyjafjallajökull summit eruption (Iceland) provided by volcanic ash textures. *Earth and Planetary Science Letters*, 394, 111–123
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- 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, <http://dx.doi.org/10.1016/j.geomorph.2013.04.018>



**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)

**Choice of orientation :** Geological Risks