



Infrasound of basaltic effusive activity at Piton de la Fournaise Volcano

Riccardo Genco (1), Sebastien Valade (1), Nicolas Villeneuve (2), Aline Peltier (2), Valérie Ferrazzini (2), Andrea Di Muro (2), and Maurizio Ripepe (1)

(1) Department of Earth Sciences, University of Firenze, Firenze, Italy, (2) Observatoire Volcanologique du Piton de la Fournaise, IPGP, Sorbonne Paris Cité, UMR 7154 CNRS, Paris, France

On August 24th 2015, a 67 days long eruptive activity started at Piton de la Fournaise Volcano.

During the last phases of the eruption we deployed a portable, small aperture, infrasonic array which allowed us to record unprecedented data from effusive volcanic activity.

The array consisted on four, few tens of meters spaced, infrasound pressure sensors and was installed on the outer rim of the Enclos Foqué, roughly 2.5 km far from the active vent, sited on the southern flank of the central cone. The system was almost continuously operating from October, 15th to December, 7th 2015, thus recording the end of the first eruptive phase (August 24th – October 17th) as well as the two short-living following phases (from 22 to 24 and from 29 to 31 October, 2015).

The infrasound records have been coupled with discrete high-rate (30 Hz) thermal and visible imagery acquisitions located at a short distance from the vent (100-200 m) providing detailed information on the eruptive source dynamics.

The comparison with seismic and ground tilt data recorded by the permanent network operated by the Observatoire Volcanologique du Piton de la Fournaise (OVPF), shows that infrasound can be successfully used to locate the source, detect the onset, and the end, of the effusive phases as well as accurately track the time evolution of the effusive process.

We present results which allows a detailed analysis of the shallow magma dynamics during the effusive activity at Piton de la Fournaise Volcano. As far as we know these are amongst the few rare infrasound dataset reported for this style of basaltic volcanic activity.