

## **Geomorphologic evolution of the eruptive vent of September 2016 at Piton de la Fournaise (La Réunion)**

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The Piton de la Fournaise shield volcano on the island of La Réunion has been characterized by repeated activity since the first regular observations in the middle of the 17th century. It is shaped by a system of calderas of different ages, with the most recent one having formed in 2007 at the summit when the Cratère Dolomieu subsided by approx. 350 m within a short period of time. In the past years, activity has concentrated to several fissures and vents located along the outer slopes of the summit cone and within the surrounding caldera, Enclos Fouqué.

The present contribution focuses on a geomorphologic description of the eruptive vent of the latest eruption that occurred between 11 and 18 September 2016 at Piton de la Fournaise. The course of the eruption will be illustrated through series of observations, photographs (compiled in time-lapse sequences) and geophysical data acquired by the instruments of the Volcanological Observatory (OVPF).

Even though this eruption has been preceded by only a few long-term precursors, the dike propagation to the surface has been accompanied, as usual on this volcano, by a strong seismic crisis and ground deformation that lasted 56 minutes, from 03:45 to 04:41 Universal Time (UT). The beginning of the eruption has been marked by the appearance of the eruptive tremor on the seismic recordings at 04:41 UT.

Ejection of lava fountains and the source of lava flows were observed on a length of approx. 1 km along the progressive opening of 7 en échelon fissures, from the northern slope of the summit cone down to the floor of the Enclos Fouqué caldera (elevation: 2340–2160 m asl). During the first hours, lava fountains were 15–30 m high. From the evening of 11 September, the fountain activity slowly confined to three (13 September) and then to two main vents (14 September) in the lower portion of the fissures. Those two vents finally coalesced on 15 September as an elongated cone where two eruptive outlets were still visible until the end of the eruption. On 16 September, lava fountains reached heights of estimated 40–60 m during phases of vent collapses.

During the last day of the eruption, ash plumes have been ejected from the minor outlet whereas the ejected material from the major one continued to accumulate on the cone until 18 September 2016, when the eruption and the eruptive tremor suddenly ceased.

Approx. 7 million cubic metres of aphyric lava were emitted during the 7 days of the eruption – an average value, compared to other eruptions of Piton de la Fournaise.