



The 2010 eruptive cycle at Piton de la Fournaise volcano

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The Piton de la Fournaise volcano is situated in the south-eastern part of the French over sea department of La Réunion in the Indian Ocean. It represents one of the most active volcanoes in the world with one to four eruptions per year. Since 1998, a total of 35 eruptions occurred. After the April 2007 major eruption and the simultaneous collapse of the Dolomieu crater, we observed eruptive cycles in 2008, 2009 and 2010. During these cycles eruptions were short lived, lasting only some hours or some days and produced small volumes. They are separated by several months of seismic quietness and no significant deformation.

The last cycle started on October 14 at the south base of the central cone close to "Château Fort" with a 14 days lasting eruption. It was preceded over 2 months by high seismic activity starting at mid August and a seismic crisis about 1 month before eruption. Surface deformations recorded by our permanent GPS network started at end August with an elongation of the summit cone of several cm and a systematic uplift of up to 6 cm. The eruption produced a 1.6 km long lava flow and only about 3 Mm³.

Almost immediately after the end of the October eruption, surface deformations continued, while seismicity remained quite small. On December 9, after a short seismic crisis, a new eruption started on the north flank of Piton de la Fournaise. It lasted only 15 hours, produced a 1.5 km long lava flow and about 0.5 Mm³.

Presently surface deformations still continue and seismicity is again increasing. More surprising is that the deformation seems to affect also at the northern "Grandes Pentes" area.

Precise surface and volume determinations of the October and December eruptions were performed by combined aerial photographs and GPS measurements in the field and will be reported.