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Rock fall photogrammetric monitoring in the active crater of Piton de la Fournaise volcano, La Reunion Island

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The collapse of the active crater at Piton de la Fournaise volcano, La Reunion Island, 5th April 2007, offers a rare opportunity to observe frequent rock fall and granular landslides, and test new monitoring techniques. Events concern volumes ranging from single blocks to more massive cliff collapse.

The purpose of the presentation is two fold: first, we present a comparison between a Digital Terrain Model (DTM) obtained prior to crater collapse and a DTM extracted from aerial photographs shot in October 2010 (before the eruptive crisis of November 2009 and January 2010). This provides an assessment of morphological changes at the scale of the crater. The second purpose is to describe slope instabilities on the south-western flank of the crater observed since October 2009. These ground-based observations were obtained from a pair of photogrammetric stations deployed along the northern and eastern edges of the crater. These works were conducted within UNDERVOLC project.

With this monitoring system we mapped zones affected by rockfalls (departure and accumulation areas) and propose a first estimate of volumes of lava produced by the eruption affecting the inside of the crater since January 2.