



The Radiative Thermogramme: a useful way to visualize field thermal data

D. Coppola (1), T. Staudacher (2), and C. Cigolini (1)

(1) Dipartimento di Scienze Mineralogiche e Petrologiche, Università di Torino, Turin, Italy (diego.coppola@unito.it / Fax: +39-011-6705128 / Phone: +39 011-6705175), (2) Observatoire Volcanologique du Piton de la Fournaises, La Plaine des Cafres, La Réunion, France (Thomas.Staudacher@univ-reunion.fr)

The “Radiative Thermogramme” is a three-dimensional representation of thermal scan data that is based on the evolution the radiative power distribution (QD) obtained from thermal image sequences. This novel and potentially useful thermal analysis has been applied on a detailed set of thermal images collected during the last day of the August 2003 eruption of Piton de la Fournaise (La Réunion). During this monitored period the Radiative Thermogramme clearly revealed several dynamic process associated with a spatter cone containing a lava pond and feeding a channelized lava flow. Periods of steady effusion were interrupted by brief pulses of increased magma supply that closely coincide with peaks in seismic tremor amplitude. The thermal measurements show that roofing of a lava channel during steady effusion and cooling of surface flow both decrease thermal radiance in distinguishably different ways. However, thermal radiance decrease due to channel roofing is not due to a decrease in volcanic activity as might be interpreted from satellite-based data. We propose that the application of this analytical procedure on several volcanic contexts successfully describes thermal patterns that can be directly correlated with volcanic field process and other data stream.