

Density variations in La Soufrière of Guadeloupe detected with muon radiography: relation with hydrothermal activity

Kevin Jourde¹, Dominique Gibert¹, Jacques Marteau², Nolwenn Lesparre¹, Jean de Bremond d'Ars³,
Jean-Christophe Komorowski¹, Serge Gardien², Jean-Christophe Ianigro²

¹Institut de Physique du Globe de Paris, Sorbonne Paris cité, Univ. Paris Diderot, France, ²Institut de
Physique Nucléaire de Lyon (UMR CNRS 5822), Univ. Lyon 1, France, ³Géosciences Rennes (UMR
CNRS 6118), Université Rennes 1, France

E-mail: gibert@ipgp.fr

A muon telescope has been installed during 18 months to perform a density monitoring of La Soufrière of Guadeloupe. The telescope was located on the Eastern side of the volcano and configured to acquire global radiographies in the North-South plane. Radio links enabled to download and process the data in near real time. The data show that density decreases occurred in the bottom part of a low-density reservoir located beneath the active vents of the lava dome. The density variations start sharply in a couple of weeks and precede the apparition of new vents at the summit of the volcano.