



The third Volcano of La Réunion Island : new geochemical data from submarine flanks

M.S Smietana (1), P.B Bachèlery (1), and C.H Hémond (2)

(1) Laboratoire Géosciences Réunion, UMR CNRS 7154 IPGP, Université de La Réunion, Saint-Denis, France(magali.smietana@gmail.com), (2) Institut Universitaire Européen de la Mer, UMR CNRS 6538, Brest, France

The existence of a third volcano on La Réunion Island, named Les Alizés, was presumed from gravity and magnetic data. This buried volcano is only known by the hypovolcanic complex encountered during a geothermal exploration drilling, beneath the eastern flank of Piton de la Fournaise. Negative magnetic anomalies offshore the north-eastern coast, suggest that the rocks belonging to Les Alizés volcano could be present in this area.

In January 2008, a scientific survey onboard the R/V METEOR was carried out offshore La Réunion within the frame of the project ERODER2. During this campaign, submarine basalts were dredged on three rift zones of this intraplate volcanic island (NE and SE rift zones of Piton de la Fournaise volcano, and l'Etang Salé rift zone off the southern flank of Piton des Neiges volcano). The dredged rocks were analyzed for their major and trace element bulk compositions and compared with all available data for both Piton des Neiges and Piton de la Fournaise.

Two groups of basaltic lava have been identified. Group 1, which encompasses samples from each rift zone, presents compositions similar to the subaerial basaltic rocks. Group 2, only found in the northern part of the NE rift zone, has higher K₂O (1,28-1,44 wt.%), P₂O₅ (0,35-0,43 wt.%), and La/Sm (4,1-4,2) compared to subaerial and Group 1 lava [K₂O (0,61-1,07 wt.%), P₂O₅ (0,17-0,28 wt.%), La/Sm (3,1-3,8)].

Such characteristics (high K₂O, P₂O₅ and HREE and low SiO₂) are exceptional for La Réunion lava and Group 2 composition does not correspond to any known rock from this island. This suggests a possible compositional change during the building of La Réunion edifice that can be indicative of variations in the partial melting processes. Is Les Alizés volcano there?