

## **Definition of the magma storage system beneath the Pico-Faial volcanic islands (Azores archipelago, Portugal) from the interpretation of data from fluid inclusions**

V. Zanon

Centro de Vulcanologia e Avaliação de Riscos Geológicos, Ponta Delgada, Portugal (vittorio.vz.zanon@azores.gov.pt)

A study of microthermometry of fluid inclusions hosted in olivines and clinopyroxenes from ultramafic xenoliths, ankaramites and basalts, from the islands of Pico and Faial (the Azores) revealed polybaric magma ponding. The fluid composition is pure carbon dioxide. The distribution of densities revealed a common pressure for the storage of ascending mafic magmas and the formation of cumulates at the crust-mantle boundary ( $\sim 0.5$  GPa). All basalts erupted at fissure zones re-equilibrated at 0.42 GPa. They did not record further and shallower ponding steps. Ankaramites (cpx+ol) erupted by the central volcano of Pico intruded and ponded at  $\sim 0.3$ -0.39 GPa, allowing the complete resetting of inclusions. Some lavas however, recorded also shallower ponding and re-equilibration levels from  $\sim 0.07$  to  $\sim 0.16$  GPa.

The preservation of the relatively high-density values of the inclusions related to the lavas from fissure zones is related to the rapid ascent and emission of these magmas, clearly favoured by the presence of the extensional tectonic setting beneath these areas. This would bring important consequences for the monitoring/mitigation activities of volcanic eruptions in these areas of these two islands.