## Insights into the origin of magmas from the adventive cones of Piton de la Fournaise volcano (La Réunion Island)

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On the basis of their location and their chemical characteristics, the adventive cones of Piton de la Fournaise volcano (La Réunion Island) suggest that magmas could directly rise outside of the main active zone, from deeper levels than the current magma pathways. These magmas display unusual compositions compared to the historical lavas (e.g lower  $CaO/Al_2O_3$ ) and they contain more magnesian olivines (Fo>85%). Such crystals are not at the equilibrium with their host lava, raising thus the question of the nature and origin of their parental magmas. Here, we study the composition of silicate melt inclusions trapped within these early-formed olivine crystals. The aim is to gain information on these preserved primitive liquids, uncontaminated and unaffected by the magmatic differentiation, to assess the chemical characteristics of the mantle source of the Réunion plume. The results show some very primitive compositions (up to 11.93 wt% MgO) relative to the lava ones, which seem to be at the origin of the main differentiation trends defined for the Piton de la Fournaise lavas. LA-ICPMS trace element analyses suggest that the magmas originate from a common chemical source, corresponding to either (1) a homogeneous mixed source between different enriched mantle components (HIMU, EM 1, EM 2), or (2) a primitive "undifferentiated" mantle source. The melt inclusions display key element ratios, very similar to the primitive mantle values, giving thus further support for the second hypothesis: a deep-seated source from a less differentiated mantle domain.