



## **He isotopic signatures of silicate and carbonatite magmas from Brava Island (Cape Verde): source implications**

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Brava (64 km<sup>2</sup>) is located 17 km west of the island of Fogo, where more than 20 historical eruptions were reported. We will present the results of the first He isotopic signatures obtained for Brava. Concentrates of olivines, extracted from mafic silicate rocks, and of apatite and calcite occurring in sovitic carbonatites were analysed.

With one exception, calcites are characterized by R/Ra values (up to 11.7) which are, on error, above the canonical value of  $8 \pm 1$  reported for MORB, suggesting that carbonatites are derived from a source less degassed than the characteristic upper mantle. Due to the typically high U and Th contents of apatites, this phosphate is characterized by significantly more radiogenic signatures (R/Ra down to 4.0). However, the existence of relatively undegassed/unradiogenic mantle source(s) beneath Brava is endorsed by R/Ra values (up to 13.4) determined for olivines from silicate lavas.

Cape Verde archipelago is formed by 10 islands defining two alignments, known as Northern Islands and Southern Islands (where Brava is included), presenting distinct elemental and isotopic signatures. The new helium isotopic data obtained for Brava are clearly distinct from those previously reported for other Southern Islands [1]. For example, the neighbouring Fogo and Santiago Islands display MORB-like R/Ra values ( $< 9$ ) in contrast with more primitive signatures (R/Ra up to 13.4) that we determined for Brava. This highlights the peculiar source composition of Brava in the context of the Southern Islands, and demonstrates the role, not previously recognized, of a

relatively primitive mantle component in Southern Cape Verde. Our data reinforce the presence of a relatively undegassed reservoir influencing the Cape Verde magmatism, thus supporting recent geophysical data which point to the presence of a deep anchored mantle plume beneath the archipelago [2].

[1] Doucelance, R., Escrig, S., Moreira, M., Gariépy, C. & Kurz, M. D. (2003) – *Geochim. Cosmochim. Acta*, 67: 3717-3733; [2] Montelli, R., Nolet, G., Dahlen, F. A. & Masters, G. (2006) – *Geochem. Geophys. Geosyst.*, 7: DOI 10.1029/2006GC001248.

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