

PETROLOGY AND GEOCHEMISTRY OF RECENT LAVAS FROM SANTO ANTÃO (CAPE VERDE ISLANDS)

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Santo Antão Island is the northernmost island of the Cape Verde Archipelago that is located in the Atlantic Ocean between 17° 13'N-14° 48'N and 22° 42'W-25° 22'W. The genesis of this Archipelago is explained by the activity of a hot-spot, which began 25 My ago. The main stratigraphic sequences of Santo Antão island (Silva *et al.*, 1994; 2004) have been dated by Plesner *et al.* (2003) and comprise, from base to top, the "Complexo Eruptivo Antigo" (7.57 ± 0.56 My) the "Formação Conglomerático-Brechóide", the "Formação Eruptiva Principal" (3.24 ± 0.89 to 0.22 ± 0.03 My) (which is overlain by a white phonolitic deposit pumice) and the "Formação Eruptiva do Tope de Coroa" (0.17 ± 0.02 My to 0.09 ± 0.03 My). The "Complexo Eruptivo Antigo" includes chiefly basaltic flows. The "Formação Conglomerático-Brechóide" is a sedimentary unit formed during an intensive erosion period and was followed by an important volcanic event, represented by the "Formação Eruptiva Principal", comprising nephelinitic, phonolitic, tephritic and basanitic lava flows. The "Formação Eruptiva do Tope de Coroa", the most recent unit of the island, was divided (Silva *et al.* 2004) into three sub-units (figure 1): "Sequência Antiga", "Sequência Intermédia" and "Sequência Superior". The "Sequência Antiga" is composed by phonolitic and nephelinitic flows and scorias, the "Sequência Intermédia" comprises basaltic flows and scorias and the "Sequência Superior" includes basaltic, phonolitic and nephelinitic flows and scorias. Santo Antão recent lavas are silica undersaturated (carrying abundant feldspathoids, particularly hauyne), alkaline and considerably evolved (Mg# = 13-53 wt%, Ni = 0-252 ppm, Cr = 0-434 ppm). They display a strong enrichment in incompatible trace elements, suggesting that their primary magmas were produced by low degrees of partial melting, from a heterogeneous, metassomatized, source (including residual garnet and phlogopite), with a significant HIMU component.

References:

Plesner, S., P.M. Holm and J.R. Wilson (2003) ⁴⁰Ar-³⁹Ar geochronology of Santo Antão, Cape Verde Islands". *Journal of Volcanology and Geothermal Research*, Vol. 120, pp. 103-121.

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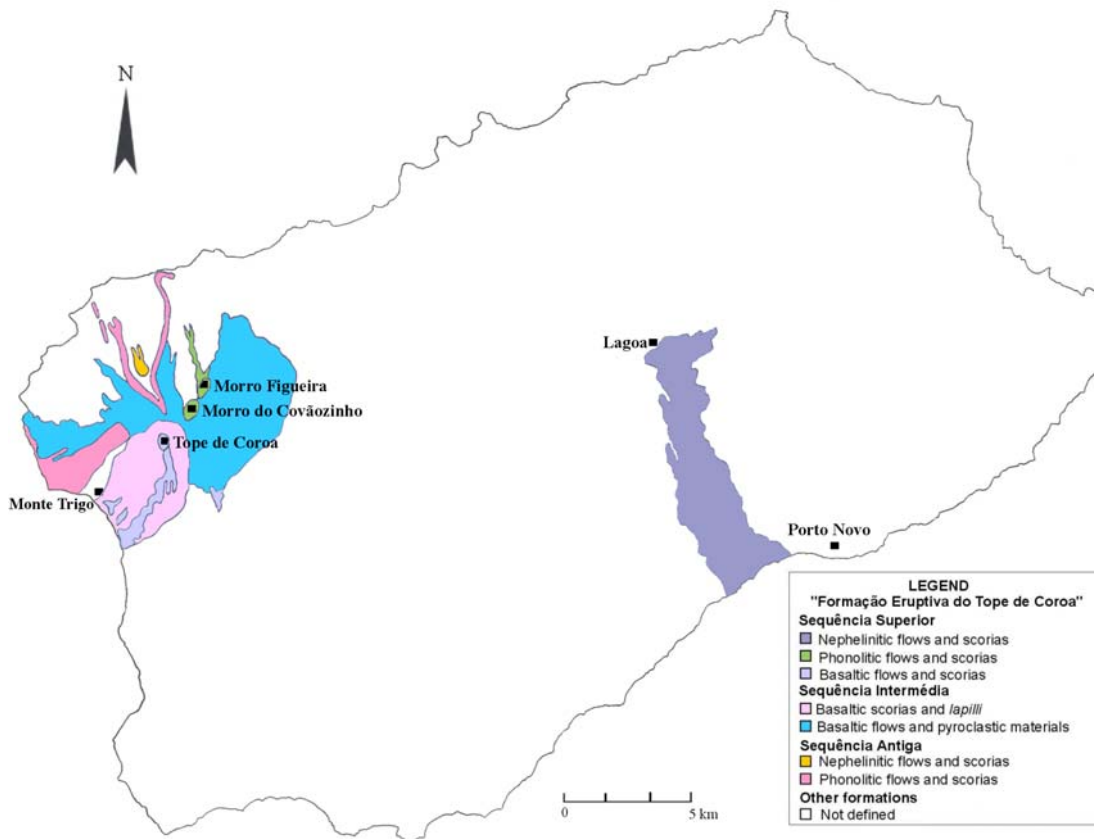


Figure 1-Geological map of the Santo Antão recent lavas ("Formação Eruptiva do Tope de Coroa"), adapted from Silva et al. (in preparation).