

Geochemical fingerprints in topsoils of Brava island, Cape Verde

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Brava is a small island of the Cape Verde archipelago, with two main stratigraphic units separated by an erosion surface representing a long period of volcanic inactivity. The Lower Unit is a submarine nephelinitic/ankaratritic basement intruded by an alkaline/carbonatitic complex. The Upper Unit is a sub-aerial, mainly phonolitic, volcanic sequence. It comprises abundant pyroclastic deposits, lava domes, coulées, and extrusive carbonatites.

Chemical analyses of surficial materials from Brava were performed by means of instrumental neutron activation analysis and Mössbauer spectroscopy.

The chemical results obtained so far for the topsoils developed in the different geological formations reveal some significant differences, mainly in topsoils derived from carbonatites or with contribution of these volcanic materials (Fig. 1), particularly REE, Ba, Th and U contents.

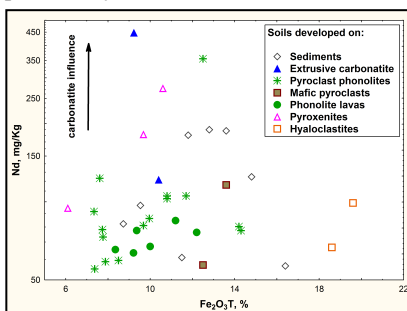


Fig. 1 – Variation of total Fe and Nd contents in topsoils from different geological formations of Brava island (Cape Verde).

Surficial samples from the Lower unit and pyroxenites present the highest $\text{Fe}^{3+}/\text{Fe}^{2+}$ ratios (up to 93% in soils developed in hyaloclastites). Phonolite soils are less oxidized. Mafic materials are the least weathered and contain the highest magnetite contents.