

T33F-2998**The alkaline and alkaline-carbonatite magmatism from Southern Brazil***Wednesday, 16 December 2015**Poster Hall (Moscone South)*

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Abstract:

Early to Late Cretaceous lasting to Paleocene alkaline magmatism from southern Brazil is found associated with major extensional structural features in and around the Paraná Basin and grouped into various provinces on the basis of several data. Magmatism is variable in size, mode of occurrence and composition. The alkaline rocks are dominantly potassic, a few occurrences showing sodic affinity. The more abundant silicate rocks are evolved undersaturated to saturated in silica syenites, displaying large variation in igneous forms. Less evolved types are restricted to subvolcanic environments and outcrops of effusive suites occur rarely. Cumulatic mafic and ultramafic rock types are very common, particularly in the alkali-carbonatitic complexes. Carbonatite bodies are represented by Ca-carbonatites and Mg-carbonatites and more scarcely by Fe-carbonatites. Available radiometric ages for the alkaline rocks fit on three main chronological groups: around 130 Ma, subcoeval with the Early Cretaceous flood tholeiites of the Paraná Basin, 100-110 Ma and 80-90 Ma (Late Cretaceous). The alkaline magmatism also extends into Paleocene times, as indicated by ages from some volcanic lavas. Geochemically, alkaline potassic and sodic rock types are distinguished by their negative and positive Nb-Ta anomalies, respectively. Negative spikes in Nb-Ta are also a feature common to the associated tholeiitic rocks. Sr-Nd-Pb systematics confirm the contribution of both HIMU and EMI mantle components in the formation of the alkaline rocks. Notably, Early and Late Cretaceous carbonatites have the same isotopic Sr-Nd initial ratios of the associated alkaline rocks. C-O isotopic Sr-Nd isotopic ratios indicate typical mantle signature for some carbonatites and the influence of post-magmatic processes in others. Immiscibility of liquids of phonolitic composition, derived from mafic alkaline parental magmas, has been responsible for the origin of the carbonatites. Close association of alkaline and tholeiitic rocks requires that their parental magmas resulted from small subcontinental mantle masses, vertical and laterally heterogeneous in composition and variously enriched in incompatible elements. Isotopically distinct magmas were generated following mantle metasomatic events at Middle and Late Proterozoic.

Fonte: <https://agu.confex.com/agu/fm15/webprogram/Paper83842.html>



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