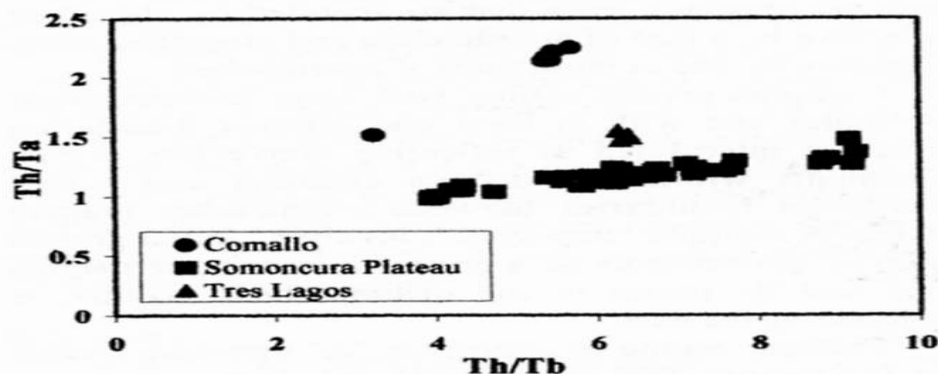


Xenolith-bearing alkali basalts from Patagonia: Different sources and metasomatic agents.

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The Pliocene-Quaternary xenolith-bearing alkali basalts from Patagonia have high contents of Sc (17 - 22.7 ppm), Cr (117 - 410 ppm) and Ni (100 - 496 ppm) indicating that they are primitive. This feature allows utilization of the ratios of hygromagmaphile elements (e.g., Th, Ta, Hf, Tb - [1]) to obtain a geochemical characterization of the mantle sources as well as (if samples belong to a single source) of the possible magmatic/metasomatic processes that have affected them. The Th/Ta vs. Th/Hf diagram from Patagonian localities (Fig.) indicates that the Comallo basalts and the Somoncuro Plateau (SP) basalts could belong to different sources. This hypothesis is supported by different ¹⁴³Nd/¹⁴⁴Nd isotope data in both source regions. Considering that the SP basalts have a single source, the trend observed in the Th/Ta vs. Th/Hf diagram (arrow in Fig.) could be attribute to different degrees of partial melting, decreasing towards Western localities. The higher enrichment in REE of basalts from the Eastern (E) as compared to the Western (W) localities of the SP basalts seems to agree with this view.

The existences of a different source for the Tres Lagos basalts cannot be firmly conclude. However, the chemical composition of glasses of glass inclusions in olivines of xenoliths indicate differences in the metasomatic fluids that have affected both regions. While xenoliths from SP were affected by a Na-alkali-rich metasomatic agent, those from Tres Lagos were affected by a Ca-Mg rich one, suggestive, perhaps, of different stages in the evolution of a possibly single metasomatic event.



References

[1] Joron J.L. and Treuil M. (1989) Hygromagmaphile element distributions in oceanic basalts as fingerprints of partial melting and mantle heterogeneities: a specific approach and proposal of an identification and modelling method. Geol. Soc. London, Spec. Publ. 42, 277-299.