

## ISOTOPIC FEATURES (Sr-Nd) OF THE PEPE NÚÑEZ ALKALINE SUITE (LATE CRETACEOUS TO CENOZOIC) IN THE SOUTHERN EXTREME OF THE PARANÁ BASIN (NW URUGUAY)

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The Pepe Núñez alkaline suite represents the first record of subvolcanic rocks of alkaline affinity in the Norte Basin (southern extreme of the Paraná Basin, Uruguay) [1]. These Late Cretaceous to Cenozoic occurrences comprise nine subvolcanic plugs (Ne-tephrites, alkali trachybasalts, and alkali basalts) that cross-cut the tholeiitic basaltic pile of the Paraná Magmatic Province [2]. This work presents Sr-Nd isotopic data from 30 representative samples to characterize their petrogenesis. Analyses were performed by TIMS (Sr) and ICP-MS (Nd). Initial  $^{87}\text{Sr}/^{86}\text{Sr}$  ( $\text{Sr}_i$ ) ratios range from 0.7038 to 0.7044,  $\epsilon\text{Nd}(i)$  values range from -0.17 to +1.54. Depleted mantle model ages ( $T_{\text{DM}}$ ) vary between 663 Ma and 885 Ma. Geochemically, the samples form a tight cluster plotting within the Mantle Array, overlapping with the OIB (Ocean Island Basalts) field. Notably, the isotopic signature of these alkaline rocks is clearly distinct from the Low-Ti basalts of the Paraná Magmatic Province, showing no evidence of the significant crustal contamination typically observed in the tholeiitic sequences. The Ne-tephrites show slightly more depleted signatures ( $\epsilon\text{Nd}(i) = +0.73$  to  $+1.54$ ) compared to the alkali basalts and trachybasalts ( $\epsilon\text{Nd}(i) = -0.17$  to  $+1.08$ ). The data suggest that the Pepe Núñez Alkaline Suite originated from a mantle source with OIB-like affinity (resembling FOZO-PREMA, or metasomatized SCLM), likely related to partial melting of metasomatized lithospheric mantle or asthenospheric components that ascended rapidly, avoiding interaction with the continental crust.

Keywords: alkaline plugs, Sr-Nd isotopes, Norte Basin, Uruguay.

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[1] Olivera, L; Muzio, R; Suárez, M.; Fort, S.; Peel, E. (2025) Age range of the latest alkaline magmatic activity of Uruguay. Goldschmidt2025, Prague, Abstract.

[2] Muzio, R.; Olivera, L.; Fort, S.; Peel, E. (2022) Petrological features of the first Cenozoic alkaline magmatic event recorded in northwestern Uruguay, southern extreme of the Paraná basin, *Journal of South American Earth Sciences*, Volume 116, 2022, 103796, ISSN 0895-9811, <https://doi.org/10.1016/j.jsames.2022.103796>.