

## **Granitoids of ca. 1 Ga. T(DM) in the Southern Pernambuco-Alagoas Massif margin, NE Brazil; A Mesoproterozoic plate?**

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The Pernambuco - Alagoas massif is in the Southern Domain of the Borborema Province. Sm/Nd isotopic data show the existence of 15 Brasiliano granitic intrusions (ca. 0.6 Ga) with Sm/Nd  $T_{DM}$  ages ranging from 0.9 Ga to 1.2 Ga. They can be divided into two groups: Group 1 is metaluminous diorites, monzogranites, and granodiorites showing  $SiO_2$  contents between 60 and 70 wt%,  $Na_2O + K_2O \sim 8$  wt%, high LILE/HFSE ratios, and spidergrams characterized by troughs at Nb, Sr and Ti. Group 2 comprises peraluminous leuco-syenogranites and leucomonzogranites. They have high  $SiO_2$  (70 - 75 wt%); and spidergrams and LILE contents similar to those of Group 1. Both groups show volcanic arc signatures and  $\epsilon Nd(t)$  at 0.6 Ga from +3.0 to 1.7.

Granitoids from both groups originated from sources with similar Sm/Nd signatures. Brasiliano granitoids showing such young Nd isotopic signatures have not been recorded in other domains of the BP. Geochemical and isotopic data suggest mafic underplating during the late Mesoproterozoic or early Neoproterozoic in the Southern Domain of the Borborema Province. The volcanic arc and Nd signatures suggest that the mafic magma may have been a mixture from a subducting oceanic slab ( $\sim 1.0$  Ga?) and older lithospheric mantle. The mafic magmas differentiated to yield a zoned lower crust, explaining the geochemical differences among the granitoid magmas subsequently derived from it.  $T_{DM}$  values  $< 1.0$  Ga require later addition of younger juvenile material to the 1.0 Ga lower crust.