

Isotopic signature (Sm/Nd) of granitoids from São Roque domain (São Paulo State), Ribeira belt, Brazil

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A large portion of the São Roque tectonic domain is made up by Brasileiro orthogneisses and granitoids (650-600 Ma). They occur as numerous small bodies of mainly high-K, calc-alkaline I-type, porphyritic granodiorites to granites with minor proportion of quartz-monzodiorites and quartz-monzonites intruding supracrustal sequences. At this area, basement rocks are not known.

The Nd depleted mantle model ages (T_{DM}) calculated for these granitoids lie in the 2.0 to 1.4 Ga interval, with $\epsilon_{Nd}(0.6)$ ranging between -14 to -5.5. The values close to 2.0 – 1.7 Ga characterize the Paleoproterozoic as the probable period when the crustal precursors of the granitoids differentiated from the upper mantle. The 1.6-1.4 T_{DM} values granites may represent a continental accretion event during the Mesoproterozoic, although reports of rocks of this ages in south Brazil are scarce and doubtful; alternatively, the T_{DM} age might represent the weighted average of the mantle differentiation ages of the protoliths.

Several occurrences of syn-orogenic calc-alkaline granitoids and late-orogenic syenites with Mesoproterozoic similar T_{DM} ages and $\epsilon_{Nd}(0.6)$ (-5.5 to -7) are reported in other regions of south and southeastern Brazil. If we consider this age as a mixing age, then similar end members and mixing proportions are necessary in order to generate rocks with same isotopic characteristics in different and relatively far tectonic domains. This is unlikely. Then, the hypothesis of the Mesoproterozoic crust production seems to be more probable.