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TECTONIC IMPLICATION OF Nd AND Sr ISOTOPE DATA OF METAMORPHIC ROCKS OF THE SOUTHERN BRASILIA OROGEN

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The southern portion of the Brasilia Orogen is represented by a horizontal nappe stack that was regionally transported during the collision between the Paranapanema Block and São Francisco Plate. This area can be divided in two domains: one composed of metasedimentary units, with subordinated metaigneous rocks, deposited at the passive margin of the São Francisco Plate and another, represented by calc-alkaline granitoid suites, metaigneous and metasedimentary rocks, which correspond to an active margin installed at the Paranapanema Block. On the eastern edge of the active margin occurs a metawacke sequence, metamorphosed under amphibolite facies conditions, that has T_{DM}(Nd) = 1.09-1.44 Ga, $\varepsilon Nd_{(660Ma)}$ = -1.5 to +1.3 and values of $^{87}Sr/^{86}Sr_{(660)}$ = 0.704-0.709. This unit is interpreted as a fore arc basin deposit, related to a rapid erosion of a calc-alkaline and juvenile volcanic source area. An amphibolite associated with these metawackes has T_{DM}(Nd) = 1.09 Ga. Metapelites metamorphosed at high pressure amphibolite facies exhibited T_{DM}(Nd) = 1.93-2.11 Ga, $\varepsilon Nd_{(640Ma)}$ = -10.5 to -8.5 and $^{87}Sr/^{86}Sr_{(640Ma)} \approx 0.724$. They are interpreted as an accretionary prism partially extruded from a subduction zone. Part of the southern passive margin is composed of schists and gneisses with lithic fragments with T_{DM}(Nd) = 2.18-3.02 Ga, $\varepsilon Nd_{(2.1Ga)}$ = -7 to +2.2 and $^{87}Sr/^{86}Sr_{(2.1Ga)}$ = 0.662-0.714. An amphibolite associated to these rocks presented tholeitic signature with $\varepsilon Nd_{(2.0Ga)}$ = +2.19. They are derived from sediments with volcanoclastic origin that were deposited close to a Rhyacian source area. The Neoproterozoic passive margin association is represented by a transgressive sequence of metapsammites and metapelites. These metapelites have T_{DM}(Nd) = 2.05-2.46 Ga, $\varepsilon Nd_{(950Ma)}$ = -14 to -11 and $^{87}Sr/^{86}Sr_{(950Ga)} \approx 0.720$ and are derived from recycled sediments deposited in a tectonically stable area. Tectonically above these sequences there is a metawacke unit with T_{DM}(Nd) = 1.55-1.74 Ga, $\varepsilon Nd_{(630Ma)}$ = -7.1 to -4.8 and $^{87}Sr/^{86}Sr_{(630Ma)}$ = 0.708-0.715. This unit is derived from sediments deposited in a syn-collisional foreland basin installed on the margin of the São Francisco Plate.