The Neoproterozoic Granitoid Suites in Southern Brazil

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The Neoproterozoic granitoids suites in South-eastern Brazil is related to a continental arc structure reflecting a continent-continent collision, which sealed the Brazilian orogeny (600-480Ma). Then, pre-, syn-, late to post- and post-tectonic series of granitoids can be distinguished, each of them displaying discriminative petrological and geochemical features. The pre-tectonic granitoids suite was emplaced 595Ma in a deep lithosphere (750-850°C, 8-10kbar). Their hybrid characters reflect mingling and mixing of mantle and crustal melting environment processes. The very Sr-enriched and Nd-depleted initial ratios ($0.712<{}^{87}Sr/{}^{86}Sr_{(i)}<0.713$ and $-8.9<\varepsilon Nd_{(600)}<-9.3$), must be related to an important role of a crustal source. The syn-tectonic granitoids suite, leucogranites and Be-P-Li bearing pegmatites (582Ma), are related to a crustal melting produced by decompression and a thermal relaxation (550-700°C, 4-5kbar). The late to post-tectonic granitoids suite was emplaced from 537 to 520Ma in a deep crustal level, after a long (45My) quiet magmatic period, and they were controlled by an extensive deformation phase. They consist mainly of porphyritic granite, hyersthene-bearing granites and simples pegmatites no mineralised. The initial ratios $^{87}Sr/^{86}Sr$ (0,723) and negative value of $\varepsilon Nd_{(600Ma)}$ (de –7 a –8) of these granitoids suggest that an important contribution of the transamazonia crust.

The post-tectonic granitoids was emplaced from 511 to 500Ma in the upper crust (870-950°C, 4-5kbar), closing this last extensive period and sealing the Brazilian orogeny in South-eastern Brazil region. These granitoids consist of syenites and granites evidencing a mantle magmatic component; the mantle melt uplift was favoured by strike-slip faults of lithospheric scale.