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ABSTRACTS

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MIDDLE TO UPPER PROTEROZOIC GRANITOID MAGMATISM IN THE STATE OF SÃO PAULO, SOUTHEASTERN BRAZIL

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The Precambrian basement in the State of São Paulo, Brazil, is composed of a series of metamorphic units exposed at various erosional levels. Recent isotopic and structural studies show that the metamorphic rocks in the area belong to older (Middle Proterozoic to Archaean) sequences reworked during the Brasiliano cycle; this is contrary to former concepts, which suggested a Brasiliano age for most of the exposed basement.

About 30% of the total area is covered by intrusive granitoid rocks with ages varying from Middle to Upper Proterozoic (ca. 1400 to 550 Ma). Available data, although still very scant, demonstrate the existence of a wide range of granitoid lineages.

Pre-Brasiliano (>800 Ma) gneissified granitoids comprise two anorogenic provinces (São José do Rio Pardo and Ubatuba) and some major linear calc-alkaline batholiths, both in terranes affected by large Upper Proterozoic nappe thrusting. The former mostly show folded tabular bodies of a mangerite-charnockite-hornblende granite suite, the most evolved rocks being chemically comparable to rapakivi granites. The latter are predominantly K-feldspar megacryst-rich hornblende - biotite granites and granodiorites with dark microgranular enclaves; less evolved (tonalitic, gabbroic) compositions seem to be scant. No independent evidence is available to relate their origin and emplacement to a B-type subduction environment; nevertheless, their characteristics are comparable to those found in typical calc-alkaline I-type granitoids.

Older Brasiliano (ca. 800 Ma) granitoids are heterogeneous, often nebulitic, and occur as small bodies within allochthonous terranes. Granites with garnet, biotite and occasionally sillimanite (Nazaré Paulista type) occur within high-grade metasedimentary sequences, while pink biotite granites (Pinhal type) are associated with strongly migmatized orthogneissic areas. These rocks are interpreted as products of crustal anatexis related to significant displacements along early Brasiliano nappes, which probably mark the beginning of an important regional collisional event.

Syn-orogenic (ca. 700 Ma ?) granitoids found in the amphibolite-grade Embu belt comprise a typical association of porphyritic biotite granites and even-grained two-mica types, together with smaller amounts of tourmaline leucogranites and pegmatites. The general features of the association are reminiscent of Hercynian granitoids from Western Europe. Syn-orogenic to late-orogenic (700-600 Ma) granitoids from low-grade metamorphic belts (São Roque and Acungui Groups) are mainly porphyritic biotite granites and granodiorites.

The emplacement of linear belts of shallow-level, A-type granitoids marks a post-orogenic extensional period (600-550 Ma). Two granitoid suites are identified, one alkaline (syenite to peralkaline granite), and another aluminous (locally associated with "wiborgitic" granites and biotite granites with Sn-W mineralizations).