

Stratigraphic and Geotectonic Significance of Granitic Suites of the Pelotas Batholith in the RS, Brazil

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The Pelotas Batholith, situated in the eastern part of the Rio Grande do Sul shield, is a 400 km-long, 110 km-wide framework of multi-intrusive, poliphasic plutonic rocks. Based on its internal constitution and stratigraphy, six intrusive suites have been described, namely Pinheiro Machado (PMIS), Erval (EIS), Viamão (VIS), Encruzilhada do Sul (ESIS), Cordilheira Granitic Suite (CGS) and Dom Feliciano Granitic Suite (DFGS). The final assembly of the Pelotas Batholith results from three main magmatic cycles. The first one is related to the Neoproterozoic (620 to 605 Ma), represented by the medium to high-K, calc-alkaline magmatism which formed the PMIS through the crystallization of an expanded association. During the late Neoproterozoic (595-580 Ma), syn- to late-transcurrence (D₂) granites have been formed, represented by the Erval, Viamão, Encruzilhada and Cordilheira suites. The Cordilheira Granitic Suite, with calc-alkaline affinity and peraluminous nature, is constituted by two-mica leucogranites. The third magmatic cycle is represented by the Dom Feliciano Granitic Suite and late volcanic to subvolcanic episodes. This association, of Cambrian age (570-550 Ma), reflects the final evolution period of the batholith. Alkaline and peralkaline terms are represented by the Bela Vista Granite and rhyolite dikes. The successive emplacement of granitic rock associations is largely related to the activity of extensive, ductile to brittle-ductile shear zones. The structural evolution determined for this region is compatible with a transpressive tectonic model related to oblique plate convergence.