MINERAL AND ROCK CHEMISTRY CONSTRAINTS ON THE PETROGENESIS OF VARIABLY CONTAMINATED CALC-ALKALINE GRANITES IN THE AGUDOS GRANDES BATHOLITH, RIBEIRA BELT, BRAZIL

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The mineral and rock chemistry of variably contaminated intermediate to felsic (62-72 wt% SiO2) syn- to late-orogenic (610-600 Ma) granitoids from the central portion of the ca. 2000 sq km Agudos Grandes Batholith, west of São Paulo, Ribeira Fold Belt, SE Brazil was used to determine intensive parameters that place important constraints on their petrogenesis. Syn-orogenic high-K calc-alkaline granites occur as elongated bodies composed of porphyritic Hbl+Bt+Tit granites (M= 15-8), dated at 610 ± 2 Ma. An eastward increase in the Al content of hornblendes reflects increases both in solidus T and crystallization depth (from 3 to 4.5 kbar). Significant variations in the mg# and Ti of hornblendes and biotites testify to important fluctuations in fO2 in different batches of magma. The late-orogenic (601 ± 3 Ma) Piedade massif is made up of two suites of hornblende-free porphyritic, relatively mafic (M= 15-5) granites: a peraluminous (Ms+Mnz) suite predominant at its eastern half is intruded by a central, metaluminous (Bt + Tit) suite. A negative correlation between Altot and mg# is seen in the biotites of the whole set of granites. This is accompanied by a decrease in the hematite content of ilmenites and, in some peraluminous rocks, by the disappearence of magnetite. The total magnetic susceptibilites drop from 15-25 x 10-3 SI in the Hbl granites to 1 x 10-3 SI in some mafic Ms-bearing granites. A petrogenetic model of contamination of metaluminous magmas similar to the more mafic Hbl-Bt-Tit with Mnz-bearing, reduced metasediments, is offered to explain the origin of the hornblende-free mafic granites, and tested with rock chemistry.