

GEOCHEMICAL AND ISOTOPIC (ND, SR) DIVERSITY OF GRANITES IN THE ANATEXIS OF A LARGE SECTION OF INTERMEDIATE CRUST IN SOUTHEAST BRAZIL: SOURCE AREAS AND ELEMENT REDISTRIBUTION

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Crustal melts generated at 625 Ma in a large section of intermediate crust (the Socorro-Guaxupé Nappe) exposed in the southernmost Brasília Belt, Brazil, have widely variable compositions, reminiscent of A-, I- and S-type granites. Muscovite dehydration-melting of metagreywackes and metapelites at 750°C in the shallowest exposed levels (ca. 5 kbar) generated (garnet)-(muscovite)-biotite leucogranites ($\epsilon\text{Nd}_{625} = -13$ to -16 ; $^{87}\text{Sr}/^{86}\text{Sr}_{625} = 0,713\text{--}0,719$). High Sr/Rb, Ba, La/Yb and Th as compared to Himalayan leucogranites reflect differences in sources and in the behavior of accessory minerals. Biotite dehydration-melting at 800-900° C of quartz-feldspathic protholiths at intermediate crustal levels (7 kbar) generated a diversity of biotite granites with I-type signatures. Variable Nd isotope compositions reflect derivation from crustal blocks with different geological evolution ($\epsilon\text{Nd}_{625} = -5$ to -7 in the Machado Block; -10 to -13 in the southern Guaxupé Domain). Two contrasted mangerite suites were generated by high-T (950° C) melting of granulites at the deepest exposed crustal levels ($P \geq 10$ kbar): the mangerite-granite S.P.Caldas suite was produced by AFC from magmas derived from the Machado Block ($\epsilon\text{Nd}_{625} = -3$ to -6) and the more mafic Divinolândia suite ($\epsilon\text{Nd}_{625} = -10$ to -12) had more residual protholiths with older crustal residence from the Alfenas-Guaxupé Block. The main geochemical features of these magmas reflect their generation by low-fraction melting (low mg#, Ni, Cr; high Nb, Nb/Ta) at very high T (high Zr, P, Ti) of residual, K feldspar-bearing granulites (high Ba/Rb, Ba/Sr, low Th, ETRL, U, Cs).