

SPACE-TIME RELATION OF EARLY POST-COLLISIONAL GRANITIC MAGMATISM IN SOUTHERN BRAZIL: ZIRCON GEOCHRONOLOGY, WHOLE- ROCK ELEMENTAL AND ISOTOPE GEOCHEMICAL DATA FOR THE QUITÉRIA-SERRA DO ERVAL SHEAR ZONE SYNTECTONIC GRANITOIDS

Knijnik D.B.^{1}, Bitencourt M.F.¹, Nardi L.V.S.¹, Weinberg R.F.², Pimentel M.³, Armstrong R.⁴*

1 Instituto de Geociências, Universidade Federal do Rio Grande do Sul; 2 School of Earth, Atmosphere and Environment, Monash University; 3 Instituto de Geociências, Universidade de Brasília; 4 Research School of Earth Sciences, The Australian National University

Crustal-scale shear zones play an important role in the generation and emplacement of granitic and mafic magmatism within Neoproterozoic post-collisional setting of southern Brazil. The Quitéria-Serra do Erval Shear Zone (QSESZ) is a strike-slip shear zone that is part of the Southern Brazilian Shear Belt (SBSB). This belt is related with the building of an extensive, nearly 1000 km long batholith (650-575Ma). The QSESZ has conditioned the emplacement of the shoshonitic Cruzeiro do Sul Granodiorite (635 Ma) and Late granodiorite to monzonite dikes (605Ma), and the tholeiitic Arroio Divisa (625Ma) and its more evolved pulse, the Sanga do Areal granitoids (620Ma). The presence of mafic rocks coeval with each of these granite magmas indicates that mantle sources were active during their emplacement. ϵNd values of -3.32 to -10.93 and $^{87}\text{Sr}/^{86}\text{Sr}(i)$ ratios from 0.7048 to 0.7223 obtained in the QSESZ granitoids suggest mantle sources with some crustal contribution and oceanic sediments. Host-rock xenoliths of the Arroio dos Ratos Complex (2.14 Ga) are interpreted as crustal contaminant. Patterns in geochemical diagrams indicate similar sources and processes of differentiation for the QSESZ granitoids. A complex process of partial melting of mantle and crustal sources involving water influx, additional heat flux from felsic and mafic injections, mixing, mingling and decompression supported by the shear zone activity over 30Ma is suggested. These settings register the initial stages of the SBSB (630-640Ma) in a post-collisional period, just after the Brasiliano / Pan-African main collisional event (650Ma).

KEY-WORDS: POST-COLLISIONAL, NEOPROTEROZOIC, SYNTECTONIC MAGMATISM.