



Geophysical Character and Geochemical Evolution of the Mesoproterozoic Figueira Branca Intrusive Suite, SW Amazon Craton (Brazil)

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The Jauru Terrain hosts the Figueira Branca Intrusive Suite (FBS) in the SW of the Amazon Craton (Brazil). The FBS is a series of 1425 Ma layered mafic intrusions, previously interpreted as anorogenic. The FBS area is located in foreland to the Santa Helena orogen, formed by the subduction of the Rio Alegre Terrain under the Jauru Terrain. Potential field methods (magnetic and gravity), gamma-ray spectrometry, geochemical and isotope data were used to characterize and to model the extent of FBS magmatism, the distribution of faults and shear zones in the area, to evaluate affinities of the magmatic activity, and the relation between the FBS and the Santa Helena orogen. The geophysical methods identified three anomalies corresponding with FBS outcrops. A fourth anomaly with significantly higher amplitude was observed to the north of the three anomalies. From south to north, the anomalies were named Indiavaí, Azteca, Figueira Branca and Jauru. These anomalies were modeled and indicated a northwest-southeast trend, parallel to regional shear zones. The gamma-ray data enabled the collection of 50 samples from the FBS rocks, the Alto Jauru group that hosts the FBS, from nearby intrusive suites, and the Rio Alegre Terrain. The 30 freshest samples were analyzed by X-ray fluorescence for oxides and some trace elements, 20 by ICP-MS for Rare-Earth Elements and 10 for Nd-Sr isotope analyses.

The FBS samples were gabbros and gabbro-norites with Nb/Yb-Th/Yb and $TiO_2/Yb-Nb/Yb$ ratios indicating varying degrees of crustal interaction. The $TiO_2/Yb-Nb/Yb$ data suggested a subduction related component and the $\epsilon Nd-\epsilon Sr$ indicated a juvenile source. Samples from coeval adjacent intermediate magma suites displayed similar characteristics, which suggest derivation from a bimodal source probably related with the subduction of the Rio Alegre Terrain.

We interpreted the tectonic setting of the FBS as a result of a roll-back of the subducted slab, which resulted in rejuvenation of the mantle under Jauru Terrain to form the FBS and nearby suites, but also under the subducting Rio Alegre Terrain, producing the magma that formed the 1412 Ma to 1380 Ma Santa Rita Suite in the Rio Alegre Terrain, which has a juvenile $\epsilon Nd(t)$ signature (+3.6). Thus in summary our data indicate that the FBS was part of the origin and evolution of the magmatic suites of the Rio Alegre and Jauru Terrains.