Juvenile contribution of the Neoproterozoic Rio Negro Magmatic Arc: Implications for Western Gondwana Amalgamation

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The ca. 790-600 Ma Rio Negro complex (RNC) of the Ribeira belt (Brazil) consists on a plutonic section of a magmatic arc built by the E-vergent subduction of the ESE border of the São Francisco paleoplate during Western Gondwana Amalgamation.

The diversity of the plutonic series, ranging from ca. 790- 620 Ma low to medium K granitoids, ca. 610-605 Ma high-K granitoids and shoshonite rocks suggest complex and longstanding arc-related magmatism. The Nd isotopic signatures of the RNC with

εNd(t) ratios ranging from -3 to +5 in the medium-K and shoshonite series to -14 to -3 in the high-K group point out to the progressive maturity of the arc with time. The Sr data suggests the same evolution, as the medium-K rocks have $^{87}Sr/^{86}Sr$ initial values <0.705 and high-K rocks display ratios between 0.705 and 0.710. The predominance of intermediate rocks over basalts suggests only an initial intra-oceanic to transitional stage, probable implanted nearby a distal portion of a passive margin, such as the Japan, to a more evolved cordilleran setting with the construction of the arc itself.

In order to explain the consumption of a wide oceanic plate almost inside West Gondwana we emphasize the role of transform fault zones as the Luanda shear zone.

Key words

Western Gondwana; Ribeira belt; Neoproterozoic; Magmatic Arc; Tectonics