

## **THE SERRA DA BOLÍVIA COMPLEX: THE RECCORD OF A NEW NEOPROTEROZOIC ARC RELATED UNIT AT RIBEIRA BELT**

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Because of its central position in Western Gondwana reconstructions, one major question regarding the tectonic evolution of the Ribeira, Araçuaí and Kaoko belts is related to the existence or absence of a major oceanic space separating major units between Eastern Brazil and Western Africa. Based on the large geographic expression and the long term evolution ca. 790 to 605 Ma for the arc related rocks (Heilbron & Machado, 2003; Heilbron et al., 2008, Tupinambá et al., 2011) some authors previously have argued about a large oceanic space separating the terranes of the belt. On the other hand, until now none relict of true ophiolite was described probably because Ribeira belt represents a deeply eroded mobile belt.

In order to contribute to this question, the work presents new geological, geochemical and geochronological data for newly described arc related rocks, known as the Serra da Bolívia complex and explores its connection with the Arc related rocks of the Araçuaí and southern Ribeira belt in the scope of West Gondwana reconstructions.

The Serra da Bolívia complex crops out at the Cambuci domain that represents the lowermost thrust sheet of the Oriental terrane. The unit comprises orthogneisses of varied compositions, ranging in from basic to acid rocks. Hornblende bearing coarse grained orthogneisses, with granodioritic to quartz-dioritic compositions, is the most common association in the complex; followed by quartz poor rocks such as monzo-gabbros, monzodiorites, monzonites and syenites. Coarse grained gabbros (norites) and leucogabbros occur as lenses inside the orthogneisses.

Chemical data indicates at least four groups of sub-alkaline rocks and one group of alkaline to transitional character (SH). Among the sub-alkaline groups we have separated, based on the behavior of major and trace elements, three calcalkaline groups (CA1, CA2 and CA) with progressive enrichment in Alkalies, and one tholeiitic group (TH), with only two samples. Geochemical data on tectonic discriminate diagrams suggest that the calc-alkaline groups display compositions compatible with arc settings, while the shoshonitic group, with more evolved compositions indicates progressive maturity during arc development. Basic rocks indicate IAT affiliations.

New U-Pb ages yielded values between ca. 770 Ma (for the tonalites) and 590 (for the gabbros). One syenitic body renders the youngest age of ca. 574 Ma, similar to the metamorphic ages previously described. Sm-Nd data yielded TDM model ages of ca. 1.72 Ga and 2.04 Ga, except for three samples, which display Mesoproterozoic model ages. The initial  $\epsilon_{\text{Nd}}$ , calculated for 605 Ma, which is the average age for the complex are between -8 and -12.

New data together with regional correlations suggest that the Serra da Bolivia Complex represents a third magmatic arc for the Ribeira belt that continues northward to the G1 association of the Araçuaí belt (Pedrosa Soares et al., 2008),

developed in a cordilleran setting between ca. 770 and 590 Ma. Youngest syenitic bodies coeval with the metamorphic episode intrude the older rocks of the arc.