



## **Thermo-kinematic evolution of the Anta Gorda Anticlinorium, Ribeira Belt: metamorphism record and shear deformation in a transpressional setting**

Maria Thereza Yogi (1), Frederico Meira Faleiros (1), Pierre Lanari (2), and Dina Cabrita (1)

(1) Institute of Geosciences, University of São Paulo, São Paulo, Brazil (maria.yogi@usp.br), (2) Institute of Geological Sciences, Universität Bern, Bern, Switzerland

The Southern Ribeira Belt (Brazil) comprises several tectono-metamorphic terranes, with their own signature and metamorphic history, delimited by a network of regional scale shear zones. These terranes were accreted and recorded metamorphism and deformation mainly during the Brasiliano-Pan African cycle, related to the consolidation of the Western Gondwana. The existence of older Mesoproterozoic and Paleoproterozoic rocks in the Southern Ribeira Belt raises the possibility of previous tectonic cycle(s) that could have contributed to its current setting. The Anta Gorda Anticlinorium (AGA) is a structural domain of the Apiaí Terrane that corresponds to a large scale folded subhorizontal shear zone. The AGA comprises elongated domes with expositions of Paleoproterozoic (1770-2200 Ma) orthogneissic mylonites covered by a Calymmian (1475-1490 Ma) metasedimentary rock succession (Votuverava Group), constituted of micaschists with intercalated layers of quartzite and amphibolite. This work aims to propose a thermal and kinematic evolution for the AGA and its correlation with important tectonic stages recorded in the Southern Ribeira Belt. We present new data obtained from fieldwork, petrography, quartz c-axis fabrics, phase equilibria modeling and  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  geochronology. Metamorphism in the metapelites is a Barrovian-type and ranges from the biotite zone grade to the kyanite zone. The peak metamorphism assemblage from kyanite zone rocks includes kyanite + staurolite + garnet + biotite + plagioclase + quartz with late sillimanite, cordierite and andalusite in the rock matrix occurring in some samples. Phase equilibria modeling indicate peak conditions of 660°C and 7.6 kbar. Votuverava Group metapelites record peak metamorphism conditions coeval with the main ductile deformation and posterior isothermal decompression on the order of 2-3 kbar. The exhumation of Paleoproterozoic orthogneisses resulted from a regional scale folding in response to transpressive tectonics. The contact between the orthogneisses and basal quartzites from the Votuverava Group record predominance of simple shear ductile deformation under greenschist to low-amphibolite facies conditions as indicated by quartz c-axis fabrics from quartzite samples. Hornblende  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  geochronology from two Votuverava Group amphibolite samples indicate cooling ages below 550°C of  $602.6 \pm 6.9$  Ma (Ediacaran) and  $\sim 720$  Ma (Tonian-Cryogenian). The older cooling ages are interpreted to be related to regional metamorphism resulted from the amalgamation of the Apiaí Terrane and its neighbor Embu Terrane around  $\sim 800$  Ma, whilst Ediacaran cooling age is associated with the transpressive tectonics developed at the beginning of the collision phase in the Apiaí Terrane.