GEOCHRONOLOGICAL CONSTRAINTS FOR THE EVOLUTION OF THE METAMORPHIC COMPLEXES NEAR THE TEBICUARY RIVER, SOUTHERN PRECAMBRIAN REGION OF PARAGUAY

Cordani, U.G.[1], Cubas, N.[2], Nutman, A.P.[3], Sato, K.[1], Gonzales, M.E.[2] and Presser, J.L.B.[1]

[1] *Institute of Geosciences, University of São Paulo – USP, Brazil; ucordani@usp.br*
[2] *Ministry of Communications and Public Works of Paraguay; eugenia@rieder.net.py*
[3] *Australian National University. Visiting Professor at USP in 2000-01; apnutman@usp.br*

A reconnaissance geochronological program was carried out on rocks from the "Southern Precambrian" region of Paraguay, a basement complex for the Paleozoic sedimentary rocks of the Paraná Basin, exposed along the Tebicuary river. The northern part of the area is formed by the Caapecu magmatic Suite, including acid volcanic rocks and granitoid shallow intrusions formed in the last phases of the Brasiliano orogenic Cycle. In the central part, medium-grade metamorphic rocks, and migmatites, are reported near Villa Florida, intruded by the Centu Cué granodioritic complex. The southern part is made up of a retrogressed high-grade metamorphic complex, but large areas of quartzitic rocks are described near San Miguel and San Juan Bautista.

The many K-Ar and Ar-Ar dates already available for the region fell within the 470 – 590 Ma age interval, confirming the regional cooling after the events of the Brasiliano Cycle. However, a few older apparent ages indicated a possible rejuvenation of ancient rocks.

Rb-Sr whole rock isochron ages were attempted in the high-grade rocks and the migmatites, but all results were around 600 Ma, confirming once more the importance of the Neoproterozoic tectonomagmatic events. A similar apparent age was also determined by a two-point (garnet-total rock) Sm-Nd isochron for one of the migmatitic samples. However, better hints for the regional geological evolution were obtained through several U-Pb ages on zircon single crystals by the SHRIMP method. Two leucosomatic bands of the Villa Florida migmatites yielded zircons with about 625 Ma and about 500 Ma ages, in agreement with the Rb-Sr and the Sm-Nd results. A similar age of 622 ± 13 Ma was obtained in a few zircons from the Centu Cué granodiorite. A high-grade gneiss from the southern part of the region yielded a very heterogeneous zircon population, characterizing four age groups at about 2020, 1070, 610 and ca. 500 Ma. This age pattern demonstrates the Paleoproterozoic formation of the gneiss' protolith, and its retrogressive transformation during the Neoproterozoic. Finally, the detrital zircons of a quartzitic rock from the same area confirmed a Paleoproterozoic age for their source rocks.