

PRECAMBRIAN TERRANES OF THE EASTERNMOST PART OF THE BORBOREMA PROVINCE AND THEIR GEOCHRONOLOGICAL DATA

Brito Neves, B.B. de¹, Van Schmus, W.R.², Campos Neto, M. da C.¹
and Santos, E.J. dos³

¹ *Inst. Geociências/Universidade de S. Paulo, S. Paulo, Brazil; bbleynb@usp.br, camposnt@usp.br*

² *Department of Geology, University of Kansas, USA, ruschmus@ku.edu*

³ *CPRM – Serviço Geológico do Brasil/ Recife-Pernambuco, Brazil; ediltonjs@aol.com*

Geological studies in the easternmost part of the Borborema province (northeast Brazil) in the last three decades, as well as recent geochronological (Rb/Sr, Sm/Nd and U/Pb methods) research projects, allow the recognition of a series of tectonostratigraphic terranes (Howell's sense) in this so-called "Saliente Oriental" of the continent, i.e. area east of meridian 36°. These terranes are separated from each other by important regional ductile-brittle shear zones (some of them also recognized in the African continent), part of which show evidence of having been polycyclically affected in the Paleozoic and Meso-Cenozoic history of the province. Several sedimentary basins and volcano-plutonic sites were associated with these weakness zones, from the Cambrian to the Tertiary.

The Rio Grande do Norte terrane (RGN), situated north of the Province, north of the Patos lineament (LP), is composed of high-grade rocks (with some overlying supracrustal Proterozoic belts) of Paleoproterozoic age (2.0-2.2 Ga) with some local Archean nuclei. The oldest rocks of South America (ca. 3.45 Ga) were found in the eastern part of this terrane. This terrane is being interpreted as a megafragment of the Atlantica Supercontinent.

The Alto Pajeú terrane (TAP) or fold belt is composed of metavolcano-sedimentary assemblages and orthogneisses of Early Neoproterozoic age (ca. 0.96 Ga), and is situated south of RGN, having the Patos shear zone as its limit. It is probably a segment of the worldwide Grenvillian net of orogenic belts that was deeply reworked by the Brasiliano orogenies.

To the south of TAP, and separated from it by another important shear zone ("Galante – Serra Redonda system of faults"), is the Alto Moxotó terrane (TAM) that presents geological and geochronological characteristics similar to RGN. It is a more or less linear fragment, ENE-WSW trending, also deeply reworked by the Brasiliano tectonic and magmatic overprint. Their Rb/Sr data show a scattered envelope of points (from 2.2 to 0.5 Ga), but the U/Pb ages confirm Paleoproterozoic ages and some local Archean protoliths.

RGN and TAM are being interpreted as previous fragments of the Atlantica Supercontinent that were amalgamated by the TAP fold belt during the Early Neoproterozoic (before the Brasiliano Cycle). This means that these three terranes together were connected as part of Rodinia.