

PROVENANCE SIGNATURES AND TECTONIC SETTING FOR THE NEO- PROTEROZOIC SERIDÓ AND LAVRAS DA MANGABEIRA METAVOLCANO- SEDIMENTARY BELTS (BORBOREMA PROVINCE, NE BRAZIL)

MARIA HELENA B. M. HOLLANDA¹, CARLOS J. ARCHANJO¹, JHON MAURICIO RICCO
BAUTISTA², LAÉCIO C. SOUZA³

¹ Geosciences Institute, University of São Paulo, São Paulo, Brazil; hollanda@usp.br

² Geochemical and Geotectonics Postgraduate Program, Geosciences Institute, São Paulo, Brazil

³ Department of Geology, Federal University of Rio Grande do Norte State, Natal, Brazil

The Borboreme Province (NE Brazil) consists of a large crustal block in which Neoproterozoic mainly siliciclastic (meta)volcanosedimentary sequences lie over Archean to Paleoproterozoic gneiss and migmatite. The lithostratigraphy of the Seridó belt comprises a basal unit of calc-silicate (para)gneisses including marble lens – the Jucurutu Formation –, succeed upwards by quartzites and conglomerates – the Equador Formation – and by a metapelite on the top named Seridó Formation. In Lavras da Mangabeira the calc-silicate paragneisses and marbles are absents, with the succession comprising quartzite and conglomerate followed on the top by metapelites.

Distribution of U/Pb detrital zircon ages for the Jucurutu and Seridó formations and Lavra das Mangabeiras metapelites define several peak clusters centered at 630-670 Ma, 710-780 Ma, 810-860 Ma, 930-970 Ma, 1000-1100 Ma; minor groups provided ages between 1300 and 2200 Ma. Whole-rock Sm-Nd model ages (t_{DM}) range between 1.2 and 1.8 Ga. In contrast, detrital zircons from quartzite and metaconglomerate yield Archean to Paleoproterozoic ages with t_{DM} model ages older than 2.5 Ga. Provenance for Lavras da Mangabeira succession is compatible with a decreasing of zircon ages up-sequence. In the Seridó basin, however, U/Pb and Sm/Nd data indicated an important shift in sedimentary sources during the deposition of the Equador Formation. If the stratigraphy relations between the Jucurutu and Equador formations were not inverted by late tectonic events, such a drastic change in sedimentary provenance could be used as stratigraphic marker to assist regional correlations on the whole province. Zircon and Sm/Nd results in the Seridó and Lavras da Mangabeira basins are consistent with a depositional setting that would have evolved from a passive margin to an immature syn-orogenic flysh represented regionally by metapelite belts.

Key words: Zircon provenance, isotopic analysis, lithostratigraphy, tectonic setting, NE Brazil

