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DETRITAL ZIRCON GEOCHRONOLOGY OF THE GLACIAL DEPOSITS FROM THE NORTHERN PARAGUAY BELT, BRAZIL: PALEO GEOGRAPHIC IMPLICATIONS

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Records of two glacial events in the northern Paraguay belt are represented by the Late Cryogenian Puga diamictites and the Ediacaran Serra Azul Formation, which have been correlated to the global Marinoan and Gaskiers glaciations, respectively. The age of these two glaciations are constrained by Pb-Pb isochron ages on overlying cap carbonates, but the source of the sediment remains poorly known. In order to provide some information about the provenance and the evolution of these glacial successions, U-Pb SHRIMP ages were determined on 7 diamictite samples. Detrital zircons recovered from the Puga diamictites present U-Pb ages (n=173) ranging from ~627 to ~3360 Ma, and the main clusters are at approximately 977, 1230, 1330, 1540, and 1874 Ma; only 5% of the grains are Archean. The youngest zircon dated at 627 ± 7 Ma suggests that Puga diamictites were deposited during the global Marinoan Glaciation. The U-Pb ages (n=206) determined on detrital zircons from the Serra Azul diamictites range from 595 and 2100 Ma, and the main peaks are approximately 710, 1011, 1165, 1526, and 1770 Ma; no Archean grains were found. The age determined on the youngest zircon from the Serra Azul Formation (595 ± 11 Ma) suggests that these sediments are correlated to the 580Ma Gaskiers Glaciation. Most of the ages obtained on the detrital zircons represent the main magmatic and crustal formation events of the Amazonian craton, including the Carajás Province (> 2.3 Ga), Ventuari – Tapajós (1.95 – 1.8 Ga) Rio Negro Juruena (1.8 – 1.55 Ga), Rondonian – San Ignacio (1.5 – 1.3 Ga), and Sunsás (1.25 – 1.0 Ga). It is important to mention that the ~627 Ma zircon grains found in the Puga diamictites are probably derived from volcanic tuff layers interbedded within the glacial sediments. However, the ~710 Ma zircons are not found in the Amazonian craton. Possible sources for this young population could be either the juvenile Mara Rosa magmatic arc in the Brasilia belt, or the rocks from the Laurentian external fold belts located to the west of the sampled area in Neoproterozoic paleogeographic reconstructions.