

CHARACTERIZATION OF THE MACAÚBAS AND BAMBUÍ GROUPS AT THE PARAÚNA DAM AREA, ARAÇUAÍ OROGEN: NEW GEOCHRONOLOGICAL AND ISOTOPIC DATA.

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The Paraúna Dam is located on the southwestern border of the Araçuaí Orogen, and shows a succession of Neoproterozoic rocks of the Macaúbas Group overlain by a carbonate package of the Sete Lagoas Formation, Bambuí Group. In the studied area, the Macaúbas Group is composed of a lower succession of sandstone followed by a glaciogenic intermediate diamictite-rich unit grading to the upper sandstone unit. At the top, the Sete Lagoas Formation consists of crystalline limestones with subordinated pelitic intercalations. We analysed 449 detrital zircon grains from four samples of both the upper and lower sandstones, as well from the matrix of diamictites, all of them from the Macaúbas Group, using a Laser Ablation Multi-Collector Inductively Coupled Plasma Mass Spectrometer (LA-MC-ICP-MS). New U-Pb zircon age spectra reveal a complex provenance scenario, with multiple source possibilities, and wide age ranges from the Tonian to the Paleoarchean, similar to most age spectra for the equivalent units of the Macaúbas Group in other regions. These spectra are typical of a basin system that evolved from continental rifts to passive margin setting. The few youngest zircon grains with ages around 700 Ma suggest contributions from an Early Cryogenian source to the upper units. Magmatic rocks with similar ages (ca. 700 Ma) are found in both West-Congo and São Francisco cratons and their respective marginal mobile belts e.g. volcanic intercalations in the Lower Diamictite, Naauwpoort volcanic flows, in West Congo domain, and the Rio Negro Complex, and the South Bahia alkaline Province, in São Francisco domain. Distinctly of prior data, Neoproterozoic zircon grains are much scarce in the analysed samples, reaching only 1.1% against an average of 14% described in the literature. The carbonate succession is represented by 64 samples of white to light-grey crystalline carbonate with $\delta^{13}\text{C}$ values within a narrow interval between -0,65‰ to 0,75‰ (V-PDB) and $\delta^{18}\text{O}$ negative values around -10‰ (V-PDB). The studied sections display consistent $\delta^{13}\text{C}$ values that are considered primary and represent the original depositional marine environment. A gradual $\delta^{13}\text{C}$ positive excursion of values around 0‰ allowed a chemostratigraphic correlation to the basal sequence of the Sete Lagoas Formation. Moreover, the lack of expressive negative values of $\delta^{13}\text{C}$ suggests that the section is a post-cap carbonate sedimentation. In conclusion, our data together with the compiled literature suggest that the studied Macaúbas diamictites record a glaciation event with an age close to or younger than 700 Ma, at the Paraúna Dam area. The apparent lack of typical cap carbonates at the lower Bambuí Group in the same area hinders a correlation with that glacial event. In addition, the data presented here provide new insights into the relationship between the Araçuaí Orogen and Bambuí Basin evolution, given the recent Ediacaran ages ascribed to the basal Bambuí Group, the Paraúna Dam records a post-Ediacaran deformation superimposed in the western domain of the orogen.