A COMBINED U-PB PROVENANCE AND ISOTOPE CHEMOSTRATIGRAPHY (C, O, SR) STUDY ON UPPER SETE LAGOAS FORMATION, BAMBUÍ GROUP, BRAZIL: AN EARLY CAMBRIAN UNIT?

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Recently published geochronological data has arisen questions on the Sete Lagoas Formation (SLF) depositional evolution. This unit is mainly composed by carbonate rocks with subordinated pelitic intercalations and represents the basal formation of the Bambuí Group, overlying the glacial deposits of the Jequitaí Formation in the São Francisco Craton (SFC).

This study combines isotope chemostratigraphy (C, O, Sr) and U-Pb dating on detrital zircons retrieved from the siliciclastic rocks of SLF from the southeastern part of the basin. Zircon grains from different sections yield ages as young as 540 Ma, suggesting a Cambrian age for most of Bambuí Group. Sections from Lagoa Santa are composed of dark gray to black, organic matter rich carbonates showing positive $\delta^{13}C$ values and $^{87}Sr/^{86}Sr$ ratios ranging mainly from 0.7075 to 0.7078. The Vespasiano section is composed of carbonates with low organic matter content and $\delta^{13}C$ values oscillating within a narrow range around 0‰. This section is positioned below the abrupt shift in C isotope values, which does not represent a major gap on SLF sedimentation, as recently proposed. It is possible that such gap lies at the base of SLF, between the basal Sturtian cap carbonates with negative $\delta^{13}C$ values and the sections with $\delta^{13}C$ around 0‰. The lower part may have correlatives on Macaúbas sequence in the Araçuaí Belt, whereas the upper part was deposited in a foreland setting with unknown correlatives in SFC and its surrounding mobile belts. These results also suggest a revision on SLF sequence stratigraphy.

The $^{87}Sr/^{86}Sr$ ratios obtained on the SLF carbonates contrast with recently proposed Sr evolution curves, especially for the Cambrian, from where ratios higher than 0.7085 would be expected. It is possible that a restricted environment was set over the foreland basin and global correlations based on Sr isotopes are not reliable in such cases.