Provenance and Chemostratigraphy of the Bambuí and Una Groups

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The Bambuí Group covers extensive areas of the São Francisco Craton and of the eastern edge of the Brasília Belt in Brazil. It is part of the São Francisco Basin, where natural gas exsudation are known and may have as source rocks the shales of the Sete Lagoas Formation, at the base of the group. The age of the Bambuí Group, however, remains controversial in the literature due to the difficulties of direct dating the sedimentary rocks in the sequence.

The results of Sr analysis showed 87Sr/86Sr ratios rising from bottom to top of the group which agrees with the expected behavior for the Ediacaran period, suggesting that Bambuí deposition occurred between 630 and 575 Ma. However, the U-Pb provenance data revealed the presence of younger zircons, with ages around 550 Ma.

For the Una Group, the Sr ratios are show a different pattern, showing an inverse trend, with higher values on at the base and decreasing to the top of the sequence. The detrital zircon ages range between 3722 ± 42 Ma and 1477 ± 13 Ma for this group, and no neoproterozoic zircons are found.

The Una Group would be a intracratonic basin, which diachronic evolution, demonstrated for the difference between the source areas, and the sediments are product of craton erosion, and not of adjacent folds like the Bambuí Group. Thus, the restriction on the mixing sea water between the carbonatic platforms and the intracratonic basin, would favor the difference of the isotopic ratios of Sr.