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MPC-03 Precambrian isotope chemostratigraphy

Negative C-isotope anomaly in the Ediacaran Tamengo Formation (Corumbá Group, Southern Paraguay Belt)

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The Edicaran-age Tamengo Formation (Corumbá Group) is composed of black limestone with organic shales and volcanic tuffs intercalations with metazoan fossils Cloudina and Corumbella. This formation crops out in de Rio Apa Block, southern Amazonian craton, and in the southern Paraguay Belt and rests over dolostones with phosphates (Bocaina Formation) that by its turn overlies glacial diamictites (Puga Formation) and cap carbonates probably related to the Marionan Glaciation. The Ediacaran-age of Tamengo Formation is confirmed by the *Cloudina* occurrence and the 87Sr/86Sr (0.7085 - 0.7086).

The most complete section of the Tamengo Formation is in the west side of the Laginha quarry (ca. 80m thick), near Corumbá town, Brazil, where there is a sedimentary breccia facies at the base, interpreted as deposited in an intermediate talus, with mudstone and organic shale intercalations in the middle portion and a thick wakestone and grainstones in the upper portion, near the contact with shales and siltstones of the Guaicurus Formation. A negative C-isotope anomaly (δ13C ~ -3‰) was identified at the base of Tamengo Formation followed upsection by values between -1.3 and -0.3‰ and by a positive anomaly (up to +5‰) corresponding to a *Cloudina* occurrence. Euhedral zircons from an ash bed overlying these limestones yielded an U-Pb concordia age of 543 ± 2 Ma (n= 9; 1 sigma) constraining the time of this C-negative incursion. The samples analyzed for C isotopes were selected from petrographically studied slabs of homogeneous mudstones and the δ18O values are around -8‰, which suggests that C-isotope values represent the original oceanic water isotope composition. Negative C-isotope anomalies in the Ediacaran Period have been identified in other Neoproterozoic sections but they represent cap carbonates from Marinoan and Gaskiers glacial events. However, in the Tamengo Formation there is no sedimentological evidence of glaciation and the significance of this C-isotope anomaly is still an open question. Nevertheless, its presence at the base of Tamengo Formation is important to stratigraphic correlations in the Paraguay Belt.

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