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Satellite image of Google Earth

Program and Abstracts

C-O-Sr isotopes in Tamengo Formation (Corumbá Group) at Laginha Mine section, southern Paraguay Belt, Brazil

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The Corumbá Group represents one of the most complete sedimentary records of the Ediacarian in South America, with outcrops of siliciclastic and carbonate rocks along the southern Paraguay Belt. These rocks feature a rich fossiliferous content, with occurrences of the first organisms with biomineralized structures (*Cloudina*). Analysis of isotopic composition and geochemistry in carbonates of the Tamengo Formation (Corumbá Group) at the Laginha mine section shows the geochemical conditions in the shallow-water marine environments of this carbonate ramp. Samples were collected in a 138 m-thick section containing oolitic carbonates interbedded with levels of marls (and shale drapes) presenting hummocky stratification, which are interpreted to be deposited in an inner-mid ramp subjected to the action of currents and high-energy waves. Carbon and oxygen isotopic analysis were performed on 138 calcareous samples, collected each one meter. Based on the content of Rb and Sr determined by FRX, the 10 samples with the highest Sr concentration were selected for Sr isotope analysis and elemental geochemical analysis. $\delta^{13}\text{C}$ (V-PDB) values start with -3.5 ‰ at the base of oolitic carbonates, increasing to 6.0 ‰ in the first 60 meters from the base of the sequence. Carbonate grains and cement from the same samples were analyzed and provided similar $\delta^{13}\text{C}$ values. The concordance of grain and cement values and the progressive evolution in $\delta^{13}\text{C}$ along the section suggest these results represent the primary, depositional C-isotope signal of this unit in the inner-mid ramp setting. The increase in $\delta^{13}\text{C}$ values is preliminarily interpreted as a result of the increase in the amount of organic matter buried, probably due to early diagenetic anoxic conditions. Above this interval, a homogeneous trend is observed in $\delta^{13}\text{C}$, oscillating between 1.69 and 3.36 ‰. The stability in the isotopic carbon at these positive values can be related to a balance between the amount of organic matter buried and carbon recycling by organic matter degradation. $\delta^{18}\text{O}$ (V-PDB) values are all negative and show a progressive trend throughout the section, from -1.79 at the base to -9.30 ‰ at the top. $^{87}\text{Sr}/^{86}\text{Sr}$ ratios ranged between 0.7085 to 0.7089, which are in accordance with the global Ediacaran Sr isotope evolution. The obtained results allow us to infer that these are primary Strontium initial ratios. The results of this work contribute to the knowledge of the geochemical conditions that were present in the shallow marine environments of the carbonate ramp where the Tamengo Formation was deposited and implications in the development of the biological communities that evolved in the end of the Ediacaran.