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HIGH-RESOLUTION BIOCLAST TAPHONOMY, TAMENGO FORMATION (EDIACARAN), CORUMBÁ GROUP, BRAZIL

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ABSTRACT: The Ediacaran period (635 – 538.8 Ma) is defined by the termination of the Marinoan glaciation, which represents the second of two Cryogenian-aged global glaciations. The Ediacaran also witnessed major transformations in the Earth system, directly impacting the biosphere. The stepwise complexity of metazoans allowed the rise and evolution of novel body types (*Bauplan*) and feeding strategies, which reshaped community ecologies. These organisms preceded the Cambrian explosion and are divided into fossiliferous assemblages that each contain diagnostic taxonomic compositions and are separated both in geologic time and preferred paleoenvironment. Among the evolutionary novelties, the Ediacara recorded the first organisms capable of performing biomineralization at the macroscopic level (e.g., *Cloudina lucianoi* and *Corumbella weneri*) contained in Nama-type fossils. In Brazil, these fossils occur in the Tamengo Formation, which materializes a mixed carbonate-siliciclastic ramp and is divided into three ramp sectors (inner-ramp, mid-ramp, and outer-to-distal ramp). The lithological composition of the Tamengo Formation is composed of wackestones, oolitic packstones, packstones, grainstones, shales, siltstones, and mudstones with swaley-hummocky cross-stratifications subjected to fair-weather and storm base level oscillations. Abundant macrofossil horizons are preserved in several modes across the Tamengo ramp (e.g., *Cloudina lucianoi*, and *Corumbella weneri*). The materials analyzed consisted of *Cloudina* bioclastic pavements from the mid-ramp, *Corumbella* accumulations located in the outer-to-distal ramp, *in situ* *Cloudina-Namacalathus*(?) association with microbialites presumably from the inner-ramp, and thin sections housed in the Paleontology and Systematics laboratory at IGc-USP. The materials were analyzed with an Olympus DSX high-precision microscope for bioclast measurements, and a Zeiss Stemi with an attached AxioCam camera for thin-section analysis. A taphonomic protocol containing a set of taphonomic signatures was employed for *Corumbella* and *Cloudina* within microfacies associations (MFA). Exploratory data analysis (EDA) with software R 4.1.3 employed multivariate statistics and hypothesis testing, which provided meaningful results to comprehend bioclast accumulation patterns. The preliminary results allowed discussion on bioclastic dynamics in each sector across the Tamengo ramp. In the inner ramp, *in situ* *Cloudina-Namacalathus* are interpreted as autochthonous accumulations, fragmentation was due to post-mortem funnel disarticulation, and bioclasts were not significantly affected by size sorting. In the mid-ramp, bioclast fragmentation rates were the highest, and varied between carbonate and pelitic rocks, suggesting parautochthonous amalgamated accumulations. In the outer-to-distal ramp, *Cloudina* accumulations have an allochthonous origin. The MFA explained from 39 to 43 % of the taphonomic profile variation in the Tamengo ramp, indicating substrate mediation on bioclast accumulation and preservation.

PALAVRAS-CHAVE: *Cloudina lucianoi*; *Corumbella weneri*; Data Science; Taphonomy, Tamengo Formation