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Título do Trabalho: **SEDIMENTARY EVOLUTION AND CHEMOSTRATIGRAPHY OF THE BOCAINA FORMATION PHOSPHORITE: IMPLICATIONS FOR THE NEOPROTEROZOIC PHOSPHOGENIC EVENT**

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Resumo do trabalho:

The Ediacaran period records the return of extensive phosphorite deposition after a prolonged hiatus during the Mesoproterozoic. This event is thought to represent a major paleoenvironmental, paleoceanographic and biotic changes that shaped Neoproterozoic ecosystems, with evidence suggesting a seemingly causal relationship between phosphogenesis, seawater oxygenation and the preservation of key Ediacaran Faunas (Doushantuo-pertatataka acritarch assemblages). While these correlations are attractive, the low number of preserved high-grade phosphorite sequences, discordant depositional ages and multiple depositional settings challenge the existence of a synchronous, global scale phosphatization and its whole in biotic innovations. In this context, the Ediacaran Bocaina Formation located in Central Brazil presents itself as an crucial window into the Neoproterozoic phosphorite record. Newly sampled mining exploration logs and trenches shows that the unit records unprecedented, well preserved dolomite reef stromatolites and a large array of phosphatic lithologies bearing phosphatized Doushantuo-Pertatataka acritarchs. In this context, this work aims to analyze sedimentological, stratigraphic, petrographic, biostratigraphic and $\delta^{13}\text{C}$ geochemical aspects of the high-grade phosphorite successions of the mid-Ediacaran Bocaina Fm, and gain insights regarding the nature of the Neoproterozoic phosphogenic event. The results indicates that Bocaina Fm records secular sustained phosphorite deposition associate to unprecedented, (stromatolite-thrombolite) reef rim phosphorites (deposited during a lower accretionary rimmed platform stage), followed by the deposition of Doushantuo like, whole platform phosphorites associate to an later, drowned platform stage, therefore, reinforcing the evidence for the operation of strong allogeneic controls on phosphate mineralization-concentration. In addition to well-established early-Ediacaran Doushantuo Formation phosphorites, the presence of similar 'transitional' phosphorite deposits on the mid-Ediacaran Bocaina Formation and Terminal Ediacaran, Mongolian Khesen-Zuun-Arts formations reinforces the argument for a punctuated Neoproterozoic transition from restricted Precambrian-like 'oxygen-oases' phosphorites to Phanerozoic-like whole-platform 'phosphorite giants' modulated by the operation of the Neoproterozoic phosphogenic event. Further, the results also show that chemostratigraphic patterns displayed in the Bocaina Formation, as well as in those "Transitional" Ediacaran phosphorite deposits show $\delta^{13}\text{C}$ signatures typified by the predominance of negative values and large bed-to-bed inconsistency. It is suggested that the intrinsic nature and uniqueness of those noisy, light $\delta^{13}\text{C}$ trends possibly reflect the local effects of phosphogenesis on host sediments, suggesting caution against the use in global/regional chemostratigraphic correlation. Further, combined evidence of selective paleoenvironmental phosphatization, local geochemical signals, narrow time spans and heterogeneous acritarch taxonomic diversity found in those transitional phosphorites highlight the punctuated, intrinsic local nature of Ediacaran phosphogenesis.

Palavras-Chave do trabalho: Bocaina Formation; Carbon isotope stratigraphy; Ediacaran; Phosphogenesis; Phosphorite;