

CARBON ISOTOPE COMPOSITION IN THE NEOPROTEROZOIC CARBONATE RAMP, UPPER ARARAS GROUP, BRAZIL

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RESUMO: The Araras Group is the sedimentary archive of a Lower Ediacaran carbonate platform developed S-SW of Amazon Craton, overlying Cryogenian metasedimentary rocks of Northern Paraguay Belt, central Brazil. The upper Araras Group represented by Serra do Quilombo and Nobres formations, consists of dolostone/sandstone succession that records a post-Marinoan glacial events, being unconformably overlaid by siliciclastic deposit of Cambrian Alto Paraguay Group. New data regarding facies analysis and carbon isotope chemostratigraphy allowed to better understand the relation between the Araras carbonate ramp environments and their carbon isotope composition. The coupling of facies association and $\delta^{13}\text{C}$ in carbonate data suggests the upper Araras Group as a unique carbonate ramp system, individualized in: i) Deep ramp, with massive dolostone and $\delta^{13}\text{C}$ values around $\sim 0\text{‰}$; ii) Middle ramp, with storm wave cross stratification dolostone/sandy dolostone and $\delta^{13}\text{C}$ values also $\sim 0\text{‰}$; iii) Lower inner ramp, that consist of massive dolostone and oolitic dolostone, also oncolytic to intraclastic dolostone with positive $\delta^{13}\text{C}$ values between 0 to $+3\text{‰}$; iv) Inner ramp, with dolostones, sandstone and microbialite organized in shallowing upward cycles and negative $\delta^{13}\text{C}$ values ranging between -2 to 0‰ . The $\delta^{13}\text{C}_{\text{org}}$ reveal values between -31 to -25‰ and anomalous values of over -25‰ , with no facies control. The facies succession of the upper Araras Group has a thickness upward from deep ramp to inner ramp, indicating progradation of the Araras carbonate ramp. The carbon isotope analyses reveal $\delta^{13}\text{C}_{\text{carb}}$ values ranging from -2 to 3‰ , with small but significant variations between the different platform subenvironments, thus defining a decreasing trend of $\delta^{13}\text{C}$ values toward the top of the progradational succession. Two hypotheses can explain this pattern: 1) $\delta^{13}\text{C}$ variations can either record temporal variations in the carbon cycle or; 2) spatial variations of the water $\delta^{13}\text{C}$ along the carbonate ramp environment. We suggest a facies controlled carbon composition along the shallowing waters in carbonate ramp, where the positive $\delta^{13}\text{C}$ in the lower inner ramp is related to the ^{12}C decreased by primary photosensitizing activities on the oolitic bars setting; while the delivery of ^{12}C enriched of dissolved inorganic carbon in inner ramp deposits by continental runoff or an increased organic diagenesis and carbonate recrystallization.

PALAVRA CHAVE: FACIES ANALYSIS, CARBONO ISOTOPE, NEOPROTEROZOIC, ARARAS GROUP