Stable isotopes and paleoceanography/stratigraphy of the Neoproterozoic carbonates of Bambuí Group - Arcos region, Minas Gerais State, Brazil

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The Bambuí Group in the Arcos region, Minas Gerais, consists of a succession of carbonate rocks without associated siliciclastic sediments. Four main shallowing intervals were identified: the basal interval (1) represents a carbonate ramp with beach-barrier-lagoon in the inner ramp. Subaerial exposure is evident from the upper facies of Interval 1. Interval 2 is a stromatolitic tidal flat built by small-scale shallowing upward cycles. Intercalations of detritic carbonate horizons are mostly cross-bedded microphytolitic grainstones-to-packstones. The entire interval is dolomitized; anhydrite occurs scattered throughout it. Intervals 3 and 4 are very similar to each other and resemble Oolite-Grainstone Cycles; the upper facies of Interval 3 shows similarities with lime-mud-sabkha cycles. Stable isotopic data of $\delta^{13}C$ (PDB) suggest that the basal intervals (1and 2), characterised by low values of $\delta^{13}C$, represent a well oxygenated ocean. Data of $\delta^{13}C$ greater than 10,0 permil were obtained in the upper portion of the sedimentary pile (intervals 3 and 4) and suggest, on the contrary, anoxic conditions in a highly stratified ocean, with good preservation of organic matter. The great difference in $\delta^{13}C$ values between the basal and upper successions allows for separation of the Sete Lagoas and the Lagoa do Jacaré formations which display low and high values of $\delta^{13}C$ respectively. $\delta^{18}O$ data (PDB) are coherent with paleogeographic interpretation: the low values were found in dolomitized sediments related to subaerial exposure facies and the higher values were found in stromatolitic tidal-flat carbonates of high salinity environment as suggested by the presence of anhydrite.