GLACIO-EUSTATIC CYCLICITY IN PENNSYLVANIAN EVAPORITES OF THE SOLIMÕES BASIN, NORTHERN BRAZIL

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The stratigraphic framework of the Carboniferous-Permian sequence in the Solimões Basin consists of nine third-order composite sequences, based upon diferent cycle-stacking patterns. The absolute durations of the cycles and sequences were calculated from biostratigraphic and chronostratigraphic data.The sequences followed asymmetric transgressive-regressive stacking patterns. The lowstand system tracts (halite evaporite wedges) ocurred only when additional depositional space was created by tectonics, as interpreted in the Fischer plots.A spectral Fourier analysis of each sequence was performed using the gamma-ray logs of two wells, with 20 cm sampling interval. The frequency content of each sequence was compared to the stratigraphic framework, and the relationships within the main frequencies were compared to the Milankovitch frequencies for the Pennsylvanian Period.The glacio-eustasy, induced by orbital forcing, especially by short eccentricity-precession cycles, was the main allocyclic factor, being particularly marked during the Atokan and Late Desmoinesian stages. This cyclicity could be related to the contemporaneous waxing and waning of ice-sheets in the southern part of Gondwana.The average duration of the fifth-order sequences was estimated between 114 and 173 ky, and the fourth-order sequences had durations between 228 and 456 ky. These values seem to be quite compatible with contemporaneous cyclic sequences in the North-American Midcontinent (cyclothems), as well as with the European cycles (mesothems). The Late Morrowan marine transgressions in the Solimões Basin were related to an eustatic global event.