SEISMIC STRATIGRAPHY OF PARNAÍBA RIVER DELTA PALEO-CHANNELS AND SEA LEVEL RISE

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RESUMO: The Parnaíba River delta (PRD) is an asymmetric wave dominated delta located at the NE Brazilian coast at the border of the states of Piauí and Maranhão, approximately 1100km east of the Amazon River and around 1200 km northwest of the São Francisco River Delta (it is the largest river system of NE Brazil between Amazon and São Francisco rivers in terms of river discharge and dimension of the drainage basin). It is divided in two parts, east and west parts, separated by the PR. In the east part, flows Igaraçú River which is the last distributary of PR before reaching the Atlantic Ocean. Igaraçú river mouth is the east limit of the PRD. The west part of PRD is composed by a complex of tidal which is connected to the PR by a small channel which was artificially opened on the 1960's. The late Pleistocene Holocene stratigraphic architecture on the northeastern Brazilian continental shelf off the Parnaíba Delta has been explored by high-resolution seismic profiles. The seismic surveys reveal the widespread distribution of incised valleys of different size in offshore continuation of the present-day PRD. According to morphology two channel types can be distinguished: U-shaped channels in the eastern part and V-shaped channels in the western part. The stratigraphic successions were grouped into four seismic units separated by different seismic boundaries. The characteristics of the seismic boundaries and internal reflectors of the seismic units were used to distinguish between marine and riverine deposits. The modern main channel of PR depicts a depth to width ratio similar to the U-shaped incised-valleys while the smaller distributaries depict this parameter similar to the V-shaped incised-valleys. Hence, it is likely that the U-shaped incised-valleys correspond to the main distributary of the PR and depicts the river path over the continental shelf during the last sea level lowstand. The incised-valleys architectural elements were used to link sedimentation processes and variations in base level from late Pleistocene channel avulsion and channel infill in the lowermost course of the paleo-Parnaíba River to marine sediments of the present-day inner shelf. The change of the depositional environments in relation to deglacial sea-level rise is compared to incised valley infills of the Mekong River and Red River systems in Southeast Asia.

PALAVRAS-CHAVE: SEISMIC STRATIGRAPHY, PARNAÍBA RIVER DELTA, SEA LEVEL RISE..