



## **THE SEDIMENTARY AND FOSSIL PALEOCLIMATIC RECORDS IN THE SOUTHERN COASTAL PLAIN OF RIO GRANDE DO SUL, BRAZIL**

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The sedimentary deposits and fossils of the barrier-lagoon systems in the southern coastal plain of Rio Grande do Sul (CPRS) constitute a paleoclimatic record of the last ~220 kyrs. Luminescence ages from fluvial deposits of the Santa Vitória Formation, preserved in the Lagoon System III, suggest that wet-dry cycles in the area were driven at least in part by insolation cycles in the ~21 kyrs frequency. The fossils in these deposits consist of a diverse assemblage of large mammals that inhabited the area since at least the middle Pleistocene, but disappeared and was replaced by a low diversity community of mammals adapted to cold and dry environments around 30 kyrs ago, during the last glacial epoch (Marine Isotope Stage, or MIS, 2). This disappearance coincides with the onset of the deposition of loess (the Cordão Formation). The dry climate at that time also led to the precipitation of pedogenic carbonate (the “Caliche Cordão”), not only in the Lagoon System III but also in the Lagoon System II, on the banks of Mirim Lake. The Pleistocene-Holocene transition was marked by wetter and warmer conditions that began around 10 kyrs ago, as indicated by diatom assemblages and high clay and organic matter content in the uppermost sediments. The sedimentary sequence of the coastal Barrier III (the “Chuí Formation”) shows wet environments between 104 and >82 kyrs ago (MIS 5), as indicated by slacks developed on the interdunes. Aeolian processes were predominant between 82 and 10,5 kyrs ago, but were intercalated with periods of stabilization and incipient soil formation, in a higher frequency around 41 kyrs ago, thus indicating milder climate with increased seasonality during the interstadial (MIS 3) between the glacial stages MIS 4 and 2. The uppermost portion of the barrier was stabilized due to the precipitation of iron and manganese oxide during the early Holocene, which cemented sand and silt grains together and formed nodules and concretions.

Palavras-chave: Mudanças climáticas, Ciclos glaciais, Pleistoceno.

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