

THE SEDIMENTARY RECORD OF WET AND DRY EOLIAN SYSTEMS IN THE CRETACEOUS OF SOUTHEAST BRAZIL, SANFRANCISCANA BASIN

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Detailed sedimentologic and stratigraphic studies of paleodeserts from the Brazilian Cretaceous are of great potential to understand the evolution of the paleoclimate and paleogeography of Gondwana during its final rifting stage. The Sanfranciscana Basin is a vast expanse of well-preserved desert deposits. This work presents a detailed characterization of the eolian systems of the Três Barras Formation, in Sanfranciscana Basin, particularly focusing on the sedimentary facies and their associations, definition of regional stratigraphic bounding surfaces, and paleowind directions. Herein, we describe and discuss two depositional units characterized by two distinct eolian systems bounded by a long-lived unconformity. The Lower Unit (Barremian/Aptian) encompass a wet eolian system composed of dune and wet/damp interdunes, with rare ephemeral alluvial deposits. A continuous paleosol horizon in the upper part of the Lower Unit records vegetation cover, dune stabilization and the end of eolian accumulation, possibly in the late Aptian. A stratigraphic gap with a time span from at least Cenomanian to Coniacian is proposed for the unconformity. The Upper Unit (Santonian?/Campanian) comprises dune fields of a dry eolian system capped by the Mata da Corda volcanic rocks. We interpret that the eolian deposits of the Upper Unit of the Três Barras Formation are correlated to and must be considered part of the Urucuia Group that crops out in the north portion of the basin (Urucuia sub-basin). Cross stratification dip directions obtained from both eolian systems show a consistent sediment transport towards SSW and paleowinds coming from the northeast quadrant. The same pattern of paleocurrents in both units reveals that the continental breakup and drifting had little influence on the surface winds in this sector of Gondwana. The Upper Cretaceous paleowinds are coherent with global paleocirculation models based on a high-pressure cell over the South Atlantic proto-ocean, favoring desertification in the inner regions of the southwestern Gondwana. This work is the first detailed study of the Tres Barras Formation, which provides new light on the discussion of atmospheric circulation pattern during the Cretaceous and the desertification process that took place in the dawn of South America continent during and after the Gondwana breakup.

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Palavras-chave: Areado Group, Cretaceous paleowinds, paleogeographic.