

DRYING OF A CRETACEOUS EPHEMERAL LAKE: AREADO GROUP, SANFRANCISCANA BASIN, MINAS GERAIS, BRAZIL

Fernandes, L. R. M.¹; Basili, G.^{1,2}; Simplicio, F.¹; Sgarbi, G.N.C.³

¹Universidade Estadual de Campinas; ²CRILAR/CONICET, Argentina; ³Universidade Federal de Minas Gerais

Many different names are used in the literature to indicate ephemeral lakes in arid regions. Playa lake is one term quite often used for this propose and refers to lowland areas in closed basins where moisture leads to the development of a lake during a timeframe of 25 up to 50% of the year. The playa lake level variations can generate an irregular distribution of the clastic facies, as well as the deposition of evaporite salts within the lake and on its margins. Sanfranciscana Basin corresponds to a Phanerozoic succession which overlays the intracratonic Basin of São Francisco, and shows a complex set of sedimentary rocks, many of those, deposited under dry circumstances. With the purpose of reconstruct the temporal evolution of a dry system, methods of facies analyses were applied to the study of Areado Group of Sanfranciscan Basin (Minas Gerais State, Brazil). The studied sedimentary succession is 70 m thick and consists predominantly of siliciclastic rocks, with some evidence of evaporite deposits. We described eight lithofacies that constitute four facies associations: ephemeral lake (playa lake), saline mudflat, unconfined flows and aeolian dune fields. The first three facies association corresponds to the Quiricó Formation and the latter to the Três Barras Formation. Subaqueous facies (sandstone with pseudomorphs of calcite after calcium sulfate, laminated mudstone with mud cracks, laminated sandstone and cross-laminated sandstone) often appear interbedded with facies of unconfined flows (tabular beds of massive sandstone). The depositional area of the Areado Group was probably located in the distal part of distributary fluvial systems or alluvial fans. The ephemeral lake was periodically dry and flooded. These conditions provoked the formation of thin salt efflorescent crusts on the dried lake surface that formed characteristic facies constituted of irregular and discontinuous laminae of sandstone and mudstone. The Quiricó Formation was formed in a shallow ephemeral lacustrine system periodically subjected to drying. Along the vertical succession the facies analysis revealed progressive decreasing of the subaqueous deposits, suggesting a progressive aridification of the basin. The large aeolian dunes system, which is represented by the overlain Três Barras Formation, testifies the complete disappearance of the lake system.

KEYWORDS: PLAYA LAKES, AEOLIAN SYSTEM, AREADO GROUP