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ABSTRACT BOOK

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Dinoturbation structures from the Aptian of Araripe Basin, Brazil, as tools for stratigraphic correlation

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Terrestrial environments of the Brazilian Cretaceous basins sometimes are characterized by high-energy and oxidizing conditions, that tend to prevent the fossil preservation and organic matter accumulations, limiting their biostratigraphic and paleoenvironmental interpretations. The use of trace fossils in this context become important for understanding these ecosystems, and also, intra-basinal stratigraphical correlation by identification of key-beds. During the Aptian (local Alagoas Stage), in the Araripe Basin, a terrigenous clastic to evaporitic succession not only bear local economic resources, but above all consist in a key-area for understanding the final stages of the tectono-stratigraphic evolution in the adjacent Brazilian continental margin basins. The analysis of the dinoturbation recently found in the Araripe Basin presents a special importance to the correlation of subaerial (omission) surfaces throughout the basin. Dinoturbation affects deeply the underlying layers as sub-cylindrical structures ranging in length from 35-100 cm and in depth from 30-50 cm. They are found in fine grained sandstones interbedded with mudstones of the Rio da Batateira Fm, interpreted as clastic lake shores, and in calcimudstones of the Crato Fm, in flooding areas of alkaline lakes. Temporary subaerial exposure of these scenarios allowed them to suffer dinoturbation. The pressure during the contact of a dinosaur autopodia and the substrate, led to the origin of load structures with successive laminae deformation. Preservation of tracks with anatomical details are controlled by the grain-size, consistency and plasticity of the substrate and by its burial rate (Avanzini, 1998), and the absence of such details in the casts found in the Araripe Basin, suggest high water content enhancing plasticity and modifying consistency of the substrates (Carvalho et al., 2018). Dinoturbation structures observed as cross section casts are generally scarcely documented, and it allows the understanding of environmental changes from terrigenous to carbonate lake scenarios that are so peculiar in this sedimentary succession. Their regional distribution also allows the identification of basinal correlation surfaces by the analysis of the spatial and temporal distribution of the biota in association to its paleoenvironments.

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