

Paleontology of the Parnaíba and São Luís basins, NE Brazil: Paleobiological reconstructions

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Geological history encompasses the interaction of geological and biological phenomena with the reconstruction of ancient ecosystems. These are correlated with the successive position of the continent, climatic variations and the biogeographic history of the northern and southern hemispheres. The Parnaíba sedimentary basin, situated in an epicontinental area, shows ancient fauna and flora indicative of continental and marine alternations throughout the Phanerozoic that make possible stratigraphic analysis of sea level changes. The Silurian, Devonian and Carboniferous marine fauna appear as biogeographic provinces at the western margin of South America, showing a connection with the Pacific proto-ocean. Lower Carboniferous flora and Permian terrestrial fauna contain genera that are endemic or macroevolutionary. These processes showed paleolatitude temperatures that increased in the Permian to those suggestive of tropical paleolatitudes, and climatic conditions that stimulated biodiversity. In the Cretaceous the fauna of the eastern Brazilian margin may be correlated with the western coast of Africa, related to the development of the South Atlantic and the evolution of the continental margin. In the Aptian/Albian, there occurred as a biological event on a regional scale, the appearance of fish fossils with new genera demonstrating a high incidence of macroevolutionary processes. In Aptian times sedimentation in the Parnaíba Basin ceased. Sedimentation at the end of the Cretaceous was restricted to the marginal basin of São Luís. The Cenomanian fossils are marine invertebrates, fish, reptiles, plants and dinosaur footprints. The Cainozoic contains Tertiary fauna and flora, Pleistocene mammals and cave paintings made by primitive man.