



New insights into Gondwana paleogeography based on palinological data from Morro do Chaves Formation (Sergipe-Alagoas Basin, Brazil)

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The Sergipe-Alagoas basin (NE Brazil) has been widely studied in the frame of oil exploration, because it displays the most complete exposition of the stratigraphic sequences from the basins of the Brazilian continental margin. In this context, the aim of this work is to present the results of the bio-stratigraphic and paleo-environmental analysis of Morro do Chaves Formation (Lower Cretaceous), in Alagoas Sub-basin, part of the transitional section situated between the rift phase and restricted marine environment associated with the South Atlantic ocean opening. The material was analyzed from the palynological point of view and was collected in the InterCement quarry, located in São Miguel dos Campos, State of Alagoas. From 17 outcrop rock samples collected, nine had palynological content; among these only six were considered for biostratigraphic analysis purposes. In addition to outcrop samples, 28 samples were processed from four core drill. The paleoenvironmental analysis was based on the palynological content of the collected samples and on the paleontological and geological information available. The studied sedimentary package corresponds to carbonate and fine siliciclastic deposits, with approximately 70.0 m in thickness. The unit in question is formed by carbonatic "coquinóides" rocks interspersed with shale levels of dark green color. Palynofloristic assemblages were recuperated between 5.0 m and 70.0 m of the outcropping section. In the recovered material it was possible to identify 9 kinds of spores and 8 kinds of pollen grains, and two genera of fungi. Due to the degree of preservation of the material, age was established by the occurrence of *Dicheiropollis etruscus* specimens, which has enabled the recognition of the *Dicheiropollis etruscus* palinozone (upper Barremian). In microscopic observations under fluorescent light some algal vesicles components were also recognized and classified as possible algae of the Prasinophyceae class, indicating predominantly marine environment, which together with the identification of organisms classified as *Scenedesmus* sp., allows the recognition of an aquatic environment. Moreover, the occurrence of a palinoforaminifer specimen in a sample strengthens the argument of the marine character related to these deposits. The amorphous organic matter present in the analyzed material shows high degree of fluorescence at some levels, which usually results of marine algal degradation. These results support a first attempt to paleoenvironmental and paleogeographic reconstruction for Morro do Chaves Formation. The occurrence of marine elements in these Neocomian intervals, together with previous paleontological data, can be related to the input of "Tethyan waters", coming from the Mid-Atlantic region to the Gondwanic continental crust through half grabens, which have acted as "sea ways".