

Oxygen Isotopic and Sporomorph Assemblage Trends of the Cenomanian-Turonian Section of Potiguar Basin, Brazilian Equatorial Margin: a Paleoclimatic Response.

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An integrated stratigraphic analysis (sedimentology, well logging, micropaleontology, geochemistry and seismics) of the middle Cenomanian-lower Turonian section was carried out in seven boreholes of the Potiguar Basin (NE Brazil), which permitted the establishment of a sequence stratigraphic framework. Geochemical analyses (carbon and oxygen isotopes and total organic carbon) were carried out on cuttings and core samples from two boreholes. These wells present the thickest upper Cenomanian shale sections in the basin, and yield a scarce calcareous benthic microfauna.

Despite of their variable isotopic values the Cretaceous oxygen data are generally ignored by researchers in contrast to carbon isotope data. Based on the observed trend of $\delta^{18}\text{O}$ values from the carbonatic fractions of the shales and carbonates, it was possible to infer a major climate change in the Potiguar Basin, from hot and wet conditions in the late Cenomanian to cooler and drier conditions in the early Turonian. This change is reflected in sedimentological features of the section pointing out to a significant reduction of terrigenous input to the basin, which resulted in a subsequent carbonate sedimentation. In addition, gradually cooler paleotemperatures modified the plant cover and the nature of land-derived sporomorph assemblages.

The typical geochemical anomaly (positive excursion of $\delta^{13}\text{C}$ and high TOC) of the global disoxic-anoxic event at the Cenomanian-Turonian boundary (CTBE) was not detected in the study area. However, there is micropaleontological evidence of a disoxic event close to the maximum flooding surface of the upper Cenomanian-lower Turonian Sequence in distal offshore sites.