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Benthic foraminifera biofacies in Upper Cretaceous Ceará Basin (Mundaú Sub-basin)

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The Ceará Basin is located in the Brazilian equatorial coast, whose tectonic compartment gave rise to various sub-basins, such as the Mundaú Sub-basin, in the easternmost region. The micropaleontological work carried out in this area involves detailed analyses of foraminifera of the Cretaceous marine section (upper Santonian–Maastrichtian). A composite sedimentary column of 1200 m from two well sections, yielding abundant and well preserved microfossil assemblages, was studied.

A great number of benthic (calcareous-hyaline and agglutinated) and planktic foraminifera species is recorded. Paleoecological analyses confirm the presence of abundant and diversified assemblages, whose morphogroups, mainly composed by benthic foraminifera, allow to characterize eight biofacies. These contribute to the paleoenvironmental reconstruction of the basin, inferring paleobathymetric oscilations that range from middle neritic to middle bathyal settings.

The integrated biostratigraphic (planktic foraminifera and calcareous nannofossils) and paleoecological interpretation indicate that the Upper Cretaceous section can be divided into lower, middle and upper sub-units. Each sub-unit is bounded by unconformities, as evidenced by biostratigraphic hiatuses, and characterized by abrupt changes in the microfossil assemblage composition and in their corresponding paleobathymetry.