

NEOGENE CALCAREOUS NANNOFOSSILS FROM THE VEMA SEACHANNEL (DSDP - LEG 39, SITE 518 - RIO GRANDE RISE) - SOUTHWESTERN ATLANTIC OCEAN: BIOSTRATIGRAPHY AND PALEOCEANOGRAPHY

Gatto, A.L.M.¹; Pedrosa, F.A.²; Alves, C.F.¹; Wanderley, M.D.¹

¹Núcleo Acadêmico de Nanofósseis Calcários da Universidade Federal do Rio de Janeiro (NANNO/UFRJ);

²Laboratório de Geologia Sedimentar e Ambiental da Universidade Federal de Pernambuco (LAGESE/UFPE)

ABSTRACT: The Neogene is marked by changes in the oceanic circulation, such as the closure of the Isthmus of Panama, ceasing the water mixing between the Pacific and the Equatorial Atlantic Ocean, consequently forming the Gulf Stream and the Messinian salinity crisis which ended with the reopening of the Strait of Gibraltar, when the Atlantic rapidly filled up the Mediterranean basin in what is known as the Zanclean flood. A disruptive event in the Middle Miocene is highlighted, where increased production of Antarctic Bottom Water (AABW), additional production of North Atlantic Deepwater (NADW) and the fixation of CO₂ from atmosphere were reported as causes for a global cooling, expanding the Eastern Antarctic Ice Sheet (EAIS). The aseismic elevation of the Rio Grande Rise acts as a topographic barrier for AABW from the Argentine Basin to the Brazil Basin, but this input is realized by the Vema and Hunter Seachannels. Sixteen samples of calcareous ooze and terrigenous mud from Leg 39, Site 518 were obtained through hydraulic piston core by the Deep Sea Drilling Project (DSDP) on the Vema terrace. Slides were prepared for each sample through the standard decantation method for calcareous nannofossils. Qualitative analyzes were conducted through petrographic microscopy and scanning electron microscopy, where 75 taxa were identified and photographed. In quantitative analyzes, 300 specimens were counted per sample. Six biozones (NN16 - *Discoaster surculus*, NN15 - *Reticulofenestra pseudoumbilicus*, NN14 - *Discoaster asymmetricus*, NN11 - *Discoaster quinqueramus*, NN6 - *Discoaster exilis*, NN5 - *Sphenolithus heteromorphus*) and one subzone (NN11b) were detected. Two hiatus were identified. The first one between the Serravalian and Messinian stages, suppressing the Tortonian. The second hiatus was registered between the Messinian and Zanclean stages, suppressing the Miocene – Pliocene Boundary. High relative abundance values were detected throughout the interval for *discoasterids* and *reticulofenestrids*, which associated with the occurrence of *Pontosphaera* spp., *Syphosphaera* spp., *Syracosphaera* spp., and representative values of *Calcidiscus leptopus* group taxa, could indicate the predominance of tropical K-strategist assemblages, also suggesting stable and oligotrophic conditions. SEM images indicated moderate to high levels of etching (Zanclean and Piacenzian stages), low to moderated overgrowth (Zanclean stage) and moderate to high overgrowth (Serravalian to Messinian stage) based on placoliths and *Discoasters* ultrastructure. Different preservational morphotypes of *broweri*-like *Discoasters* and *Discoaster deflandrei* were found all through the Neogene section, as well as high diversity of *Reticulofenestra* spp., sometimes showing intraspecific morphological variations.

KEYWORDS: CALCAREOUS NANNOFOSSIL; BIOSTRATIGRAPHY; RIO GRANDE RISE