

Biostratigraphy and palaeobiogeographic inferences from calcareous nannofossils in the UFRJ-2-LRJ-01-SE core, Sergipe-Alagoas Basin, Brazil

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The cored well UFRJ-2-LRJ-01-SE, drilled in the Sergipe-Alagoas Basin, Brazil, contains one of the best and most complete Middle Cretaceous recovered sections in all of South America (Silva, Jr. et al., 2019; Valle et al., 2019a, b). This work presents a biostratigraphic framework and some palaeobiogeographic considerations based on the calcareous nannofossils from that well. A total of 78 samples were analysed through the core, allowing the recognition of 11 biostratigraphic intervals (Zones BC26–UC7, Late Albian–Early Turonian). The Albian–Cenomanian boundary was placed at a depth of 328 m, based on the tops of *Braarudosphaera africana*, using a local zonation. The reworked Aptian species *Nannoconus quadriangulus* and *N. troelsenii* were recorded in the lower part of the section. The absence of index fossils between Zones UC0/BC27b and UC1 was due to tectonic activity (Valle et al., 2019), suggesting a stratigraphic break or unconformity. The nannofossil assemblages showed great affinity with other coeval sections in the Tethyan province. The occurrence of a species with a boreal affinity (*Sollasites horticus*) in the Late Albian–Late Cenomanian interval may be related to an increased effectiveness of oceanic currents from the central Atlantic to the South Atlantic. Beginning in the Late Cenomanian, there was an upward decrease in nannofossil taxa with Tethyan affinities (e.g. *Nannoconus*), suggesting the development of less restrictive oceanic conditions. The absence of species with austral affinities may be related to less effective ocean currents coming from the southern part of the South Atlantic. In fact, the influence of palaeogeomorphic obstacles, such as the Rio Grande Rise–Walvis Ridge, may have reduced the ocean circulation pattern, at least until the earliest Turonian.

References

- Silva Jr., R.P., Rios-Netto, A.M., Valle, B., Silva, S.C.P., Borghi, L. & Abbots-Queiroz, F. In press. Middle Cretaceous calcareous nannofossils from the cored well UFRJ-2-LRJ-01-SE, Sergipe-Alagoas Basin, Brazil: new biostratigraphy and paleobiogeographic inferences. *Cretaceous Research*.
- Valle, B., Dal'Bó, P.F., Mendes, M., Favoreto, J., Rigueti, A.L., Borghi, L., Mendonça, J.O. & Silva Jr., R. 2019a. The expression of the Oceanic Anoxic Event 2 (OAE2) in the northeast of Brazil (Sergipe-Alagoas Basin). *Palaeogeography, Palaeoclimatology, Palaeoecology*, **529**: 12-23. <https://doi.org/10.1016/j.palaeo.2019.05.029>
- Valle, B., Dal'Bó, P.F., Mendes, M., Favoreto, J., Rigueti, A.L., Borghi, L. & Silva Jr., R. 2019b. Stratigraphic evolution of a Brazilian carbonate platform during the Cretaceous: the late Albian–early Turonian of the Sergipe–Alagoas Basin. *Facies*, **65**(91): 1-17. <https://doi.org/10.1007/s10347-018-0543-2>