

Upper Cretaceous calcareous nannofossil biostratigraphy and paleoceanography from Tethyan sediments of Oman

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The Late Cretaceous Fiqa Formation in northern Oman yields a rich and diverse calcareous nannoplankton assemblage, and seven nannofossil biozones can be identified using the Burnett (1998) UC scheme for the Tethyan realm that spans the early Coniacian to late Campanian (UC9 to UC15). The current biostratigraphic study includes core samples, sidewall core samples, and ditch cuttings from five hydrocarbon exploration wells from northern to southern Oman. This provided a more accurate date for the Fiqa Formation and improved understanding of the history of the Aruma foreland basin and its sequence stratigraphy. Integration of nannofossil and microfossil data from one well indicated that there were systematic fluctuations of climate, sea level, and nutrient supply. The planktonic/benthic ratio of foraminifera and the overall microfossil assemblages indicate open-marine conditions

with intervals of shoaling while the submarine fan system of the lower Fiqa Formation was deposited. The nannofossil assemblages indicate a long-term shift from more oligotrophic, warm water to more eutrophic, shallower and colder ocean waters. This may coincide with an overall cooling trend and general shallowing of the Aruma basin approaching the Maastrichtian. In the future, additional wells will be examined across Oman that will be followed by an analysis of the evolutionary trends of some Late Cretaceous taxa and isotopic and foraminiferal analyses.

References

- Burnett, J.A. 1998. Upper Cretaceous. *In*: P.R. Bown (Ed.). *Calcareous Nannofossil Biostratigraphy*. British Micropalaeontological Society Publication Series. Chapman and Hall/Kluwer Academic Publishers, London: 132–199.