

CHANGING PALEOCEANOGRAPHIC CONDITIONS, THE TROPHIC RESOURCE CONTINUUM, AND THE RESPONSE OF THE FORAMINIFERAL COMMUNITIES: A CASE STUDY FROM THE CRETACEOUS OF THE SERGIPE BASIN, BRAZIL

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Foraminiferida diversity patterns are a direct response to paleoceanographic conditions and can reflect long-term cumulative changes produced by seasonal cycles in sea-level, sediment type, redox conditions and rates of food supply. Diversity patterns are, therefore, particularly sensitive recorders of variations in the "trophic resource continuum" (T.R.C.), i.e., to the entire conceivable range of available resource levels at a specific time and depositional setting.

The number of benthonic Foraminiferida species recovered from the upper Aptian-Maastrichtian succession of the Sergipe Basin, in northeastern Brazil, progressively decline from the middle Albian to the early Coniacian, with peak diversities in the Late Aptian-Early Albian, through a series of small radiation/diversification "blooms" by k-selection. These are then determined by a reduction of species via extinction events and/or environmental turnovers (T.R.C. contraction, decreasing spectrum of nutrient heterogeneity, increasing mesotrophic/eutrophic conditions, selected trophic groups and r-selected biota).

A sharp increase in diversity occurred during late Coniacian-Maastrichtian times, with a maximum in the early Campanian (paleo-bathymetric maximum of the basin). Long-term, high stands of sea level during the Late Cretaceous, coupled with widespread oxic pelagic conditions (expanded T.R.C., high spectrum of nutrient heterogeneity, widespread oligotrophic conditions in outer neritic oceanic settings, and complex trophic structures), contributed to create niches and promote evolutionary diversification through k-selection, with the development of polytaxic Foraminiferida biota.

TERTIARY SEA LEVEL CHANGES ON THE ICELAND-FAEROE RIDGE

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The Iceland-Faeroe Ridge was formed in Paleocene and Eocene during the opening of the Northeast-Atlantic. It prevented the free exchange of water masses between the Iceland Basin and the Norwegian-Greenland Sea in the Early Tertiary.

The subsequent thermal subsidence of the Iceland-Faeroe Ridge is documented in the sedimentary structures investigated by high-resolution reflection seismic measurements. The correlation with geological epochs is documented in *Journal of Marine Research*, vol. 53, leg 38, where all sequences except Miocene have been observed. This prominent hiatus is mapped at the upper part of the ridge while a sedimentary sequence of probably Miocene age has been found further downslope to the Norwegian-Greenland Sea.

The Eocene sediments are characterized by a high degree of transparency. Nevertheless, some internal reflectors can be recognized. A series of parallel reflectors is visible above the basaltic basement, partly overlain by foreset beds. This might indicate the onset of sea-level changes at the northern flank of the Iceland-Faeroe Ridge already during Eocene.