

Tropical climate, ecology and hydrology during the Paleocene-Eocene Thermal Maximum

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The Paleocene-Eocene Thermal Maximum (PETM) plays a key role in the paleoclimate research, as it represents an imperfect analogue to future warming. The PETM was a geologically brief (~170 kyr) episode of extreme global warming. A pronounced negative carbon isotope excursion (CIE) in sedimentary components and deep sea carbonate dissolution reflect massive and rapid carbon input at that time. Documentation of this period is extensive for the high and mid latitudes, but the tropics remain virtually untouched. However, for the full understanding of PETM climates the tropical end member needs to be quantified in terms of temperature and hydrology. We have studied an Upper Paleocene – Lower Eocene shelf section from Nigeria deposited at equatorial latitudes. Carbon isotope analysis and palynological analysis in the form of dinoflagellate cyst assemblages have been conducted and biomarker analysis has been started. Carbon isotope analysis on total organic carbon (TOC) revealed an excursion of ~-6‰. Dinoflagellate cyst biostratigraphy confirms that this CIE represents the PETM. Shifts in species composition in the preliminary dinocyst assemblage data set are interpreted in terms of temperature, salinity, sea level, eutrophication and stratification. Representatives of the dinocyst genus *Apectodinium* are present throughout the section and abundant before the CIE. However, during the CIE this genus is surprisingly absent, while it dominates all other PETM assemblages studied so far. Its absence may be due to extreme fresh water input or extreme tropical temperatures. Finally, we will present preliminary organic biomarker analysis, including TEX₈₆ paleothermometry.

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