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Response of foraminiferal faunas to paleoceanographic changes in the Gulf of Guinea from the late Paleocene to the Initial Eocene Thermal Maximum (IETM)

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Foraminiferal assemblages from Shagamu in southwestern Nigeria were investigated to gain stratigraphic and environmental data from epicontinental paleoenvironments of Late Paleocene to earliest Eocene age (planktic foraminiferal zones P4b to P5). The Paleocene-Eocene boundary is indicated by a distinct $\delta^{13}C$ excursion. Exceptionally well preserved calcareous microfossils in the unweathered portion of the investigated section result in reliable stable isotope data, ranging approximately from -4 to -1‰ $\delta^{13}C$, -1.5 to -2.5‰ δ18O for benthic foraminifera, or -1 to 4‰ δ13C, around -3.5‰ δ18O for planktic foraminifera. Paleowater-depths changed from 50 to 300 m with the maximum during the P4b/P4c-transition. Surface water paleotemperatures calculated from δ18O values vary around 29^0C without a prominent trend. Bottom water temperatures however increase from 19 to 23^0C already during zone P4b, coincident with the appearance of *Gavelinella* and *Nonionella*. Benthic and planktic foraminiferal concentration was very low (5 to 10 individuals/gram sediment), pointing to oligotrophic conditions during deposition. The generally good oxygenation of the bottom water was interrupted by periods of reduced oxygenation during zone P4c and oxygen deficiency during the IETM. Benthic assemblages changed from *Gyroidinoides/Lenticulina* to *Gavelinella/Nonionella*-associations during the period investigated.

Canonical correspondence analyses of benthic and planktic assemblages point to bottom water temperature and type of food as the most important factors for the distribution of benthic species, or amount of food and temperature of the lower mixed layer for planktic genera.

The early increase of the bottom water temperature is in contrast to deep sea sections, which show almost contemporary increase of bottom and surface paleotemperatures. Our results may indicate differential paleoceanographic processses on tropical shelves and deep seas during the latest Paleocene.