



Cenomanian/Turonian paleotemperatures of the tropical Atlantic Ocean (ODP Leg 207, Demerara Rise)

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Cenomanian to Turonian sediments on Demerara Rise (Ocean Drilling Program Leg 207, 400 km north off Surinam, western tropical Atlantic) were recovered from four different sites along a depth transect (3192 – 1899 mbsl). All four sites are characterized by organic-rich sediments including Oceanic Anoxic Event 2 (OAE 2). The OAE 2 interval is characterised by very high TOC values of up to 29 % and can be correlated using high-resolution $\delta^{13}\text{C}_{org}$ -records.

Oxygen and carbon isotope measurements of pristinely preserved, glassy foraminifera from the deepest Site 1258 indicate bottom-water temperatures between 16 and 22 °C and stable surface-water temperatures around 31 °C before and after OAE 2. Generally, temperatures and/or salinities at the sea-floor are fluctuating strongly and show a significant cooling before OAE 2. In the middle of the OAE 2 positive carbon isotope excursion bottom-water temperatures increase up to 29 °C, reaching values nearly similar to surface-water temperatures. This warming of bottom waters points to an almost complete breakdown of the thermohaline stratification or the occurrence of a different bottom-water mass during OAE 2. After the event, bottom-water temperatures decrease significantly but are ~ 1 °C higher than the pre-excursion temperatures.

Stable isotopic values from the early to middle Cenomanian of Site 1260 reflect stable but high bottom-water temperatures of 22-24 °C with slightly decreasing temperatures through the middle Cenomanian. Several short-term fluctuations in bottom-water temperature and/or salinity indicate significant changes in Cenomanian paleoceanography and paleoclimate of the tropics. An increase in carbon isotope values of 1.5 permille in the middle Cenomanian is interpreted to reflect the Mid-Cenomanian Event (MCE).

Oxygen isotope values, however, indicate no significant changes of bottom-water temperature or salinity during this event

Further investigations on the benthic foraminiferal stable isotopes prior and after OAE 2 in Site 1260 and the Cenomanian of Site 1258 will provide more insights into OAE formation and paleoceanography of the Cenomanian and Turonian in the core of the tropics.