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Stable organic carbon isotope stratigraphy across Oceanic Anoxic Event 2 of the western Tropical Atlantic (Leg 207, Demerara Rise)

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Ocean Drilling Program (ODP) Leg 207 recovered thick successions of Late Cretaceous organic rich strata along a depth transect of 5 sites (3192 – 1899 mbsl) on Demerara Rise, 400 km north off Surinam, western tropical Atlantic.

We present high resolution organic carbon isotope and TOC records from four sites oriented along a NW striking depth transect, which span the Cenomanian-Turonian boundary interval (CTBI) including the Oceanic Anoxic Event 2 (OAE 2). These records represent the first high-resolution carbon isotope records across OAE 2 from the South American margin of the tropical Atlantic. Age significant fossils are very scarce within Demerara Rise black shale sediments and therefore, the main purpose of this study is to develop a detailed carbon isotope stratigraphy. This gives us the possibility to correlate the CTBI across the Demerara Rise depths transect. All four sections studied document a 6 permille increase of $\delta^{13}C_{org}$-values at the base of the CTBI which is followed by an interval of elevated $\delta^{13}C_{org}$-values and a subsequent decrease. Above the CTBI carbon isotope values are 1 permille heavier than the pre-excursion ones. The shallowest Site 1261 shows the most expanded and complete CTBI section on Demerara with a thickness of the carbon isotope excursion of 9 m. Site 1258 contains the second expended CTBI succession (thickness of 4 m). However, a hiatus in the upper part of the excursion interval occurs. A very condensed CTBI succession of only 1.5 m occurs at Site 1260, the site with the shallowest present water depth. Site 1259 does not lie in the shallowest present water depth, however,

black shale deposition here started near the Cenomanian-Turonian boundary, indicating that this site must have been the shallowest of the investigated section in the mid-Cretaceous.

Furthermore we tie our records to biostratigraphically well defined sections in the Western Interior Basin (Pueblo, USA), boreal shelf seas (Eastbourne, England) and western Tethys (Gubbio, Italy and Oued Mellegue, Tunisia). A correlation of the Demerara Rise sites with these sections shows that even the details of our records are seen in the $\delta^{13}C_{carb}$- and $\delta^{13}C_{org}$-records elsewhere. Therefore, our high-resolution organic carbon isotope records supply an important stratigraphic base for subsequent paleoceanographic studies on Late Cenomanian to Early Turonian sediments from Demerara Rise.