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Calcareous nannofossil and planktic foraminiferal biostratigraphy of the Paleocene-Eocene interval in the Bay of Biscay

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The Paleogene represents one of the most prominent long-term climate transitions in Earth history. The view of a Paleocene/early Eocene “greenhouse” is supported by numerous paleontological, isotopical and sedimentological findings suggesting warm temperatures also in subpolar regions. Polar ice-sheets were either small or did not exist. Bottom water temperatures inferred from benthic foraminiferal δ^{18}O were substantially higher than in modern oceans. The Paleocene/Eocene warmth culminated in the Early Eocene Climatic Optimum (EECO; 55-51 Ma), and is subsequently followed by a long-term cooling, which finally led to the Oligocene “icehouse”.

As a first step towards a study of the long-term climate variability as reflected by surface water conditions based on calcareous nannofossils and planktic foraminifera I present a calcareous plankton biostratigraphy for the late Paleocene to the Middle Eocene at DSDP Site 401. This site is situated in the Bay of Biscay and represents one of the most northern sites which provide Paleogene carbonates. Other DSDP/ODP sites which have previously been studied for this interval are either from the equatorial oceans (Shatsky Rise, Allison Guyot, Demerara Rise) or the southern hemisphere (Maud Rise, Walvis Ridge). Therefore DSDP Site 401 will give us a more complete picture by considering also the northern hemisphere. This site consists of a continuous sedimentary record through the study interval and provides well preserved calcareous nannofossils and planktic foraminifera.