

ABSTRACT

In this study, we present evidence of a Paleocene–Eocene Thermal Maximum (PETM) record within a 543-m-thick (1780 ft) deep-marine section in the Gulf of Mexico (GoM) using organic carbon stable isotopes and biostratigraphic constraints. We suggest that climate and tectonic perturbations in the upstream North American catchments can induce a substantial response in the downstream sectors of the Gulf Coastal Plain and ultimately in the GoM. This relationship is illustrated in the deep-water basin by (1) a high accommodation and deposition of a shale interval when coarse-grained terrigenous material was trapped upstream at the onset of the PETM, and (2) a considerable increase in sediment supply during the PETM, which is archived as a particularly thick sedimentary section in the deep-sea fans of the GoM basin. Despite other thick PETM sections being observed elsewhere in the world, the one described in this study links with a continental-scale paleo-drainage, which makes it of particular interest for paleoclimate and source-to-sink reconstructions.