



Paleocene-Eocene Thermal Maximum not a transient event for North Atlantic

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Rapid global warming 55 million years ago at the Paleocene-Eocene Thermal Maximum (PETM) has long been seen as a transient event. This event is accompanied by a rapid drop in carbon isotopes in most cores (carbon isotope excursion – CIE), followed by a slower recovery, with the entire CIE typically lasting between 150 to 200kyrs. This event is not transient in all cores, however. In Deep Sea Drilling Program (DSDP) Site 401, this event causes long-lasting changes in the isotopic content of the surface and thermocline dwelling foraminifera, far after the benthic foraminifera have recovered isotopically. Benthic foraminifera do show a recovery, but have a smaller overall excursion than the surface dwelling forms. This is most likely due to an expulsion of photosymbionts from the foraminifera, resulting in a bleaching event not unlike those seen in corals today. Unlike Ocean Drilling Program (ODP) Site 690, the color of the core and the mineral content also show no recovery. The lack of recovery in surface dwelling foraminiferal isotopes, color change, and mineral content indicate the North Atlantic was affected by this event long after other areas of the globe.