



Sedimentary markers of ocean plateau volcanism during the Cenomanian–Turonian Oceanic Anoxic Event

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The Cenomanian–Turonian transition (94 Ma) marked a major environmental and biotic crisis of the Cretaceous Period, featuring abrupt climate warming (with superimposed cooling pulses) and widespread marine anoxia/euxinia, from which it has been classed as an oceanic anoxic event (dubbed Cretaceous OAE 2). The cause of this event is widely believed to be linked to major volcanic activity during the emplacement of one or more oceanic plateaus (e.g., Caribbean Plateau, High Arctic Igneous Province). Because there are few radioisotopic dates for rocks on these ocean plateaus, demonstrating a precise coincidence between this volcanic activity and OAE 2 largely depends on utilisation of sedimentary proxies of volcanism in the stratigraphic records of the event. A globally recorded shift to unradiogenic osmium-isotope (specifically $^{187}\text{Os}/^{188}\text{Os}$ ratios) compositions is clearly indicative of enhanced ocean plateau volcanism at the onset of and during OAE 2, but other proxies have shown less clear trends. In this study, we present new geochemical data for a number of proxies for volcanism from sedimentary rocks of a near-shore shallow marine record of OAE 2 at Bass River (ODP Leg 174 AX, New Jersey, USA). This record represents a relatively rare example of a lithologically consistent (silty claystones) OAE 2 stratigraphic succession, allowing easier interpretation of geochemical trends. We find considerable variation in the studied proxies, and in some cases no indication of volcanism. These findings highlight the importance of eruption style and/or local marine conditions and sedimentological processes on many proxies of volcanism in records of OAE 2.