HIGH PRODUCTIVITY IN THE OPEN OCEAN DURING CRETACEOUS ANOXIC EVENTS

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Several events of widespread deposition of organic-carbon-rich marine sediments (black-shales), referred to as Oceanic Anoxic Events (OAEs), occurred in the middle of the Cretaceous (about 125-80 million years ago). High biological productivity and/or ocean stagnation have been invoked as possible causes for these widespread events. We have recorded high barite accumulation rates associated with OAEs in several deep-sea cores. This suggests elevated marine biological productivity as the major cause for the extensive organic matter accumulation. Oceanic productivity started rising before the initiation of OAEs and peaked during these events. The accumulation and good preservation of biogenic barite, which dissolves under extreme sulfate-reducing conditions, indicates that euxinic conditions were not prevalent in the deep ocean during the mid-Cretaceous. The increased productivity could have served as a negative feedback to reduce high atmospheric carbon dioxide concentrations.