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Palynological and geochemical characterization of Late Albian black shales from the “Amadeus segment

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The informal stratigraphic interval known as "mid"-Cretaceous (∼130-89 Ma; Barremian-Cenomanian) is characterised by enhanced preservation of organic matter in marine environments, resulting in the widespread deposition of black shales. The distribution of these organic-rich facies is somewhat confined to the Western Tethys and Atlantic intermediate- to deep-water settings. However, Corg-rich facies, preserved globally across the world are referred to as "Ocean Anoxic Events" (OAEs). Here the results of a high resolution (∼5 kyr) integrated stratigraphic analysis, including palynology and geochemistry, of the upper Albian "Amadeus segment" – part of the OAE1C –, from the Fiume Bosso section located in Central Italy, are presented. The studied interval consists of a rhythmical alternation of marly limestones, marls and black shales, previously shown to be related to precession and eccentricity forcing. The integration of palynological (dinoflagellate cysts, pollen and spores), inorganic and organic geochemistry, and stable isotope data provides new insights on the paleoceanographic conditions and the related paleoclimatic conditions leading to the preservation of organic matter across the black shales. Based on this integrated data set a model of alternating deposition of limestones, marls and black shales during different phases of the orbital cycles is presented.