

Surface water environments during the black shale deposition at Cenomanian-Turonian boundary, Cretaceous

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Among several black shales, one from the Cenomanian-Turonian stage boundary (CTB) at 93.5 Ma is characterized by extraordinarily high contents of organic carbon (up to 50 %), and it is often said to represent oceanic anoxic event 2. We have been investigating geological and geochemical signatures of the CTB black shale corrected in the northern Apennines, Italy. The conspicuous geochemical features of the black shale are;

- a) Isotopic composition of sulfate sulfur was increased about 7 per mil across the black shale (Ohkouchi et al., 1999), suggesting that the large amount of sulfur was removed from the oceanic system as sulfides during the black shale deposition.
- b) Nitrogen isotopic composition ranged from -2 to 0 per mil (Ohkouchi et al., 1997), suggesting most nitrogen was fixed through nitrogen fixation pathway.
- c) Hopanoids, derivatives of prokaryotic membrane lipids were found up to 240 micromol/gCorg (Ohkouchi et al., 1997), suggesting that prokaryotes largely contributed to the organic matter in the black shale.

In this presentation the author will present these data and discuss the surface water environments during the oceanic anoxic event 2.

(References)

- Ohkouchi, N., Kawamura, K., Wada, E., and Taira, A. (1997) *Ancient Biomolecules* 1, 183-192.
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