

Non-sulphidic anoxic conditions in the end-Early Triassic deep sea Non-sulphidic anoxic conditions in the end-Early Triassic deep sea

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This study focuses on an upper Lower Triassic (Spathian) to lowermost Middle Triassic (Anisian) section representing the central Panthalassic deep sea. Analysed organic carbon isotope ratio ($\delta^{13}\text{C}_{\text{org}}$) records from the section demonstrate that lower values in the Spathian increase by up to 6 ‰ at the Spathian – Anisian transition. This trend accords with the carbonate carbon isotope ($\delta^{13}\text{C}_{\text{carb}}$) record from shallow water carbonate sections. The end of the Early Triassic trough of $\delta^{13}\text{C}_{\text{org}}$ consists of black chert deposits sandwiched by black claystone beds in the study section. In these black-coloured beds and underlying siliceous claystone beds, higher concentrations of redox-sensitive elements, such as Mo and V, and coinciding low sulphide sulphur isotope ratios ($\delta^{34}\text{S}_{\text{sulphide}}$) and previously reported sulphur-bearing organic compounds are present, suggesting anoxic deep water. As enrichment factors of Mo are not higher than the typical sulphidic trend, these anoxic conditions did not become sulphidic. Oxygen-poor conditions coinciding with a carbon isotope trough have been also reported in late Early Triassic strata from shallow-water sections. These coincidences imply global environmental perturbations related to the delayed recovery of life after the end-Permian mass extinction.

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