

## 美濃帯の下部ジュラ系遠洋深海堆積岩に記録された海洋酸化還元状態の復元

### Reconstruction of oceanic redox conditions in the Lower Jurassic (Pliensbachian–Toarcian) pelagic deep-sea bedded chert sequence of the Mino Belt, central Japan

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The Pliensbachian-Toarcian interval in the Early Jurassic is characterized by a second-order marine mass extinction and remarkable worldwide palaeoenvironmental perturbations associated with the early Toarcian oceanic anoxic event (T-OAE). However, oceanic redox conditions and palaeoceanographic processes for redox sensitive elemental accumulation are unclear in the pelagic deep-sea realms of the Panthalassic Ocean. Here we show geochemical and multivariate statistical analyses in the pelagic deep-sea sedimentary rocks of the Panthalassic Ocean during the Pliensbachian-Toarcian. Three principal components (PC1, PC2, and PC3) in the redox sensitive elements explained 88.64% of the total variance. The PC1 represents the comprehensive redox variations, whose stratigraphic variations show euxinic-anoxic conditions across the Pliensbachian/Toarcian (Pl/To) boundary layer and the classical T-OAE. The PC2 depicts the sorption processes of Fe-Mn oxide minerals with transition elements, whose stratigraphic variations suggest few drawdowns of the transition elemental inventory after the Pl/To boundary layer. The PC3 delineates the active particulate shuttles by Fe (-Mn) oxide minerals, whose stratigraphic variations indicate the strong activation between the Pl/To boundary layer and the classical T-OAE. The statistical extraction of both the PC1 and the PC3 support the characteristic phenomena in the pelagic deep-sea realms of the Panthalassic Ocean under the relatively strong reductive conditions.