Palynology of the Early and Middle Jurassic and its evolution during the Sinemurian-Pliensbachian boundary event and the Toarcian Oceanic Anoxic Event (Sichuan Basin, China)

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Abstract

The continental Jurassic System is well developed in China with a large thickness. Extensive research has corroborated that many geological events initially investigated by marine records are also documented in these terrestrial successions, such as the Early Jurassic Sinemurian-Pliensbachian boundary event (SPBE) and the Toarcian Oceanic Anoxic Event (TOAE). Both of them are characterized by a negative carbon-isotope excursion in bulk organic matter and carbonate carbon, and are supposed to be associated with climatic changes and biotic turnovers. Here, we report palynology analyses of the Early and Middle Jurassic in the Sichuan Basin (South China) which demonstrate that there are at least four evolution stages, the spore *Osmundacidites* dominant stage, the spore *Cyathidites* and pollen *Classopollis* co-dominant stage, the pollen *Classopollis* dominant stage, and the spore *Cyathidites* revival stage respectively. Both of the Early Jurassic events, SPBE and TOAE are observed in the third evolution stage whose components seemingly experience slight fluctuations. We attribute the contradiction that the spore and pollen widely known as the climatic indicator fail to detect the climatic and environmental changes associated with these Early Jurassic events to an actuality that the homology between palynology and vegetation is ambiguous and extremely complicated.

Keywords: Classopollis, palynological evolution, continental successions, TOAE, Jurassic

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