Palynological changes across the Triassic/Jurassic boundary in the terrestrial basins in China

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Abstract

There are four large terrestrial basins in China during the period of the late Triassic epoch to the early Jurassic epoch. They are the Junggar basin and the Tarim basin in NW China, the Ordos basin in north China, the Sichuan basin in south China.
According to previous research, the deposition of the top Triassic system and the base Jurassic system is continuous in the Junggar basin and the Tarim basin. The palynological succession of Haojiagou section in the Junggar basin shows a gradual evolution from Triassic zone to Jurassic zone, except several spore peaks (including *Densoisporites scanicus*, *Densosporites crassus* and *Cyathidites* sp.) at the base Jurassic.

It is generally believed that there is a big gap between the Triassic and the Jurassic in the Ordos basin. The Fuxian formation, the first stratigraphic unit of Jurassic in the Ordos basin, yields palynological zone with abundant *Classopollis* but no Triassic relict such as *Taeniaesporites*, *Aratrisporites*, which indicates the age of the late Early Jurassic.

In the past, the contact between the Jurassic and the Triassic in the Sichuan basin was thought to be conformable. Recently, however, we found a minor gap at the contact. The Xujiahe formation, the top Triassic strata, yields diverse Triassic-diagnostic taxa, such as *Dictyophyllidites*, *Aratrisporites*, *Kyrtomisporis* and *Taeniaesporites*. The Ziliujing formation, the bottom Jurassic strata, contains high proportion of *Cyathidites* and *Classopollis*. The two palynological zones shows an abrupt change, which means, we think, there is a gap. This view was supported by the study of flora and carbon isotope. Coniopteris, a plant firstly appeared at the middle Early Jurassic, was found near the base of The Ziliujing formation. The curve of organic carbon isotope lacks the negative shift of the earliest Jurassic which has been found at the Haojiagou section, NW China, St. Audrie's Bay section, SW UK, and Hochalplgraben section, Austria.

So, palynology is a useful tool of stratigraphy correlation, even identifying a stratigraphic gap.

Keywords: palynology, terrestrial, Triassic – Jurassic boundary, China

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