ASTUDY OF THE LOWER TRIASSIC CYCLOSTRATIGRAPHY IN THE
WEST PINGDINGSHAN SECTION, CHAOHU, ANHUI PROVINCE

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As a GSSP (Global Stratotype Section and Point) candidate of the Induan-Olenekian boundary (Tong et al., 2003), the Lower Triassic of the West Pingdingshan Section has been extensively studied for biostratigraphy, carbon isotope stratigraphy, magnetostratigraphy and sedimentology (Tong et al., 2005). The Lower Triassic sequence is well defined by conodont and ammonoid zonations and is continuously exposed from the upper Changhsingian to the lower Olenekian at the section. Lithologically, the sequence appears to be a persistent rhythmic repetition of couplets composed of mudstone and limestone beds (Fig. 1). It is impossible not to notice the rhythmic bedding, and the consistency of bed thicknesses is characteristic of orbital forcing. Thus, the 44 m of strata from the uppermost Changhsingian to the lowermost Olenekian were carefully described and counted bed by bed in lithology and continuously sampled at intervals of 2 cm for magnetic susceptibility.

The cyclostratigraphic study of the Induan strata at the West Pingdingshan Section achieved the following results:

1. The bundles and bundle sets identified in lithology at the field outcrops are proved by the wavelet analysis of the magnetic susceptibility data, resulting in a 4-5:1 ratio between the cycles and subcycles. The spectral analysis of the magnetic susceptibility data shows that the first and second predominant cycles are 0.76 m and 3.41 m, respectively, coinciding with the lithologic and wavelet analyses. Thus, the cycles are believed to be a proxy of the orbital forcing Milankovitch cycles during the Triassic (Berger et al., 1994).

2. The Induan sequence at the West Pingdingshan section is composed of 12 cycles and 56 subcycles in lithology, and the same composition of cycles is presented by the magnetic susceptibility data according to wavelet analysis. The spectral analysis of the susceptibility data yields two predominant frequencies during the Induan, separate at 11.6 and 54.13. Provided these cycles reflect the Earth’s orbital eccentricity and precession, the age-range of the Induan would be 0.983-1.171 Ma. Supposing the Permian-Triassic boundary has an age of 252.6 Ma (Mundil et al., 2004), the Induan-Olenekian boundary defined by the conodont Neospathodus waageni at the West Pingdingshan Section is around 251.5 Ma.

3. The application of the sedimentary accumulation mode (Schwarzacher, 2000) indicates that the tectonic setting and deposition were constant in Chaohu throughout the Induan, so that it is a perfect sequence for various stratigraphic studies.

FIGURE 1. Lower Triassic cycles and stratigraphic sequence in the West Pingdingshan Section, Chaohu, Anhui Province, China
REFERENCES


