



The change of microbialite forms associated with different fossil assemblages during the Early Triassic transgression: implication for the evolution of shallow marine ecology in the aftermath of end-Permian mass extinction

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Widespread microbialites developed at the carbonate platforms around the Tethys Ocean from the very beginning of the Early Triassic transgression. However, the microbialite forms have significant variation both temporally and spatially, reflecting diverse shallow marine environments in the aftermath of end-Permian mass extinction. Here we present a succession of the evolving microbialite forms and associated biotic assemblages with the sea-level rise in Early Triassic from the section at Chongyang in South China. Microbialite forms evolved from stratiform stromatolites to a sequence of tabular thrombolites, followed by domical thrombolites that were overlain, in turn, by oolites. The stromatolites contain more remains of calcified cyanobacteria but less metazoan fossils than the thrombolites, reflecting more supersaturated seawater condition during the formation of stromatolites that was favourable for the calcification of cyanobacteria but stressed for metazoans. Metazoan fossils increase from the deposition of tabular thrombolite and become more diverse within the domical thrombolite interval, reflecting increasing biodiversity with deepening of seawater. We suggest that with the development of domical thrombolites more complex seafloor relief created varied niches between and within the domes that harboured more ecologically diverse communities.