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A Distinctive Calcimicrobial Horizon Developed Across the Eastern Tethys and Panthalassa Following the End-Permian Extinction

A distinctive calcimicrobial facies composed of micritic globular and tufted fossils similar to *Renalcis* developed in shallow-marine carbonate platforms across a vast area of the eastern Tethys and Panthalassa immediately after the end-Permian extinction. The calcimicrobial facies occurs within the *Hindeodus parvus* zone in the Nanpanjiang Basin (Guizhou and Guangxi) and Sichuan basin of southwest China and in southern Japan. In the Nanpanjiang Basin the Permo-Triassic boundary event (PTB) is at the top of an Upper Permian skeletal packstone containing diverse, open-marine fauna bearing *Palaeofusulina*, and coincident with an abrupt change to calcimicrobial framestone lacking Permian macrofossils. The biostratigraphic PTB occurs at the first appearance of *H. parvus* within the basal meter of the conformable calcimicrobial framestone. The framestone is 7-15 m thick and includes interbeds of grainstone with thin-shelled bivalves, echinoderms, and brachiopods. The overlying strata are microgastropod packstone followed by thin-bedded lime mudstone. The onset of the calcimicrobial framestone, the PTB event, is marked by a negative shift in $\delta^{13}\text{C}_{\text{org}}$ and $\delta^{13}\text{C}_{\text{carb}}$ and a drop in TOC. Depleted $\delta^{13}\text{C}_{\text{org}}$ and $\delta^{13}\text{C}_{\text{carb}}$ and low TOC content persisted throughout the *H. parvus* zone. The widespread occurrence of the calcimicrobial facies, its preference for shallow water, and the synchronous global isotopic shift suggest that it may have resulted from a widespread oceanic event rather than being an ecological (disaster taxa) response to the extinction. The recurrence of similar calcimicrobial facies in the Olenekian suggests that detrimental environmental conditions associated with the extinction may have persisted until the end of the Early Triassic.