

LITHO- AND CHEMO-STRATIGRAPHY OF THE LOWERMOST CAMBRIAN AT HONGJIACHONG, YUNNAN, SOUTH CHINA

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The diversity of SSFs increased dramatically in the earliest Cambrian from the primitive assemblage composed of simple tubular forms (anabaritids, protoconodonts, etc.) to that dominated by more complex cap-shaped ones (molluscs, etc.). In order to constrain the horizon of this major diversification in high resolution, we analyzed the litho- and $\delta^{13}\text{C}_{\text{carb}}$ stratigraphy of the lowermost Cambrian, i.e. Zhujiaping Fm (Daibu Mb, Zhongyicun Mb, Dahai Mb) and Shiyantou Fm, at Hongjiachong in the Chengjiang area, utilizing a ~120 m-long drilled core sample. The diversified cap-shaped SSF assemblage first appeared at the middle horizon of the phosphatic Zhongyicun Mb (Jiang & Chen, 2008). The measurement of $\delta^{13}\text{C}_{\text{carb}}$ for 55 samples from the studied interval identified two negative $\delta^{13}\text{C}_{\text{carb}}$ shifts (N1 and N2) and one positive shift (P1); i.e. N1 from -1 ‰ to -5 ‰ in the upper Daibu Mb, N2 from -2 ‰ to -6 ‰ in the middle-upper Zhongyicun Mb, and P1 from -6 ‰ to -1 ‰ in the uppermost Zhongyicun Mb. The $\delta^{13}\text{C}_{\text{carb}}$ profile at Hongjiachong confirmed that the major SSF diversification had occurred in the middle of the N2 interval. After recording a negative peak in the uppermost Zhongyicun phosphorite, the $\delta^{13}\text{C}_{\text{carb}}$ values started to increase to record the P1 interval, that can be correlated with the global signal detected immediately below the sub-Tommotian unconformity. The major SSF diversification likely occurred in the Nemakit-Daldynian, particularly during the negative $\delta^{13}\text{C}_{\text{carb}}$ excursion (N2), at least in Yunnan, rather than during the positive $\delta^{13}\text{C}_{\text{carb}}$ shift as previously regarded. This diversification, probably with biomass enlargement, possibly increased the input of isotopically light carbon into the ocean by consuming the DOC pool.

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