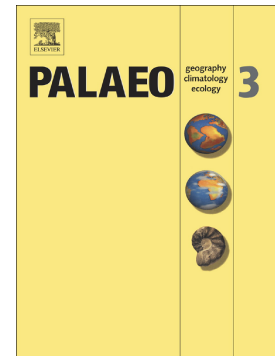


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Stepwise oxygenation of early Cambrian ocean controls early metazoan diversification

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Abstract: The Ediacaran–Cambrian transition is a critical period in Earth history, during which both marine environment and life experienced drastic changes. It was suggested that pervasive oxygenation and associated chemical changes in the ocean have potentially triggered the rapid diversification of early Cambrian metazoans. The timing and process of ocean oxygenation, however, have not been well constrained. In this paper, an integrated study was conducted on the lower Cambrian Niutitang (NTT) Formation in Siduping area, western Hunan, which was paleogeographically located at shelf margin–upper slope setting of the Yangtze Platform. Using ICP-MS, Element Analyzer, FESEM, EDS and XRD techniques, the abundance of RSEs (redox sensitive elements), patterns of RSEs distribution, pyrite morphology, TOC (total organic carbon), TS (total sulfur), S_{PY} (pyrite sulfur) as well as N and P contents were investigated systematically. The results show that during the NTT deposition, bottom seawater in the study area experienced a complicated evolution, with a dynamic alternation of three ferruginous and three euxinic intervals, and suboxic–oxic

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