Molybdenum isotopic composition and redox-sensitive trace elements indicative of the paleoenvironmental changes cross the Ordovician-Silurian boundary in South China

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Molybdenum isotopic composition and redox-sensitive trace elements have been used to confirm the presence of two anoxic black shale facies within the Ordovician-Silurian transition, i.e., the upper part of Wufeng Formation and the lower part of Lungmachi Formation in West Hubei on the Yangtze block of South China. The upper part of Wufeng Formation generally have a slightly positive $\delta^{98/95}$ Mo signature, likely related to the physical disturbance, such as strong upwelling and multiple glacial-interglacial transitions during late Ordovician period. The lower part of Lungmachi Formation is featured by the more positive $\delta^{98/95}$ Mo values (about +0.79~+1.21‰) than the upper part of Wufeng Formation, consistent with the enrichment of chalcophilic elements (Mo, Ni and U). This seems to indicate that the anoxic conditions continued to exist after the extinction, due to the possible sea-level rise contributed by the melting of ice sheets on the Gondwana ice cap during the deposition of the lower Lungmachi sediments.