

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Descriptions: Table S1 consists of raw geochemical data of Mn carbonates and black shales in Doushantuo Formation Member IV in this study. Table S2 is the result of a simple steady-state isotope mass balance model of Mo isotope adopted in this study.

File Name: Supplementary Information

Descriptions: List of geological setting, detailed methods, and supplementary discussion in this study.