

Variations of isotopic composition of organic carbon during the Great Oxidation Event

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Early Paleoproterozoic time (2.5-2.0 billion years ago) spanned a critical phase in Earth's history, characterized by repeated and severe glaciations (the Huronian glaciations) and a marked increase in atmospheric oxygen (the Great Oxidation Event). Here we report variations of carbon isotopic composition in organic carbon from Paleoproterozoic sedimentary sequences that deposited during the Huronian glaciations and the Great Oxidation Event. We found that negative excursions of carbon isotopic composition appear repeatedly after the three glacial events, implying that methane hydrate dissociations would have been inevitable events in the aftermath of the Paleoproterozoic glaciations.