

Radiogenic Sr isotope excursions in the Ediacaran seawater

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The Ediacaran to Cambrian period records one of the most dramatic biological episodes in Earth's history; for example, the emergence of multicellular animals, Ediacara-type fauna (*Vendobionta*), and possible bilaterians. To understand perturbations occurring at this period, several kinds of geochemical proxies have been measured by many researchers. Especially in south China, strata deposited in various kind of sedimentary environments, from shallow to slope facies, well crop out. Recent geochemical studies demonstrated that carbon isotopes of coeval carbonate rocks in south China show different patterns according to the sedimentary environments. For example, large negative carbon isotope anomaly called Shuram excursion was not observed in slope facies sediments. The weathering influx from continents is thought to be a major influence on the change in composition of ancient seawater and on biological evolution. Its flux can be estimated from the $^{87}\text{Sr}/^{86}\text{Sr}$ ratio of carbonate rocks. Due to the large isotopic difference between these two main sources of strontium, the $^{87}\text{Sr}/^{86}\text{Sr}$ composition of seawater tracks the long-term changes in the weathering of the continental surface relative to the hydrothermal flux. For further understandings of regional variation of the $^{87}\text{Sr}/^{86}\text{Sr}$ ratio in the Ediacaran, we carried out on-land drilling of the Ediacaran Doushantuo Formation at Three Gorges, Weng'an, Siduping, and Tianping areas. We prepared rock powders from the carbonate rocks, and dissolved them in 2 M acetic acid at 70 Celsius degrees for 24 hours. After removing coexisting matrix elements using a chromatographic technique, Sr isotope compositions were measured with a MC-ICP-MS. Along with the data from previous studies, we review the radiogenic Sr isotope excursions in the Ediacaran carbonate rocks and discuss the cause of regional variations.

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