

The Permian minimum of Sr-isotope in mid-Panthalassan paleo-atoll carbonates

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The long-term decreasing of seawater $^{87}\text{Sr}/^{86}\text{Sr}$ ratio through the Paleozoic is shifted to the Mesozoic long-term increasing trend after the 'Paleozoic Sr minimum' occurred during Capitanian in Middle Permian. A significant change in balance of the radiogenic 'continental flux' and the less radiogenic 'mantle flux' that drive marine $^{87}\text{Sr}/^{86}\text{Sr}$ ratio may have occurred at that time.

We report $^{87}\text{Sr}/^{86}\text{Sr}$ ratio of mid-Panthalassan Paleo-atoll limestones that are collected two sections at Kamura and Akasaka in SW Japan accretionary complex. Both two sections span across the Middle-Late Permian boundary characterized by a major biotic crisis. The limestones accumulated on different ancient seamounts in mid-Panthalassa because of 500 km distance away from each other. An interval with low $^{87}\text{Sr}/^{86}\text{Sr}$ value equivalent to 'Permian minimum' was detected in the *Yabeina* (fusuline) Zone and the barren interval at Kamura and Akasaka. The identical Sr-isotope stratigraphy in two sections suggests that the seawater Sr-isotope long term trend shifted in Capitanian on a global scale. The remarkable shift is outstanding in the Phanerozoic, and it was probably related to the initial rifting of Pangea that may have connected many intra-supercontinental drainage systems directly from radiogenic supercontinental interiors to the superocean.