

Stable Sr isotopes of the Middle-Late Permian carbonate: its implication for driving ocean Sr budget change

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Stable and radiogenic isotopic composition of Sr ($^{87}\text{Sr}/^{86}\text{Sr}$, $\delta^{88}\text{Sr}$) of paleoseawater, which are archived in carbonates, can be valid proxies for global change accompanied with ocean Sr budget [1]. We present $\delta^{88}\text{Sr}$ of oceanic carbonates by double-spike thermal ionization mass-spectrometry (DS-TIMS) for the Middle-Late Permian boundary interval with one of the major extinction events. Analyzed carbonate samples include shallow marine carbonates of shelf facies from South China and of mid-Panthalassan palaeo-atoll facies in Japan. Previous studies confirmed the lowest $^{87}\text{Sr}/^{86}\text{Sr}$ value in late Middle Permian followed by drastic increase during the Late Permian to Early Triassic [2]. Likewise, the $\delta^{88}\text{Sr}$ values of the analyzed samples demonstrated low values in Middle Permian and increase during the Late Permian. The low $\delta^{88}\text{Sr}$ values in the Middle Permian indicate the enhanced carbonate weathering, and this may suggest the suppression of reef building under the global cooling recorded in the significant sea level drop.

[1] Vollstaedt et al., 2014, GCA; [2] Korte et al., 2006, PALAEO