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Lau 海盆の炭酸塩堆積物から復元した氷期-間氷期サイクルにおける海水 Os 同位体比変動
Marine Os isotopic variations during the glacial-interglacial cycles as inferred from the Lau basin carbonates

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Silicate weathering on land is considered to control a long-term global climate change through consumption of atmospheric CO2. It has been also pointed out that the atmospheric CO2 consumption by silicate weathering was linked to even shorter-term variations such as glacial-interglacial cycles, although still controversial. The marine Os isotopic composition reflects the relative intensity of two dominant influxes into the ocean; radiogenic continental crustal detritus and unradiogenic mantle-like materials derived from oceanic lithosphere and meteorites. The difference in 187Os/188Os ratios between these two sources is very striking (1.0-1.4 for continental crust vs. ˜0.1 for mantle-like materials), which makes the Os isotopic system an excellent tracer for mantle and continental input into the marine environment. Hence, the marine Os isotope record has been increasingly used as a reliable proxy for continental weathering caused by global-scale geological processes. Because the influxes from mantle and cosmic dust were likely constant during the glacial-interglacial cycles, the marine Os isotopic composition is considered to have been determined by the intensity of silicate weathering. Here we report the marine Os isotopic variations during the glacial-interglacial cycles as inferred from the Lau Basin carbonates.