

## Did the solid Earth response the atmospheric CO<sub>2</sub> change during glacial-interglacial cycles?

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It is well known that silicate weathering controls long-term global climate changes through consumption of atmospheric CO<sub>2</sub>. Recently, It has been also pointed out that the atmospheric CO<sub>2</sub> consumption by silicate weathering was linked to even shorter-term variations such as glacial-interglacial cycles, although still controversial (some researchers have proposed that the weathering intensity decreased during the glacial periods (Munhoven and Francois, 1996), while the other have proposed vice versa (Ludwig et al., 1999)). The Os isotopic composition of seawater is very useful to monitor the intensity of silicate weathering because of the following reasons; (1) dominant influxes into oceans (radiogenic continental crustal detritus and unradiogenic mantle-like materials derived from oceanic crust and meteorites) have striking differences in <sup>187</sup>Os/<sup>188</sup>Os ratios (~1.4 vs. ~0.13 as <sup>187</sup>Os/<sup>188</sup>Os), (2) the residence time of Os in the ocean is enough short (~10<sup>4</sup> yr) to capture short-term (10<sup>4</sup>-10<sup>5</sup> yrs) fluctuations of these influxes. During the Cenozoic, because the influxes from mantle and cosmic dust were likely constant, the marine Os isotopic composition is considered to have been determined by the intensity of silicate weathering.