



Supplement of

Nonlinear increase in seawater $^{87}\text{Sr} / ^{86}\text{Sr}$ in the Oligocene to early Miocene and implications for climate-sensitive weathering

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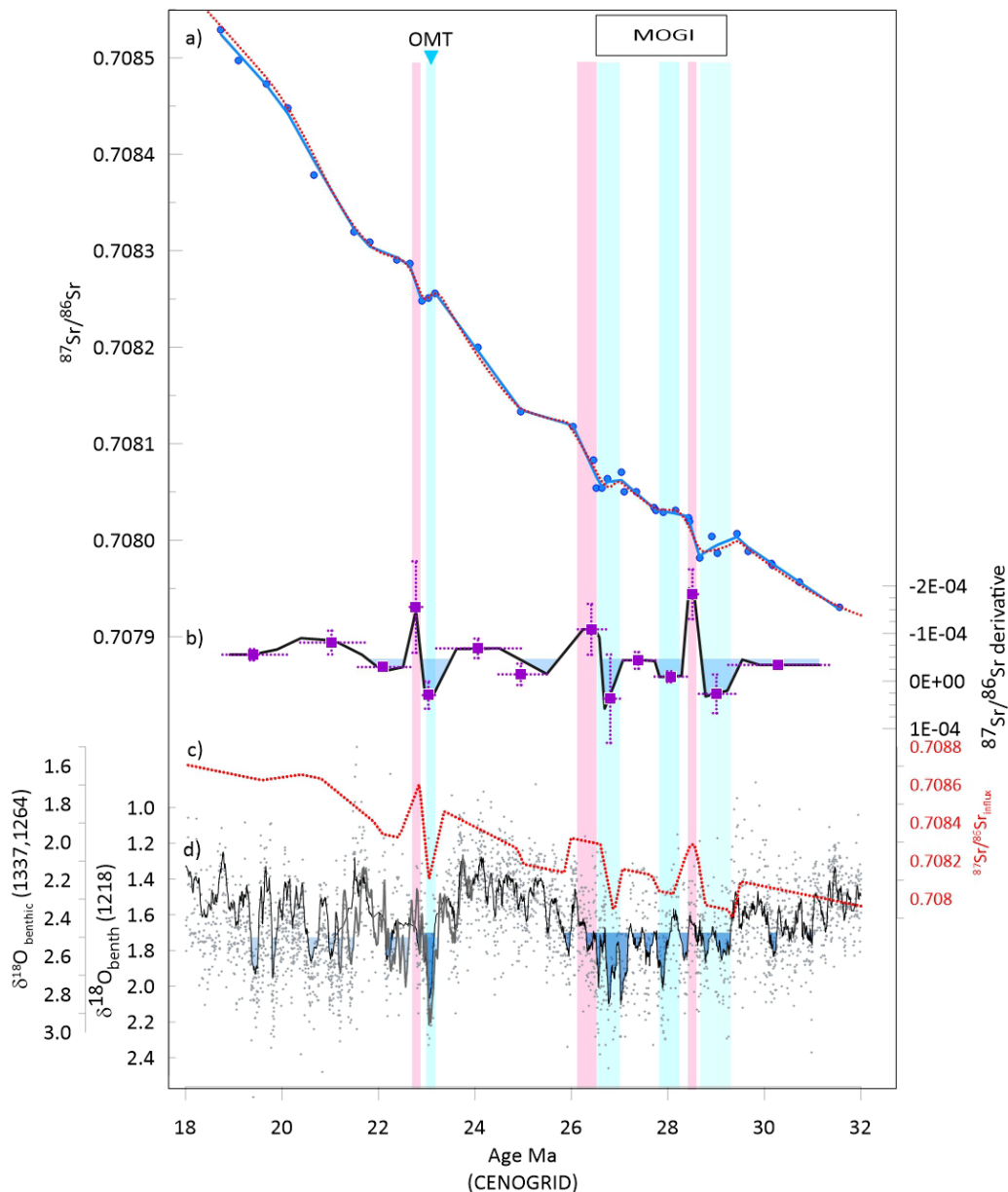


Figure S1. Response time of variation in Sr influxes in relation to benthic $\delta^{18}\text{O}$. a) Measured Site 1218 $^{87}\text{Sr}/^{86}\text{Sr}$ (symbols) and the smoothed fit from local linear regression (blue line) as well as a model fit to the curve (dashed red line) forced as illustrated in panel d). b) the derivative of the smoothed fit (black line) and the slope of each linear segment (purple square), together with the 1σ uncertainty on the slope (vertical error bar, 68% confidence interval) and the age range of the local linear fit (horizontal bar). Shading indicates sectors in which $^{87}\text{Sr}/^{86}\text{Sr}$ rises more slowly than the average rate over 32 to 18 Ma. c) Modeled changes in the Sr isotope ratio of the influx able to generate the red dashed curve illustrated in panel a) using a single ocean box with a residence time of 2.5 million years (Hodell et al., 1990) for an oceanic Sr concentration of $87\mu\text{M}$, and constant influx and outflux. d) Benthic $\delta^{18}\text{O}$ measurements (gray points) and lines showing 20 point running mean, as illustrated in Figure 4, from (Pälike et al., 2006; Holbourn et al., 2015) and (Westerhold et al., 2020). All data are plotted on the orbitally tuned CENOGRID timescale (Westerhold et al., 2020) with shading and time intervals of interest as in Figure 4.

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