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Coupling of a sediment diagenesis model (MEDUSA) and an Earth system model (CESM1.2): a contribution toward enhanced marine biogeochemical modelling and long-term climate simulations

Takasumi Kurahashi-Nakamura et al.

Correspondence to: Takasumi Kurahashi-Nakamura (tkurahashi@marum.de)

Notes on the time step of the MEDUSA runs in EXCPL

In terms of DIC flux back to the ocean, the difference between a run with the original time step and a run with only 1/10 of the original time step (i.e., 1 year) is smaller than 0.5% for most grid cells (Figure S1), which shows that the original time step is reasonably short. Time steps shorter than 1 year do not make sense because the input from CESM is annually averaged.

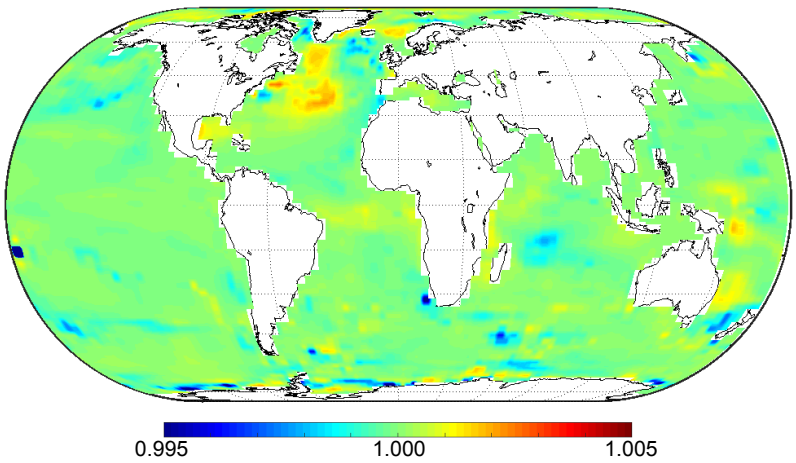

Figure S1: Influence of the time step of MEDUSA on the DIC flux from the sediment to the bottom water. The ratios of the fluxes calculated in a MEDUSA run with 1/10 of the original time step to those in another run with the original time step are shown.