

Simulating stable carbon isotopes in the ocean component of the FAMOUS General Circulation Model with MOSES1 (XOAVI)

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Supplementary material: Additional figures

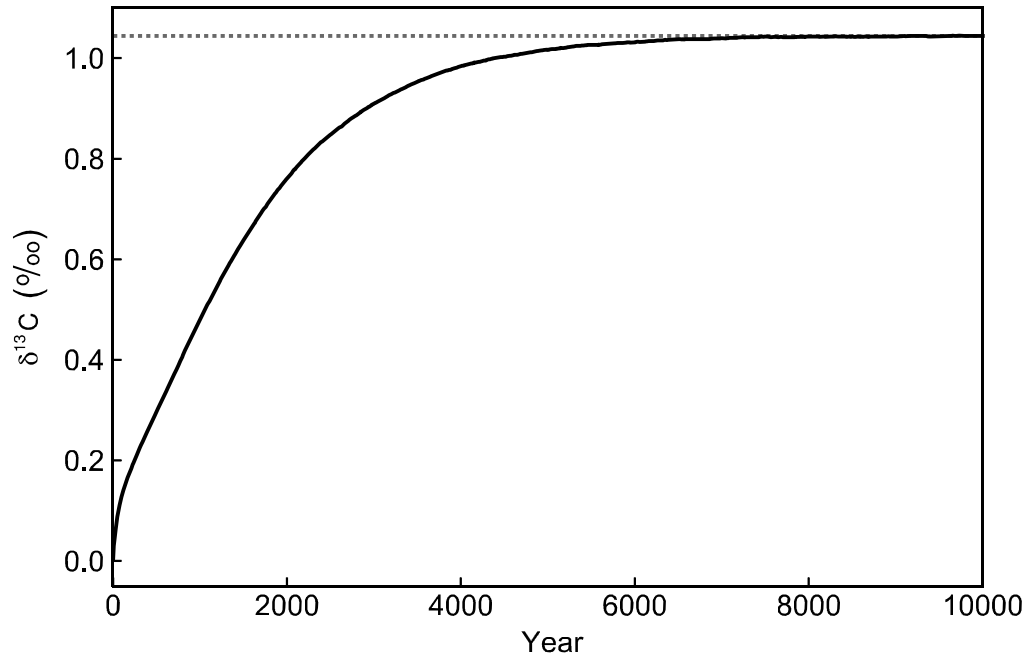


Figure S1: Global volume-weighted $\delta^{13}\text{C}_{\text{DIC}}$ integral for the *std* spin-up simulation. The solid line shows the transient isotopic ratio and the dashed line shows the value at equilibrium.

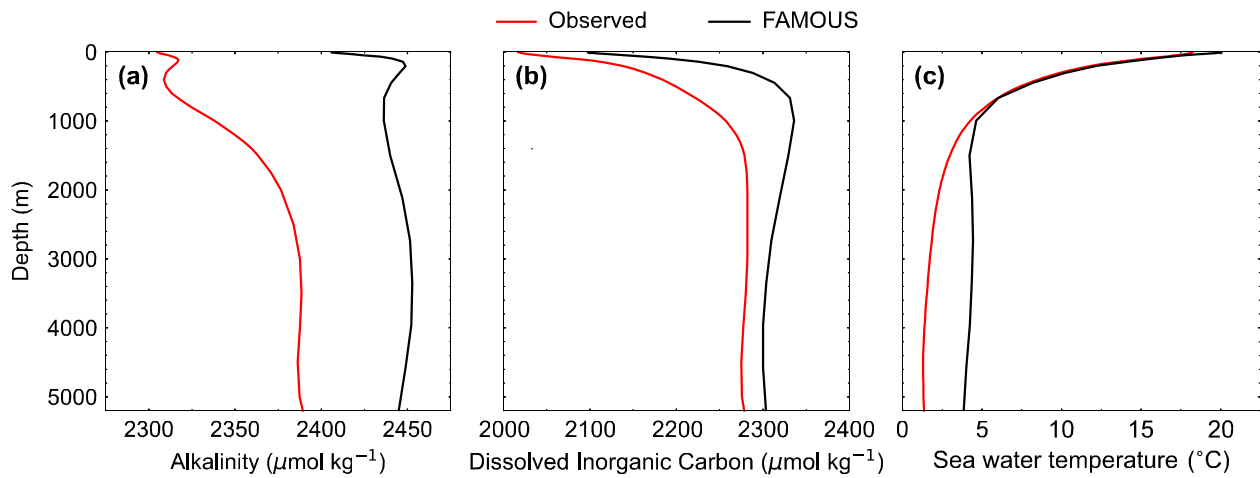


Figure S2: Depth profiles of globally averaged mean annual (a) alkalinity, (b) DIC, and (c) temperature. The values in the *std* simulation (black) are compared to observed values (red) from GLODAP (Key et al., 2004) and the World Ocean Atlas (Locarnini et al., 2013).

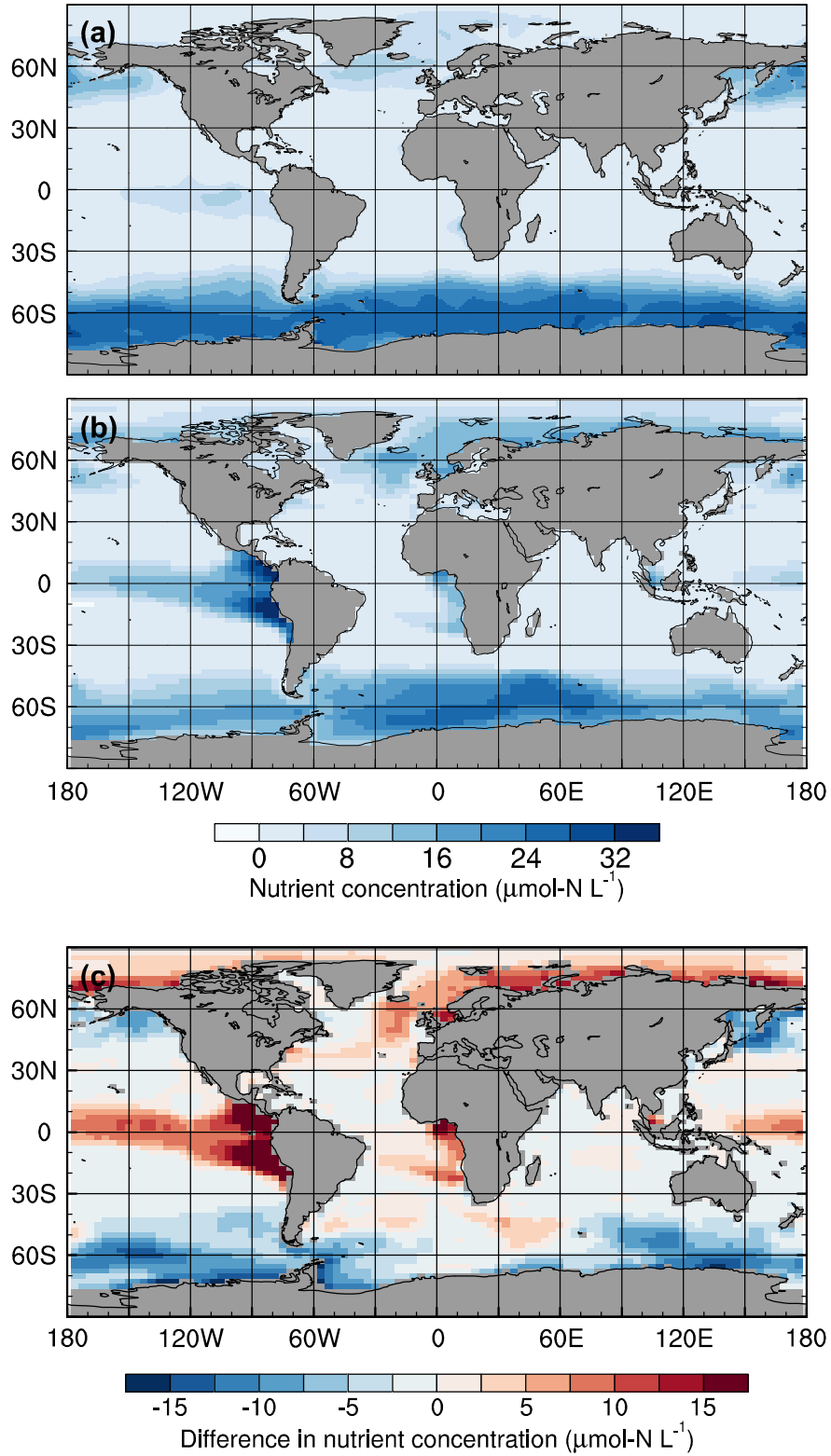


Figure S3: Mean annual surface nutrient concentrations: (a) World Ocean Atlas observations (Garcia et al., 2014), (b) the *std* simulation in the 1990s, and (c) simulated minus observed.

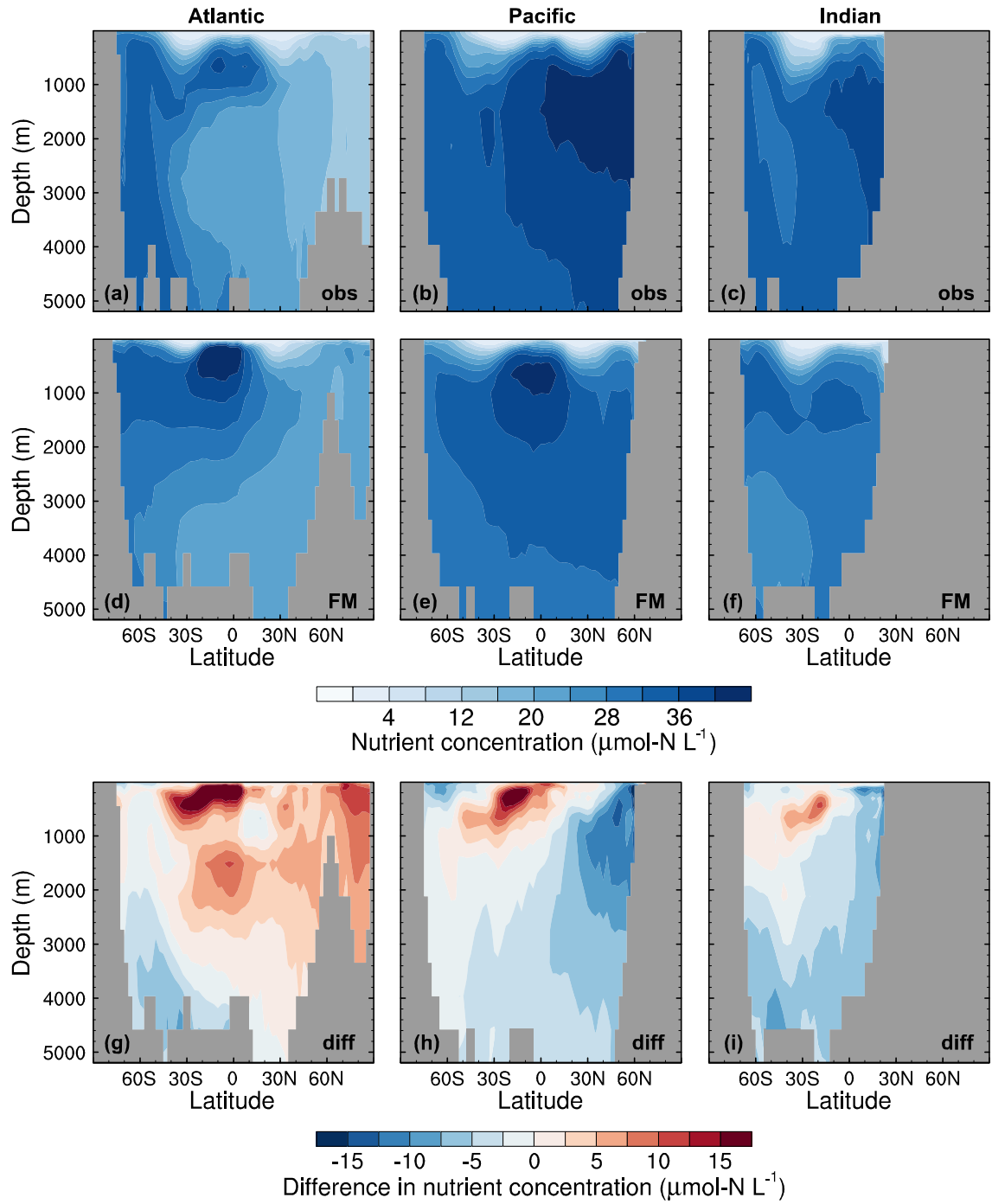


Figure S4: Zonal mean annual nutrient concentrations in the Atlantic Ocean (left), Pacific Ocean (centre) and Indian Ocean (right): the World Ocean Atlas observations (Garcia et al., 2014, top), the *std* simulation in the 1990s (middle), and simulated minus observed (bottom).

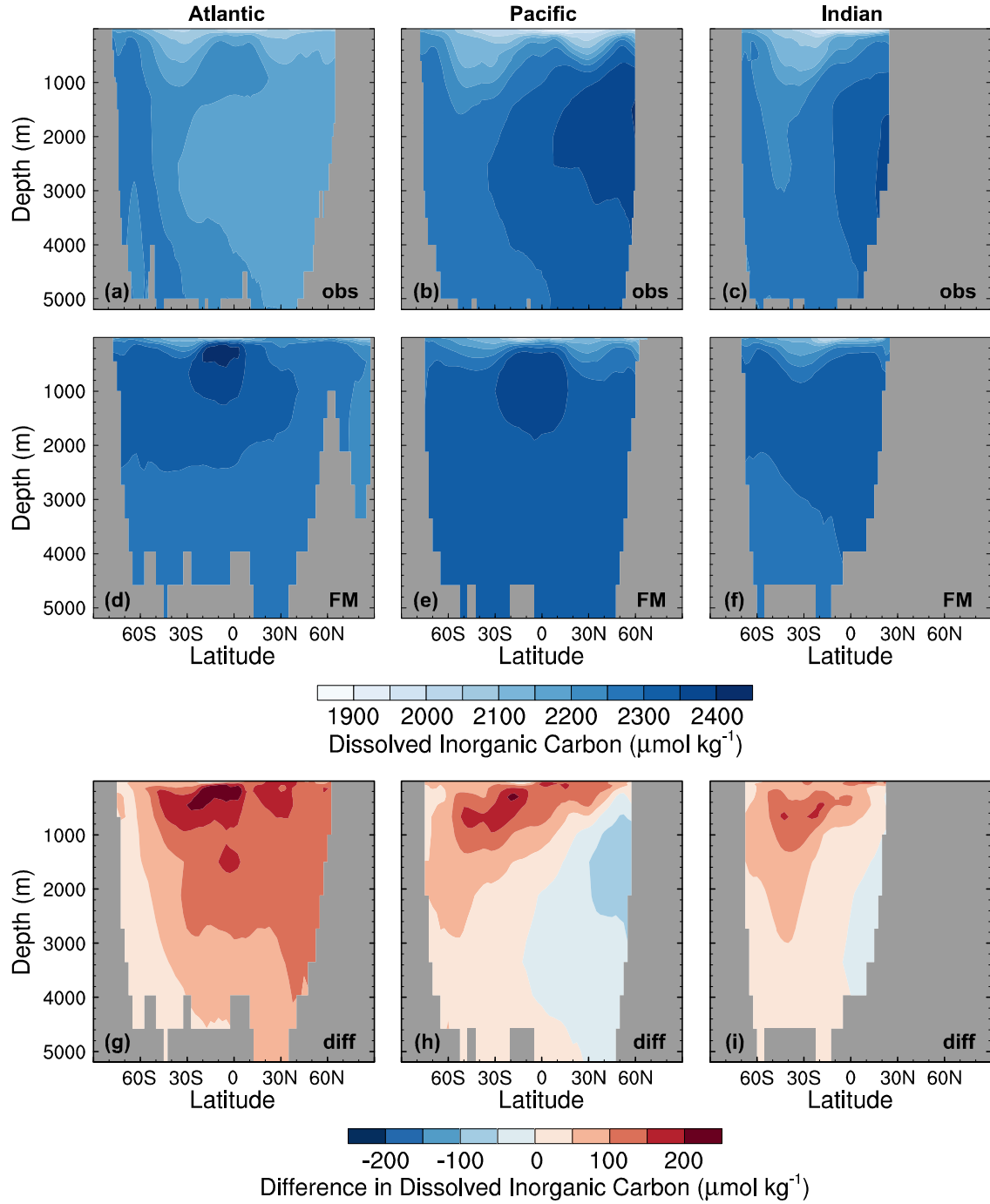


Figure S5: Zonal mean DIC concentrations in the Atlantic Ocean (left), Pacific Ocean (centre) and Indian Ocean (right): the GLODAP observations (Key et al., 2004, top), the *std* simulation in the 1990s (middle), and simulated minus observed (bottom).

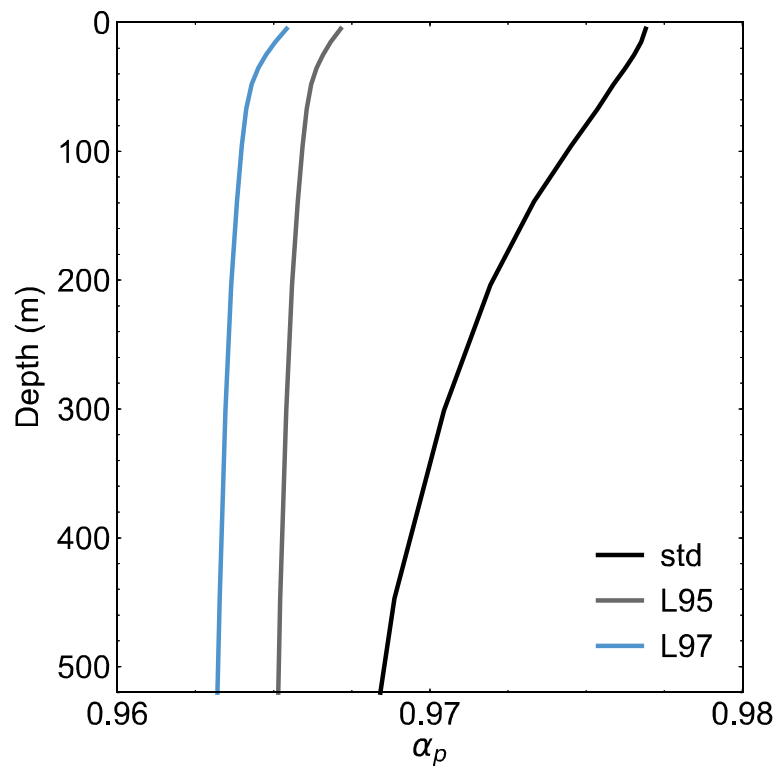


Figure S6: Depth profiles of globally averaged isotopic fractionation during photosynthesis (α_p) at the end of the spin-up simulations (years 9900 to 10,000): (a) the *std* simulation (black), (b) the *L95* simulation (grey), and (c) the *L97* simulation (blue).

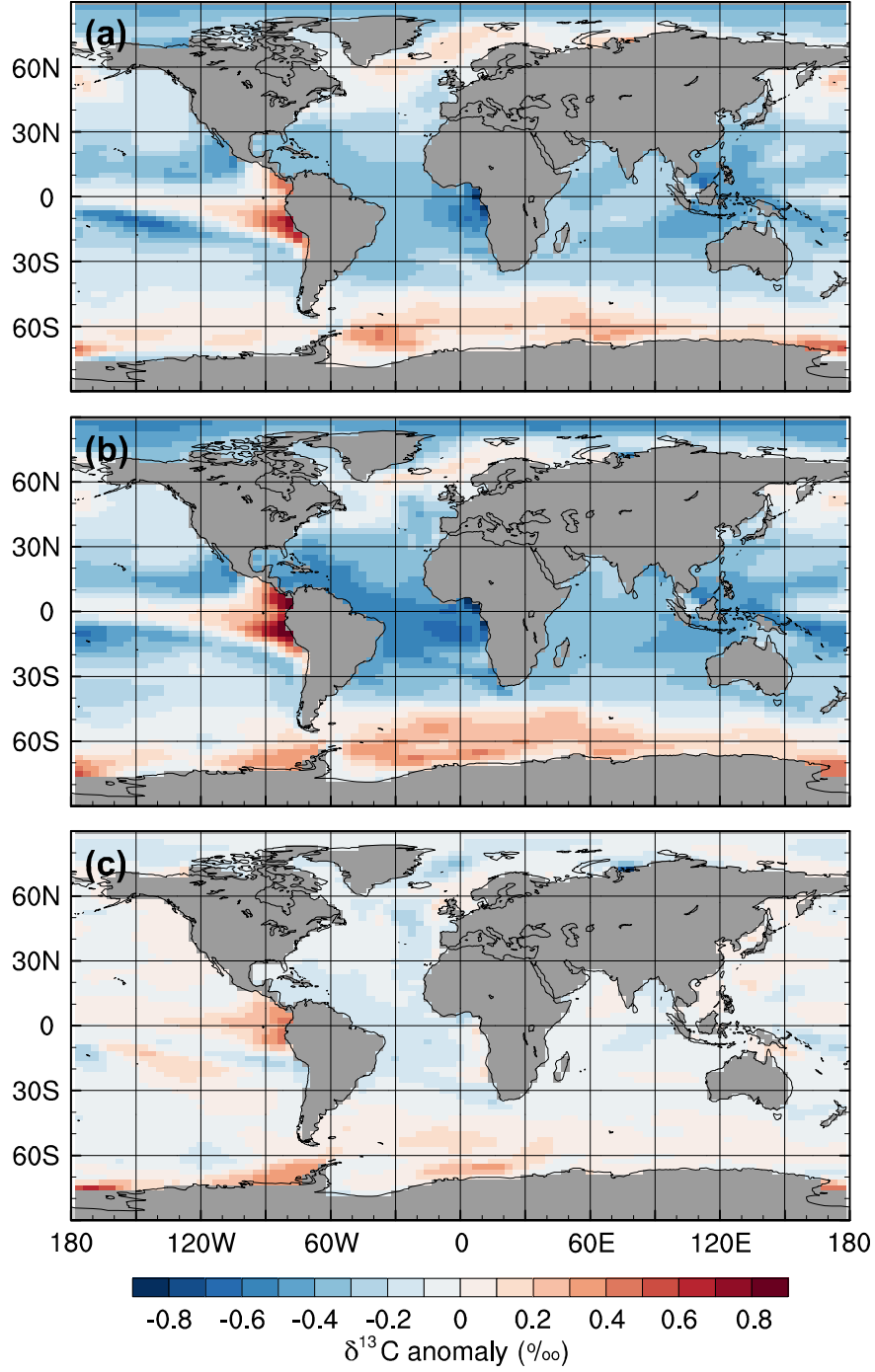


Figure S7: Differences between the simulated surface ocean $\delta^{13}\text{C}_{\text{DIC}}$ values in the 1990s: (a) *std* minus *L95*, (b) *std* minus *L97*, and (c) *L95* minus *L97*.