

Supporting Information for “Nearshore Macroalgae Cultivation for Carbon Sequestration by Biomass Harvesting: Evaluating Potential and Impacts with An Earth System Model”

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	N-MACS	No_Temp
Mean of all N-MACS areas	97.02	155.10
Significant N-MACS areas	165.25	229.67
Northeast Asia	143.67	214.37
South America	413.46	610.10
Oceania	60.75	77.49
South Africa	196.54	205.14

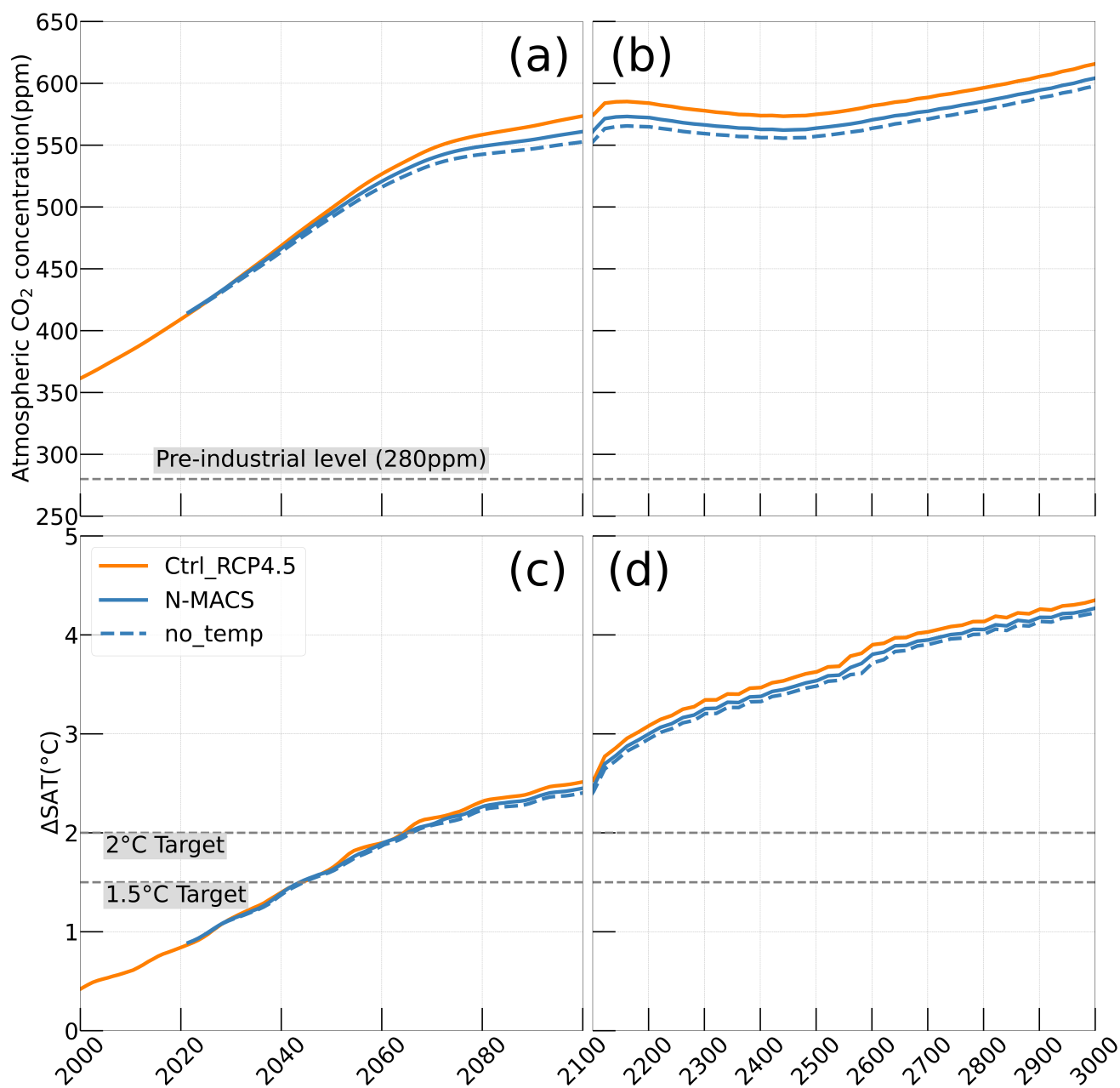


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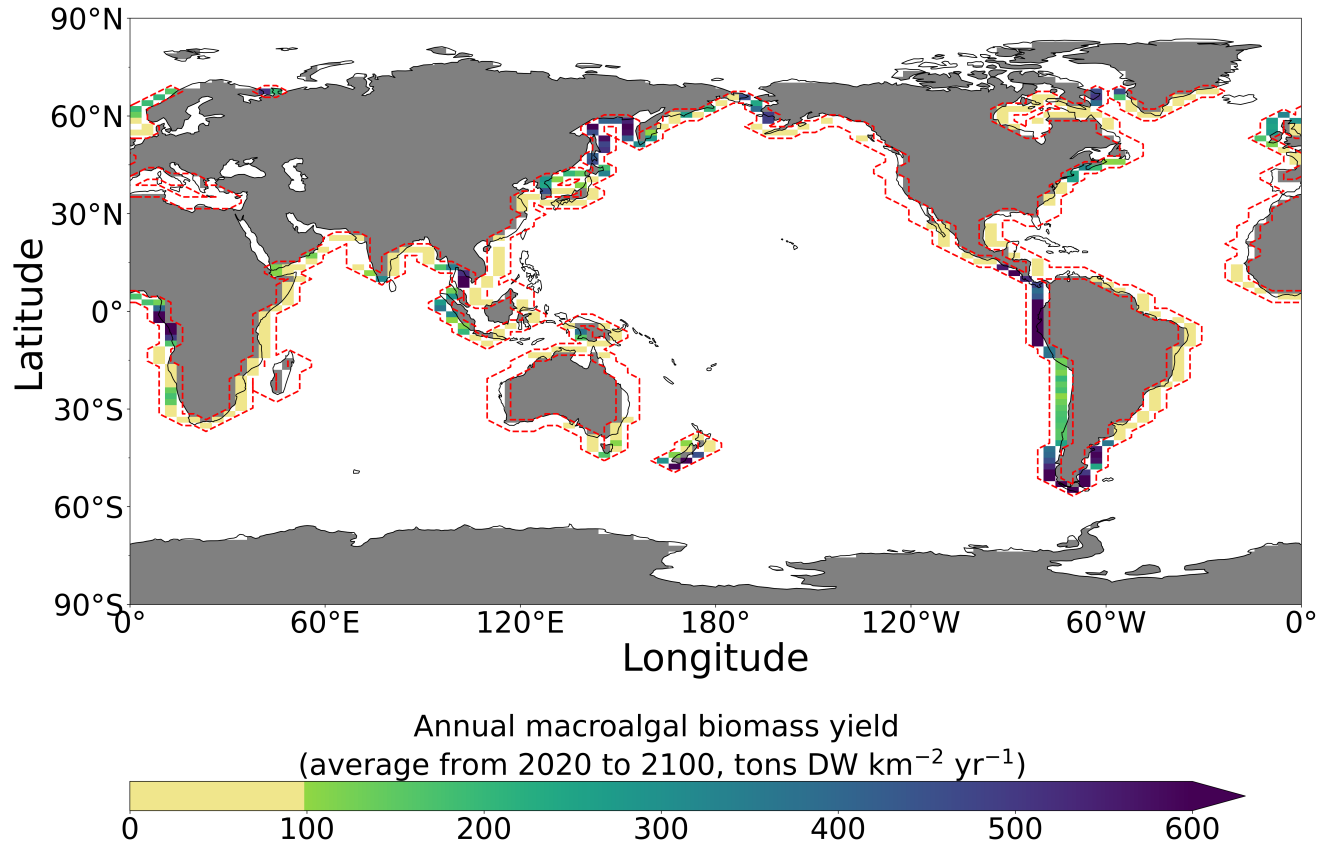


Figure S2. Annual macroalgae biomass yield (averaged from year 2020 to year 2100) of sensitivity simulation without temperature limiting factor. Dashed red lines outline the initial seeding locations in year 2020. Yellowish areas indicate relatively lower yield (≤ 100 tonnes DW per km² per year).

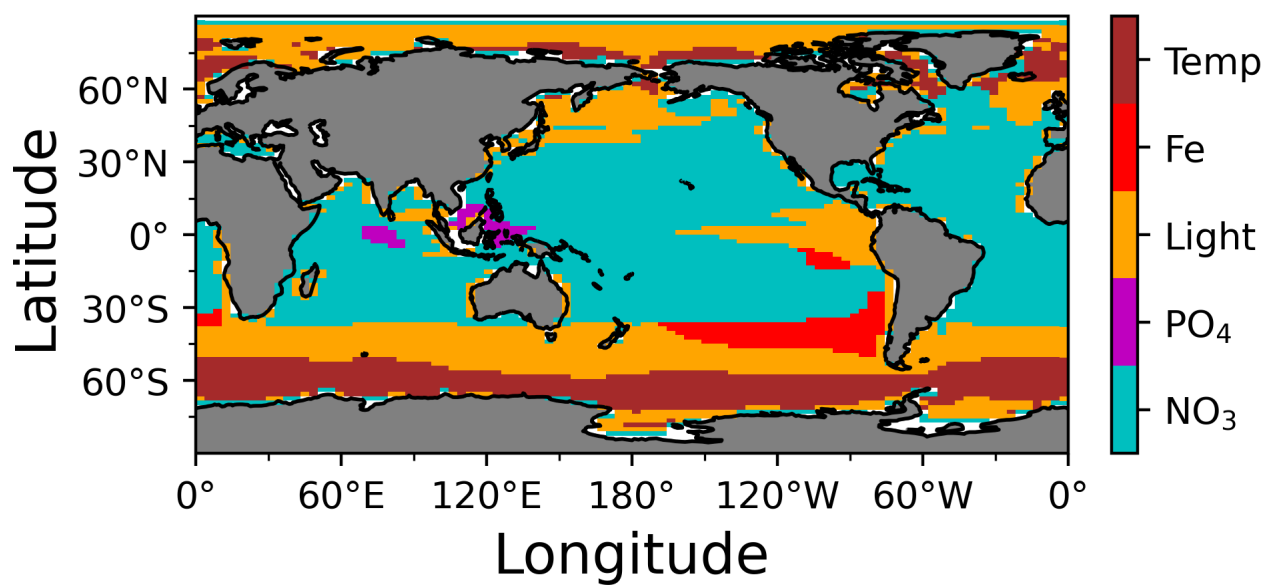


Figure S3. The most limiting growth factor for ordinary phytoplankton in N-MACS simulation from 2020 to 2100.

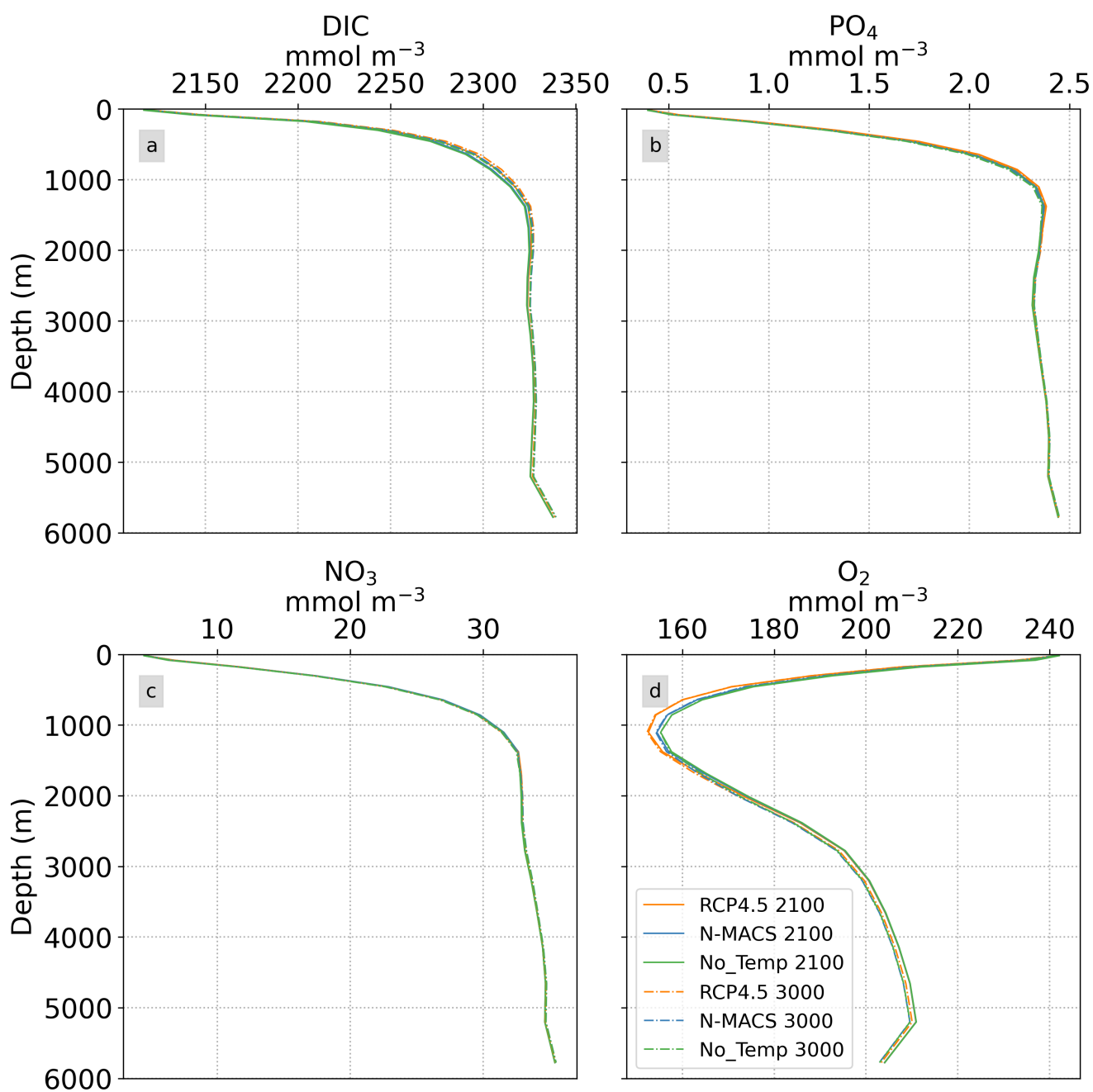


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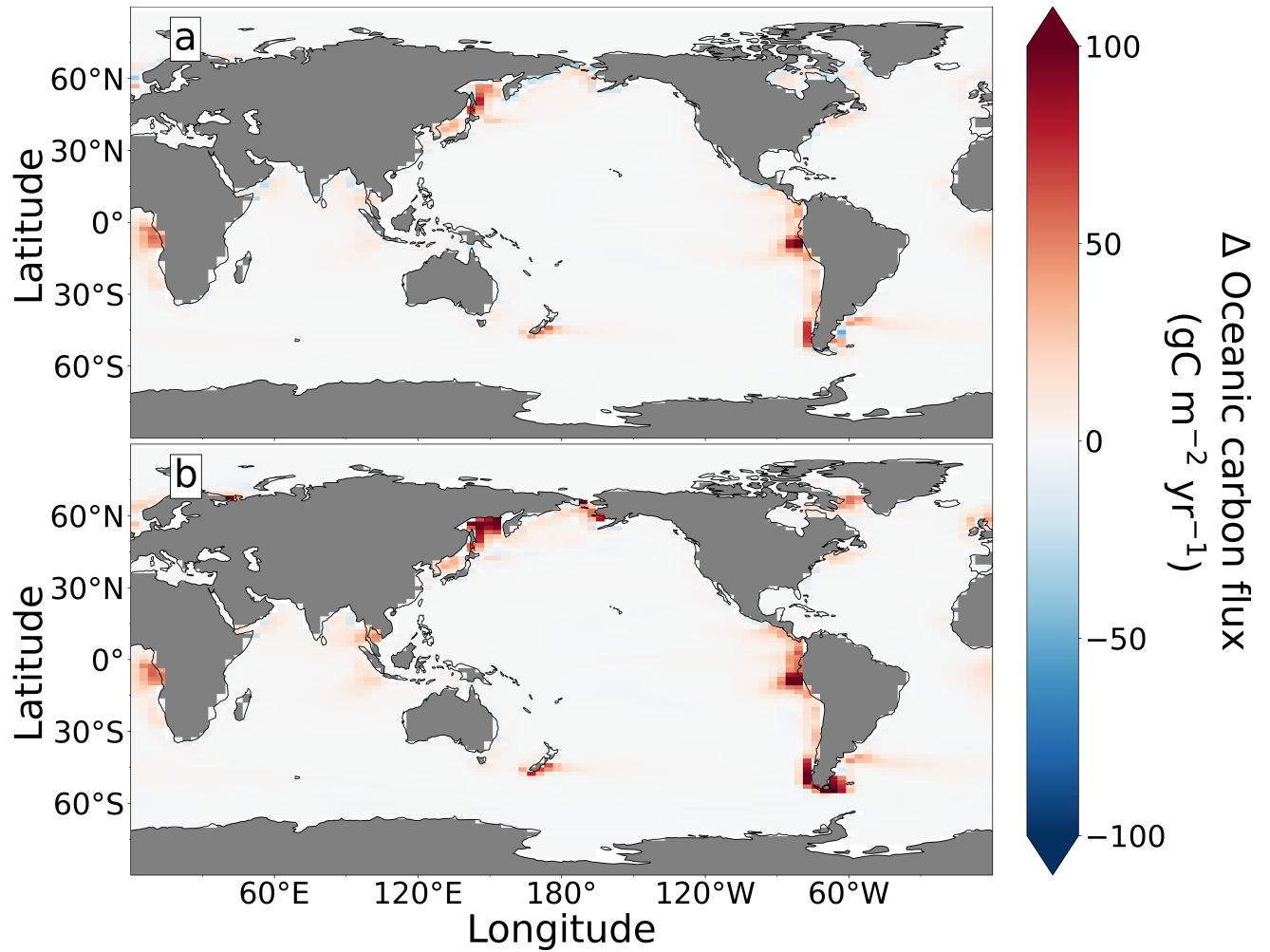


Figure S5. Yearly averaged variations in global oceanic carbon flux between 2020 and 2100, comparing (a) N-MACS and (b) No_Temp relative to RCP4.5 scenario. Positive values indicate net oceanic carbon uptake from the atmosphere.

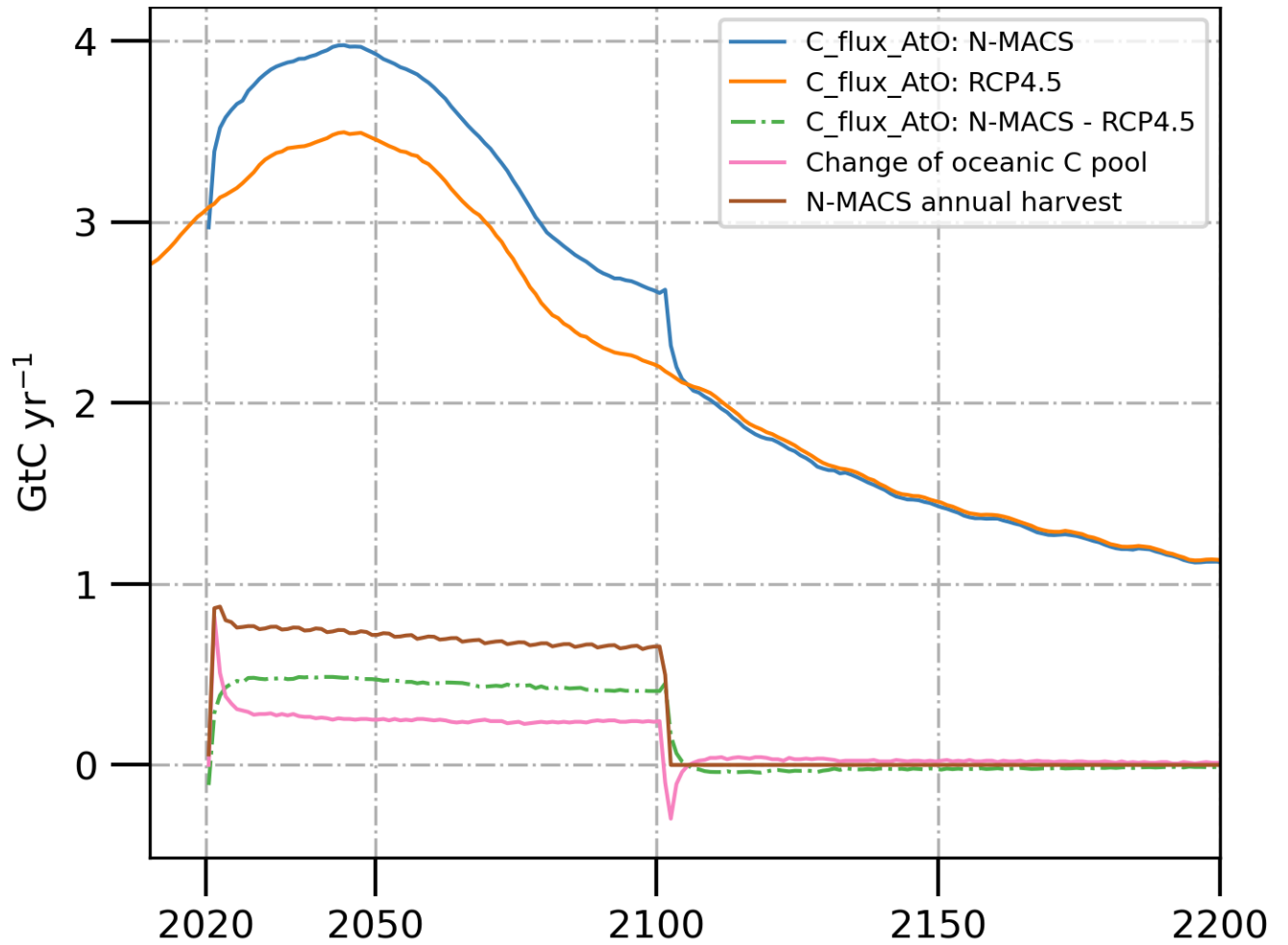


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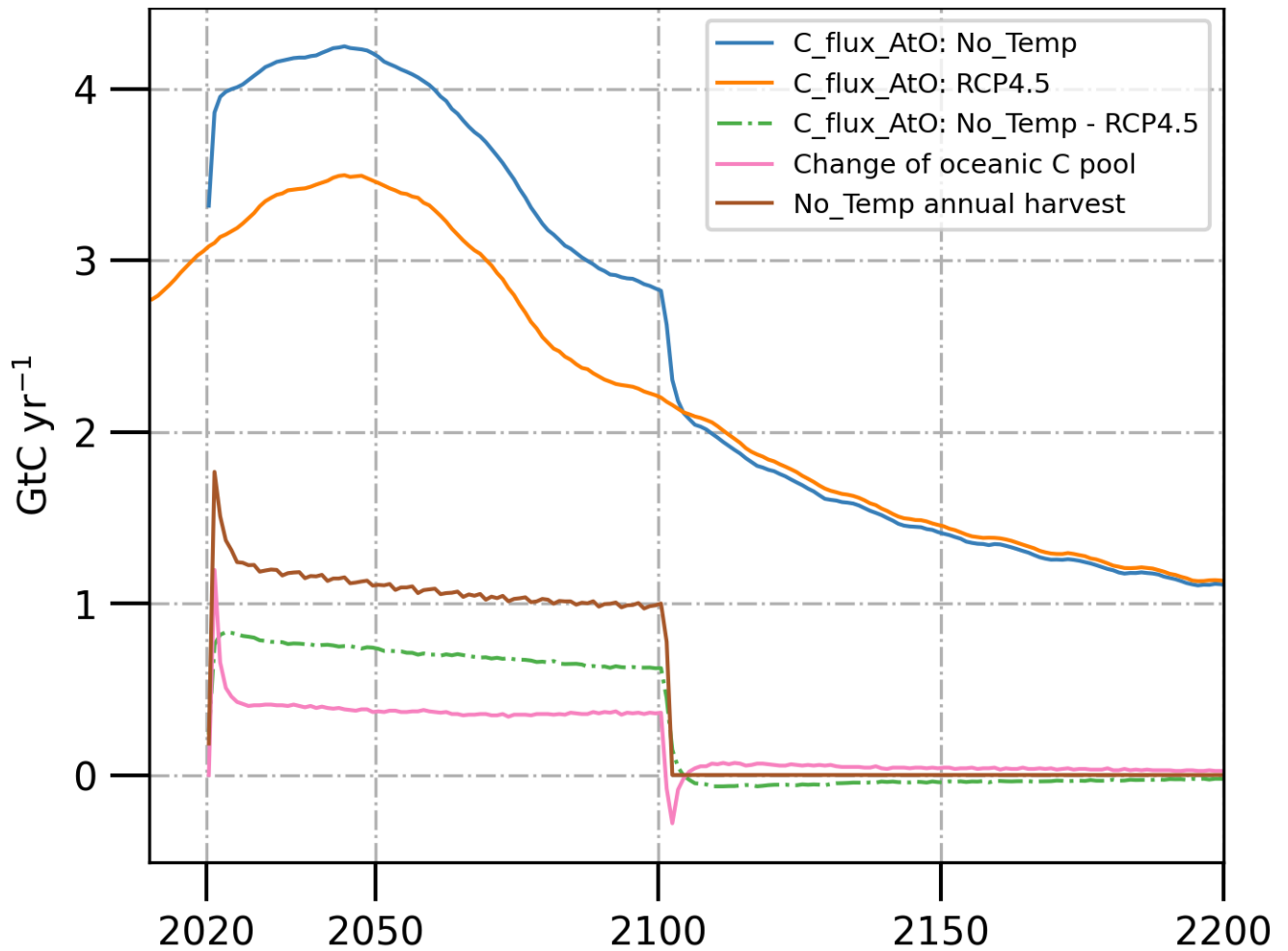


Figure S7. Global profile of air-sea carbon fluxes, No_Temp harvested biomass and oceanic carbon reservoir (GtC yr⁻¹).

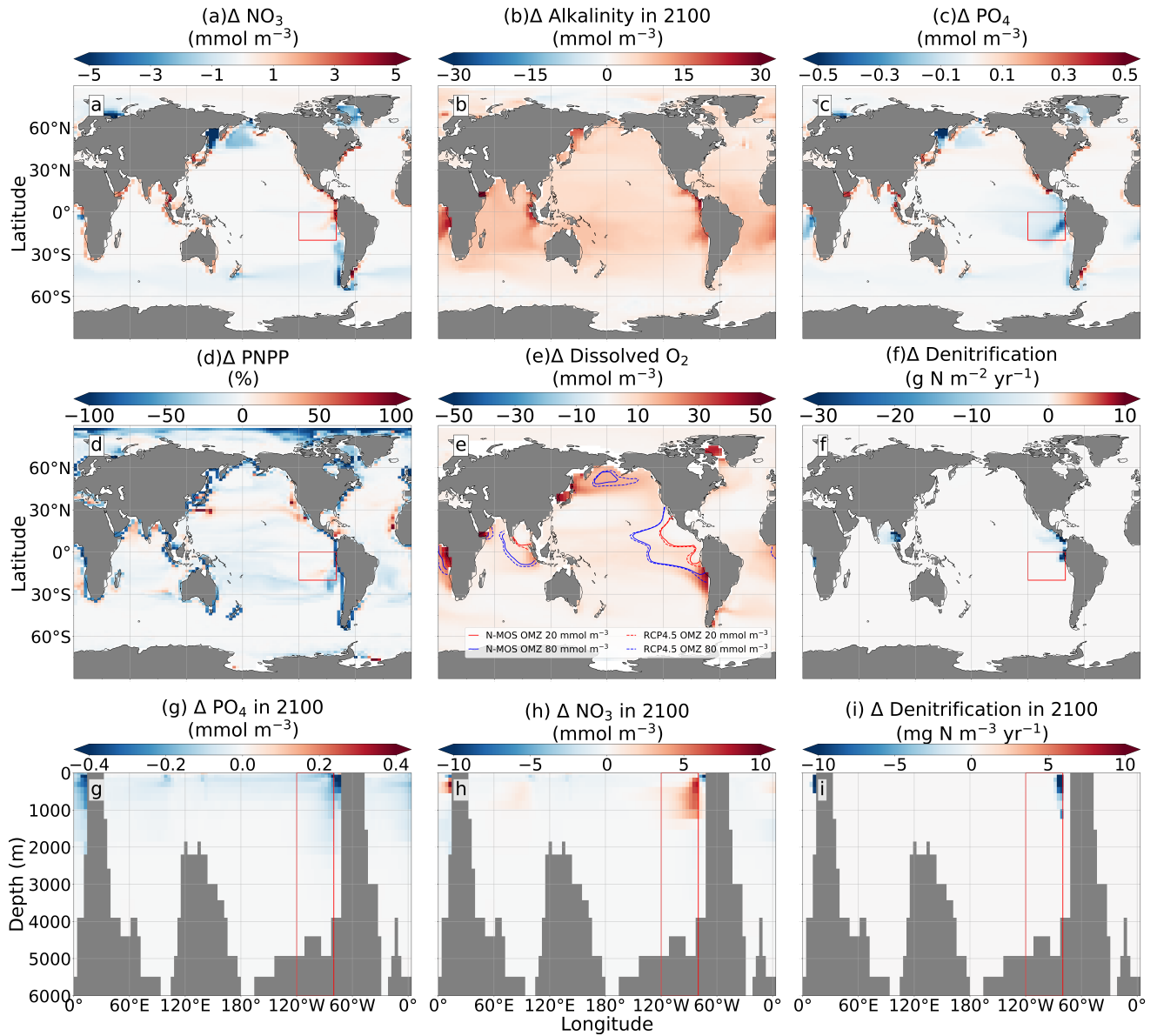


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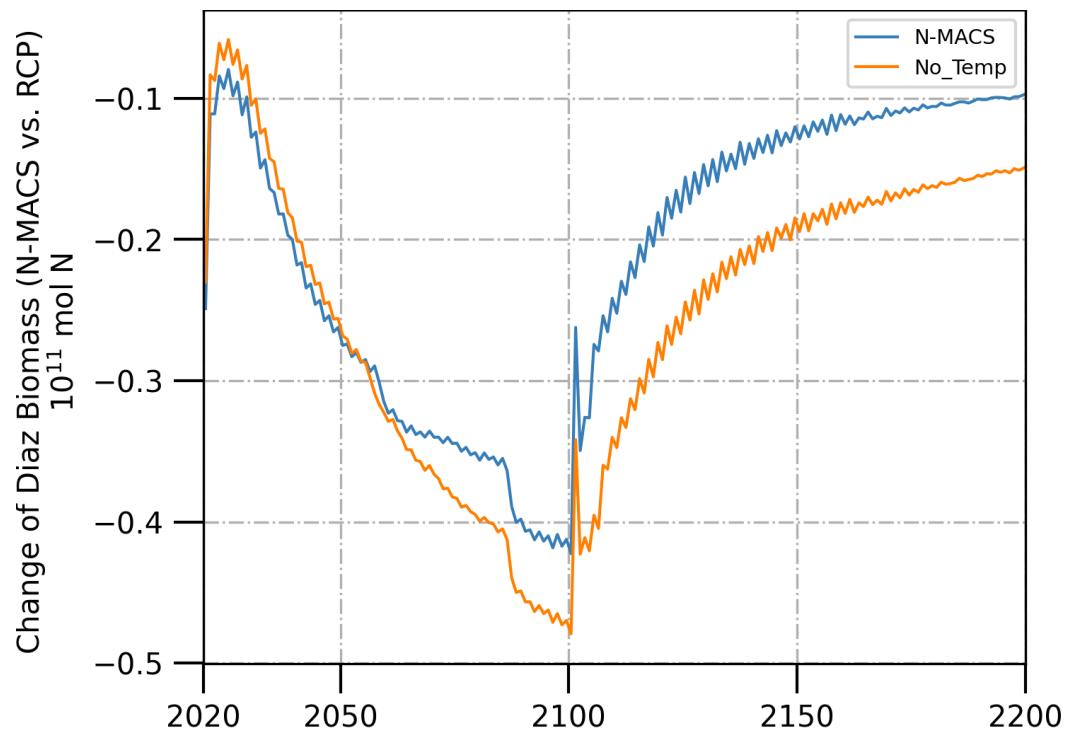


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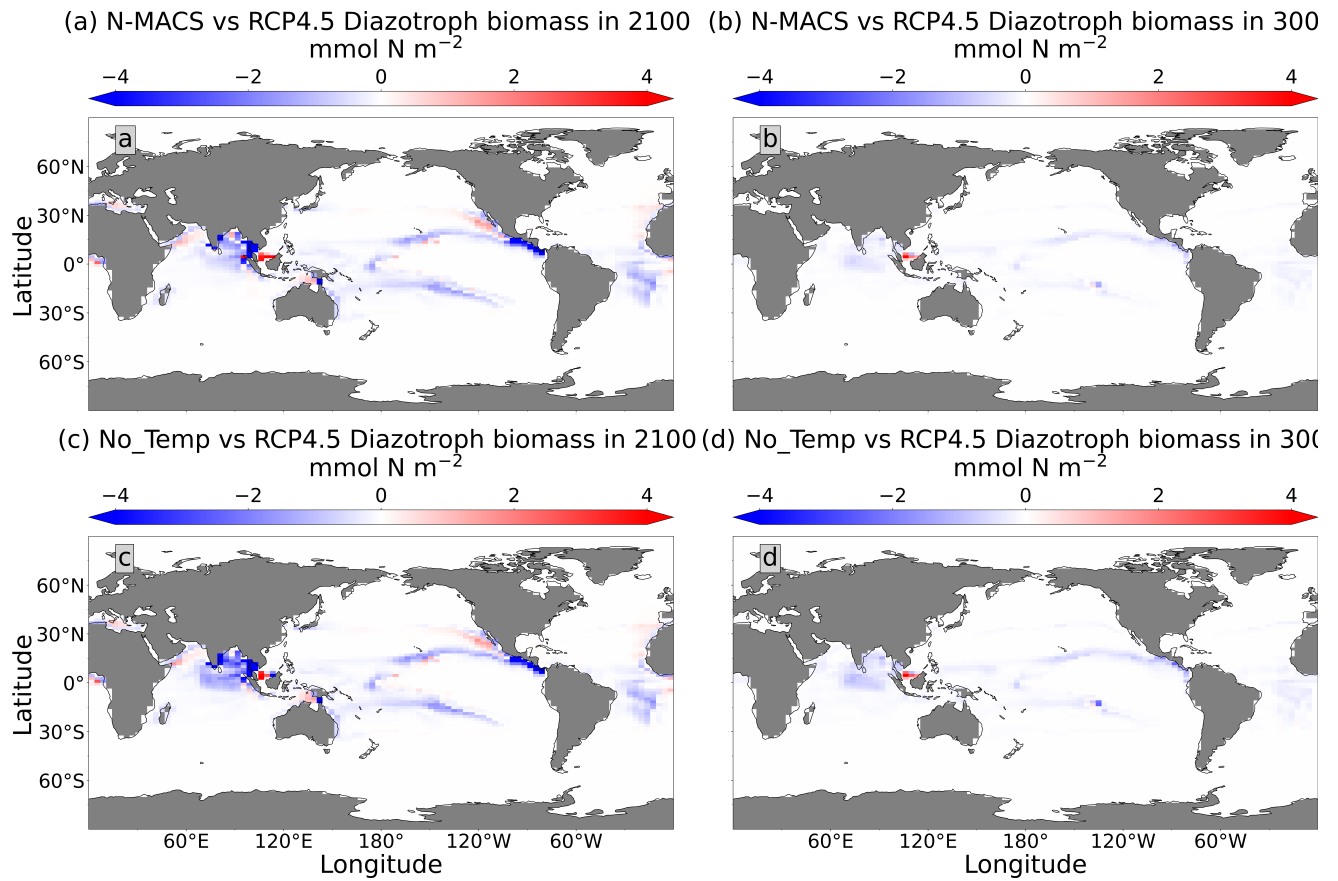


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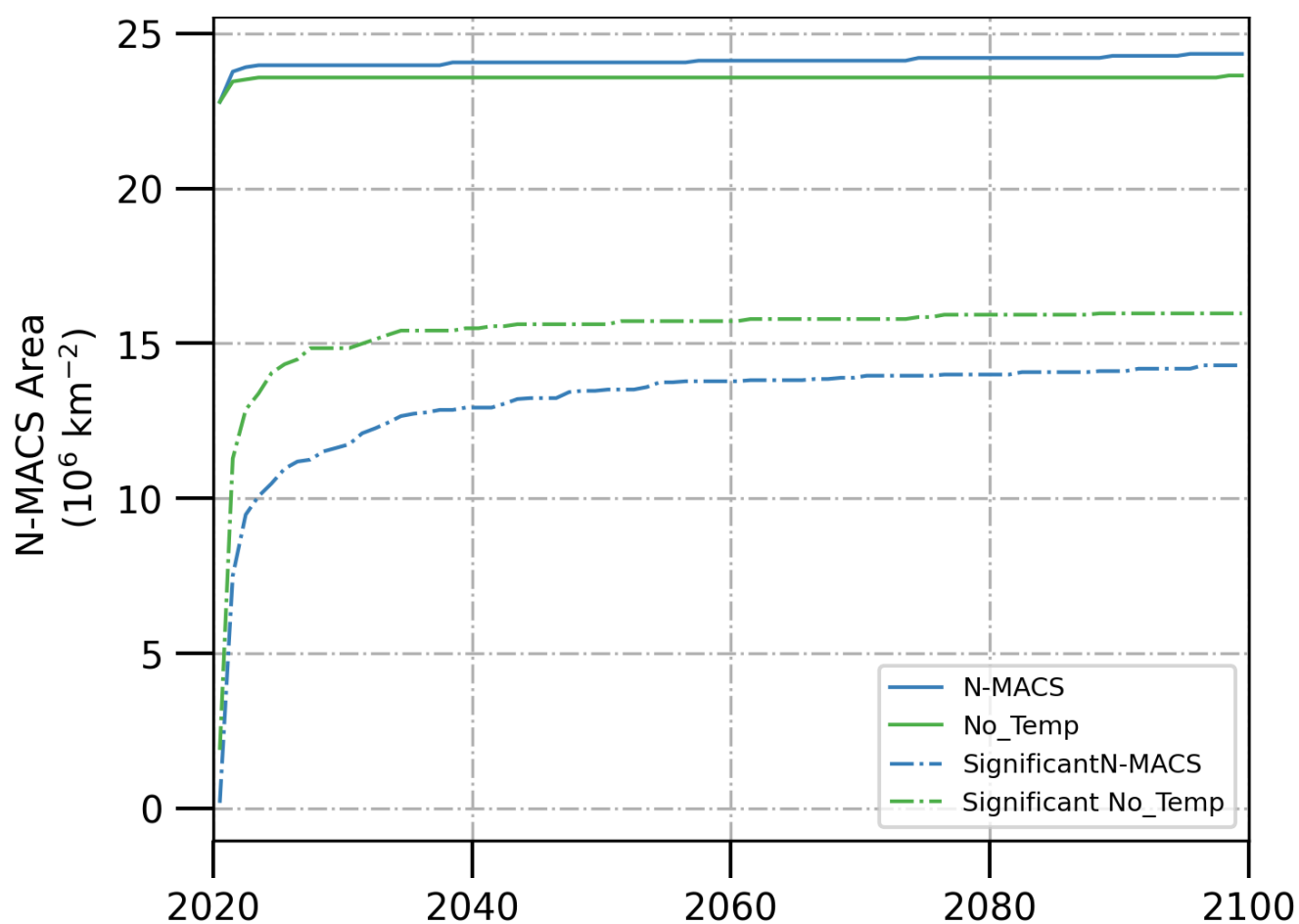


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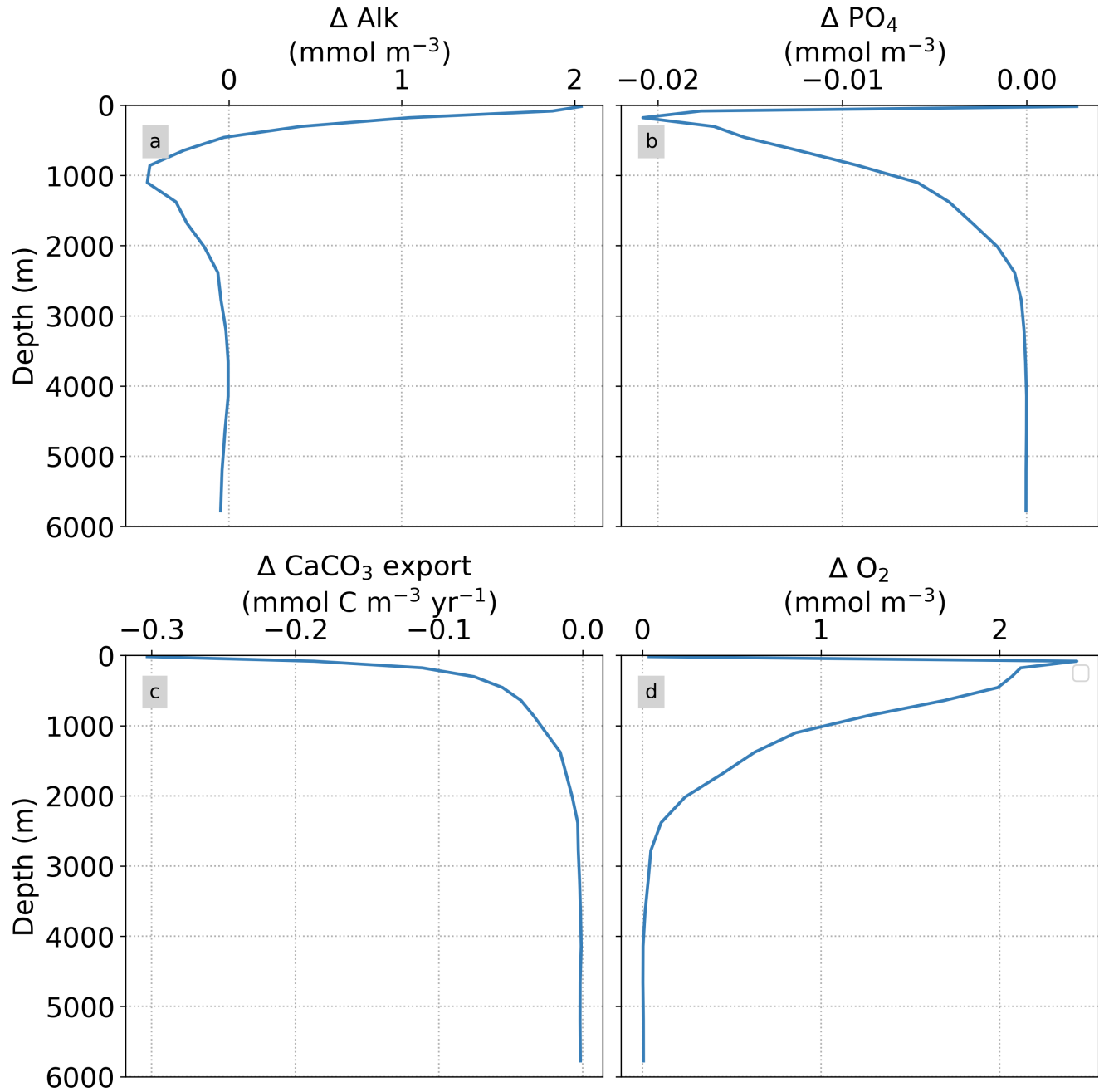


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