



Supplement of

Carbon fixation of a temperate plankton community in response to calcium- and silicate-based Ocean Alkalinity Enhancement using air-sea gas exchange measurements

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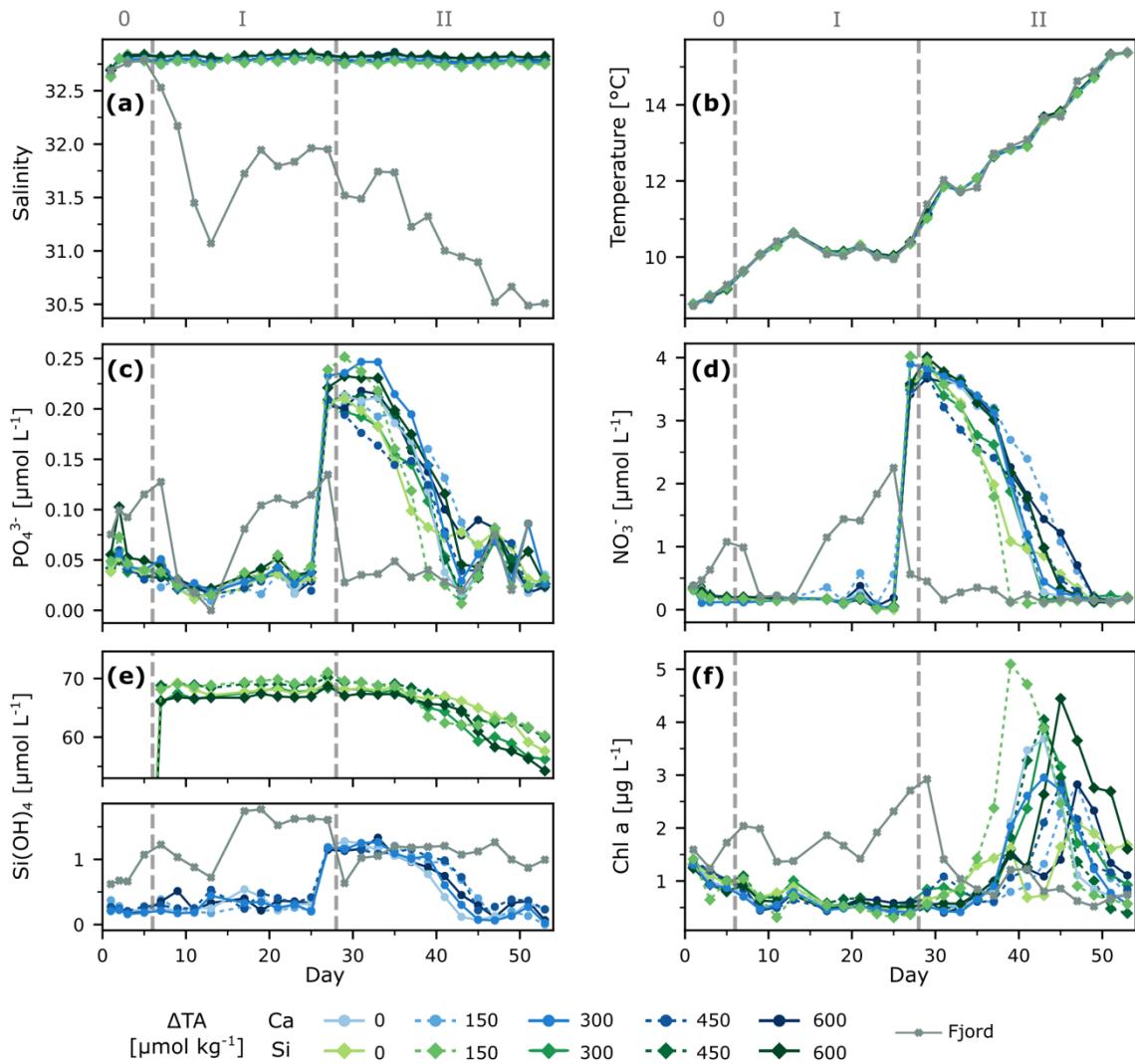


Figure S1: Temporal development of environmental conditions of the enclosed water masses and the Fjord at the mooring site. Water column averaged salinity (a) and temperature (b) over time obtained from CTD casts, and (c, d, e, f) laboratory nutrient and Chl *a* measurements of depth integrated water samples. Dashed lines and roman numbers denote the pre-treatment (0) phase and phases before (I) and after (II) nutrient addition.

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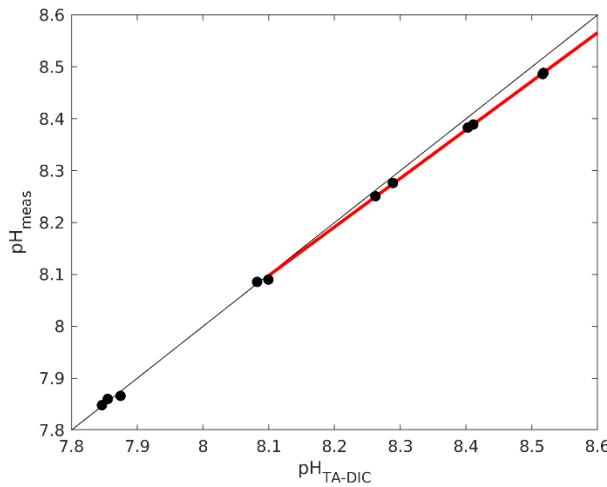
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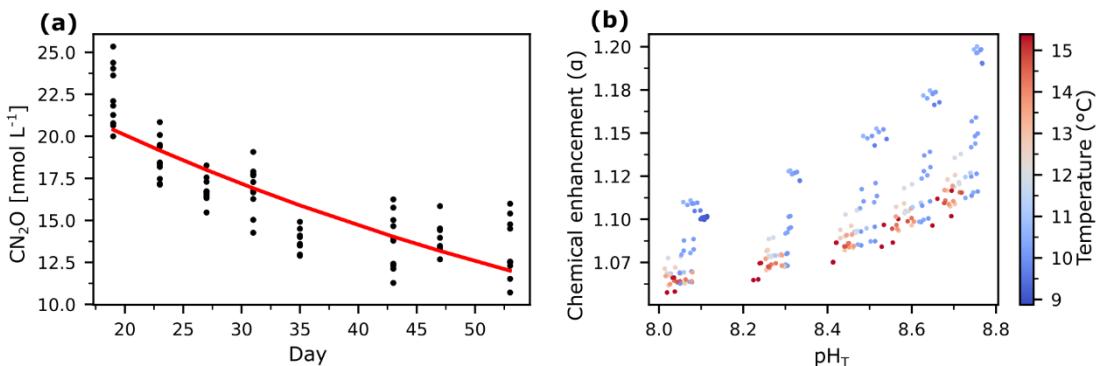


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19 **Figure S2: Measured pH vs pH derived from measurements of TA and DIC.** The obtained linearity was used to recalibrate
 20 measurements, yielding $\text{pH_corrected} = (\text{pH_measured} - 0.5163) / 0.936$.

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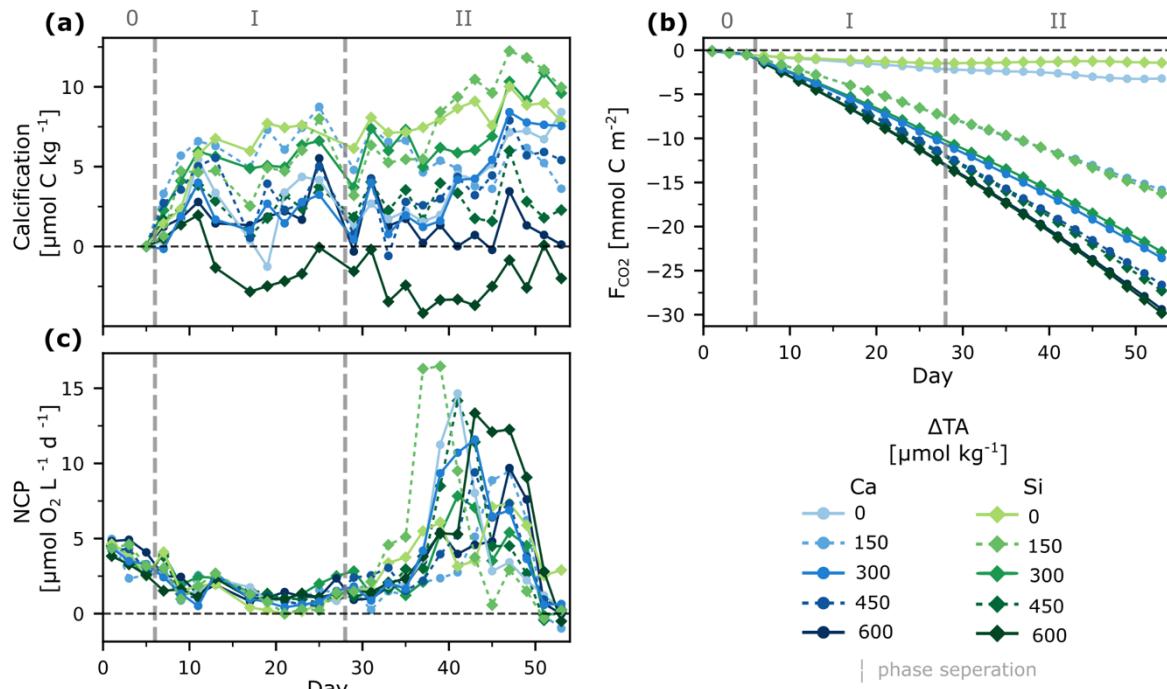


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24 **Figure S3: Measured N₂O concentrations during the experiment (a), and chemical enhancement according to Hover and**
 25 **Berkshire (1969) calculated for measured k, S, T and pH_T (b).**

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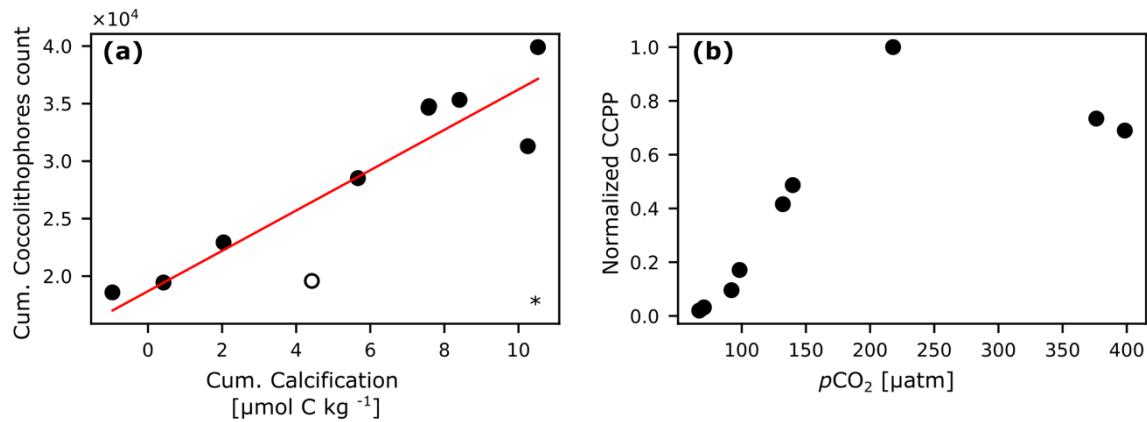


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29 **Figure S4:** Cumulative calcification (CALC) (a), cumulative F_{CO_2} (b), and net community production (NCP) obtained from
30 O_2 incubation measurements – re-fitted from Marín-Samper et al. (2024) (c) over time.

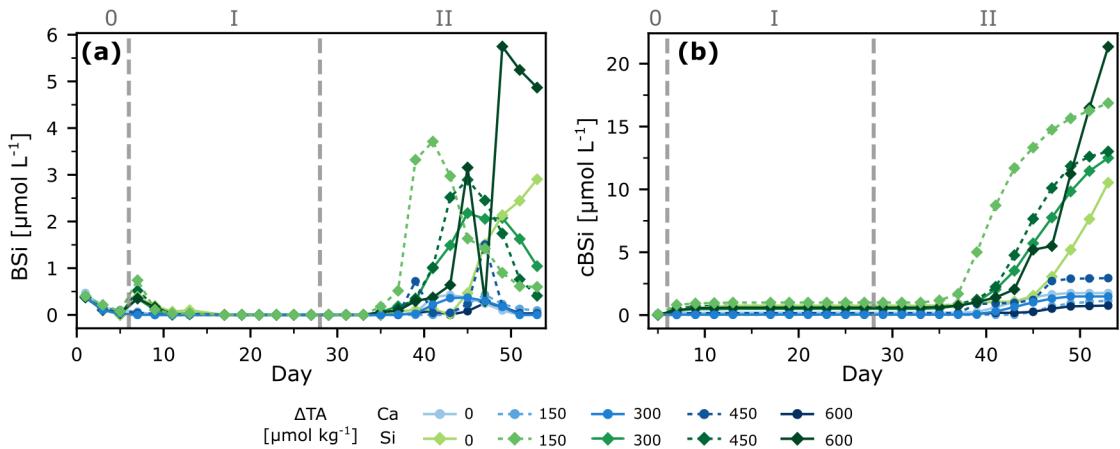
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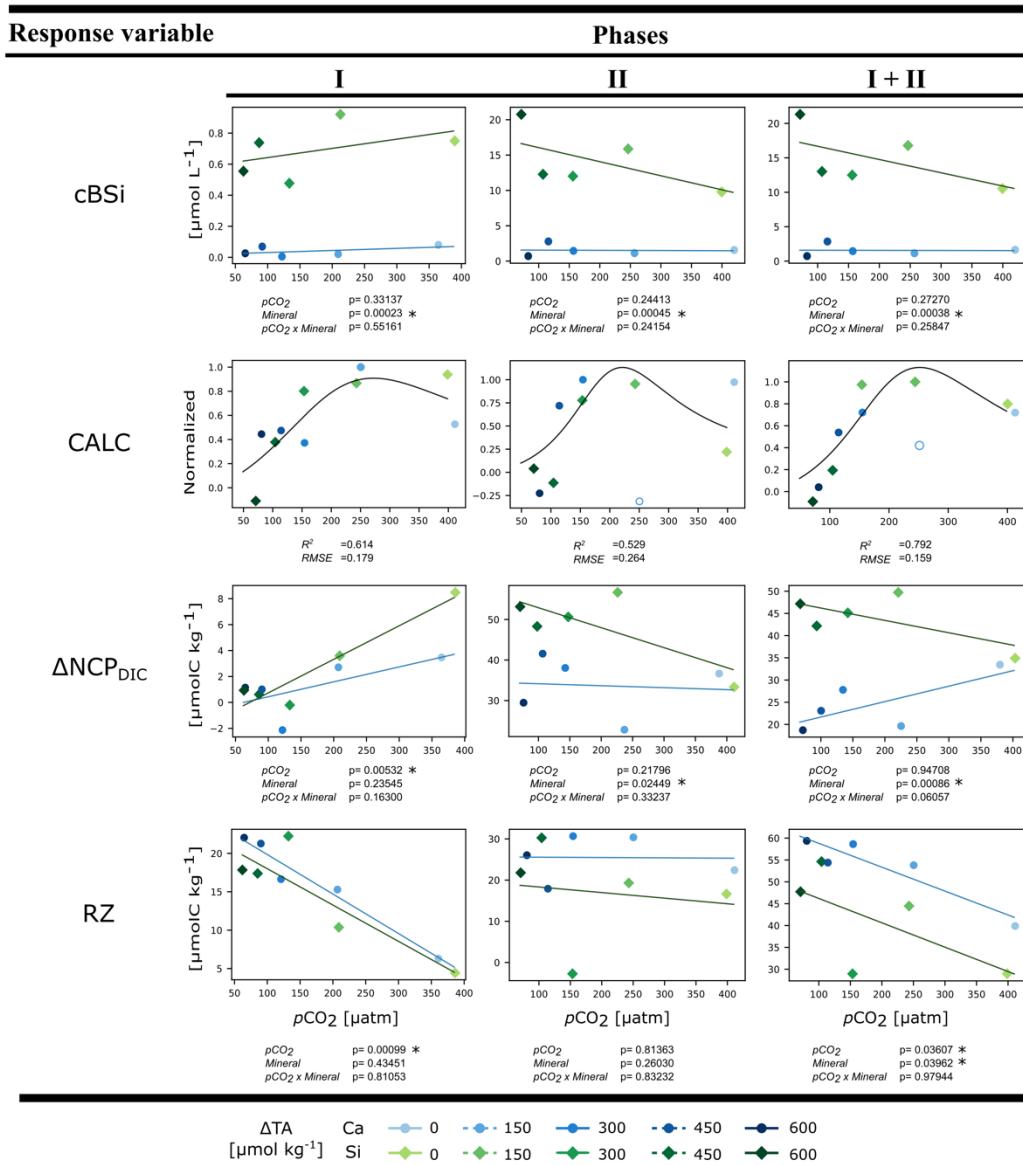
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34 **Figure S5: Calculations supporting calcification estimates.** Cumulative coccolithophore counts ($cells\ mL^{-1}$) from flow
35 cytometry measurements (Cytosense, Cytobuoy, Netherlands) vs estimated cumulative calcification (CALC) (a), and
36 normalized cumulative $CaCO_3$ production potential (CCPP) vs pCO_2 (b). The hollow circle has been excluded from analysis
37 as an outlier, * $p<0.05$.



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Figure S6: Biogenic Silica data as a proxy of diatom biomass. BSi (a) and Cumulative BSi (b) over time. Dashed lines and roman numbers denote the pre-treatment (0) phase and phases before (I) and after (II) nutrient addition.



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Figure S7: Phase-specific analysis. Cumulative BSi (cBSi), normalized cumulative calcification (CALC), bloom peaks of net community production derived from inorganic carbon ($\Delta\text{NCP}_{\text{DIC}}$) and cumulative zooplankton respiration (RZ) vs $p\text{CO}_2$. The hollow circles were excluded from analysis.