



*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**

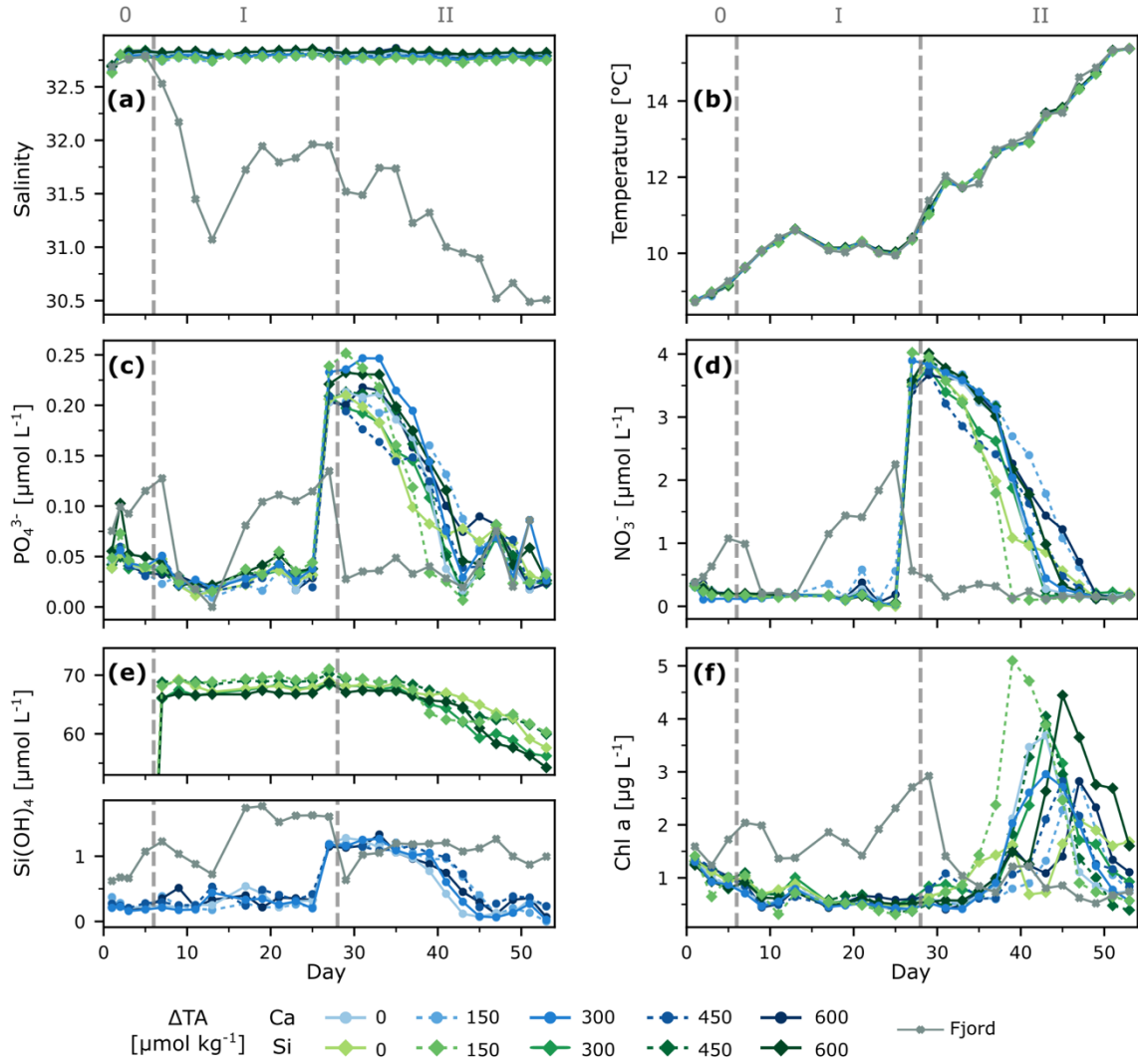
**Julieta Schneider et al.**

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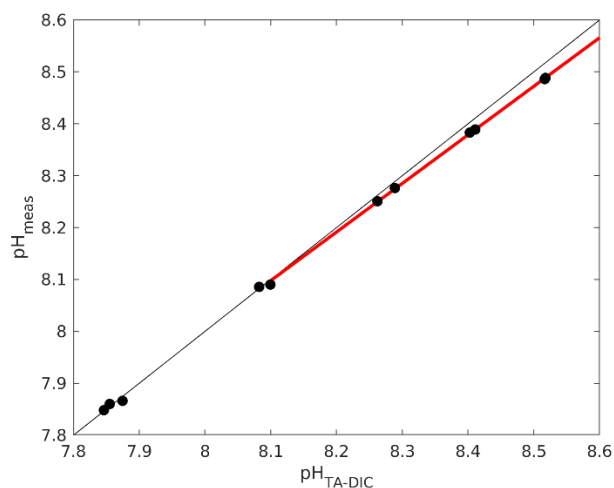
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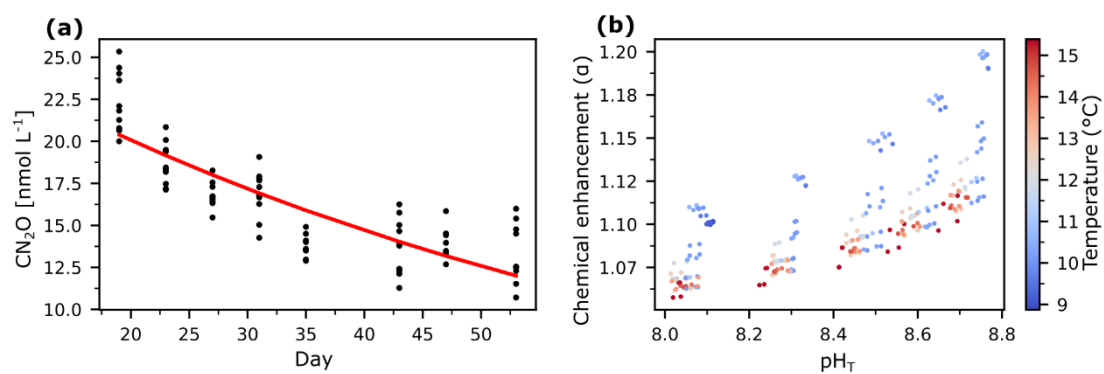
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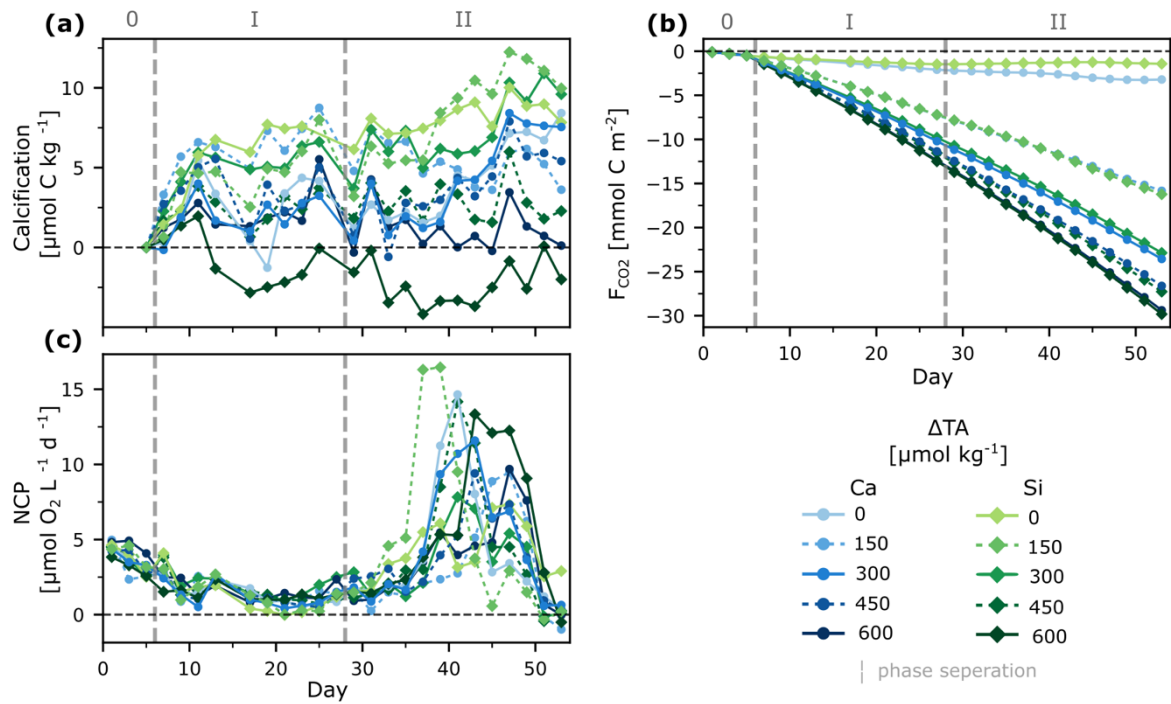
**Figure S1: Temporal development of environmental conditions of the enclosed water masses and the Fjord at the mooring site.** Water column averaged salinity (a) and temperature (b) over time obtained from CTD casts, and (c, d, e, f) laboratory nutrient and Chl *a* measurements of depth integrated water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



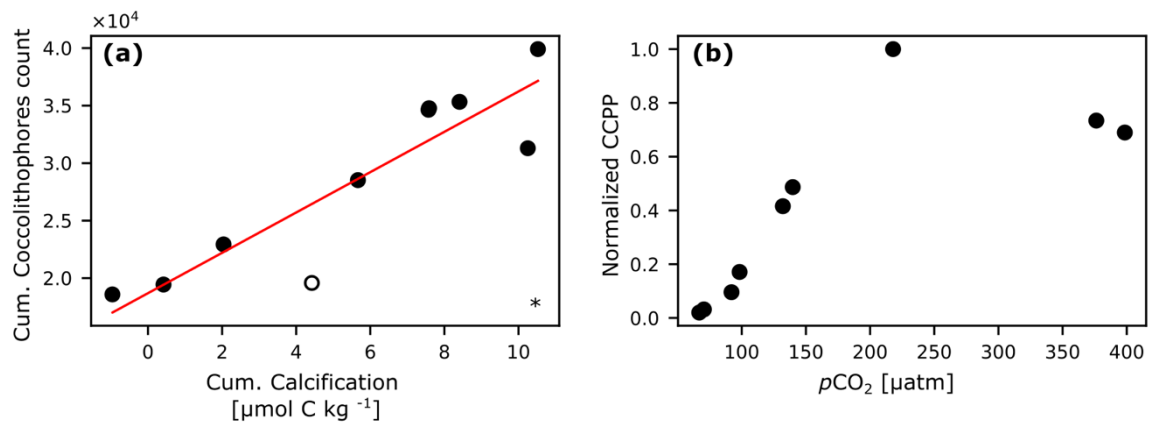
**Figure S2: Measured pH vs pH derived from measurements of TA and DIC.** The obtained linearity was used to recalibrate measurements, yielding  $\text{pH\_corrected} = (\text{pH\_measured} - 0.5163) / 0.936$ .



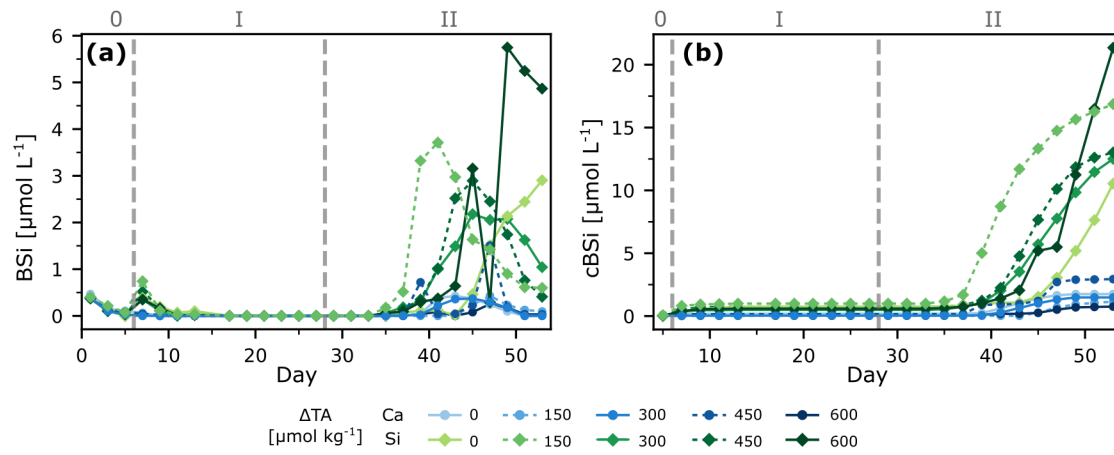
**Figure S3: Measured  $\text{N}_2\text{O}$  concentrations during the experiment (a), and chemical enhancement according to Hover and Berkshire (1969) calculated for measured  $k$ ,  $S$ ,  $T$  and  $\text{pH}_T$  (b).**



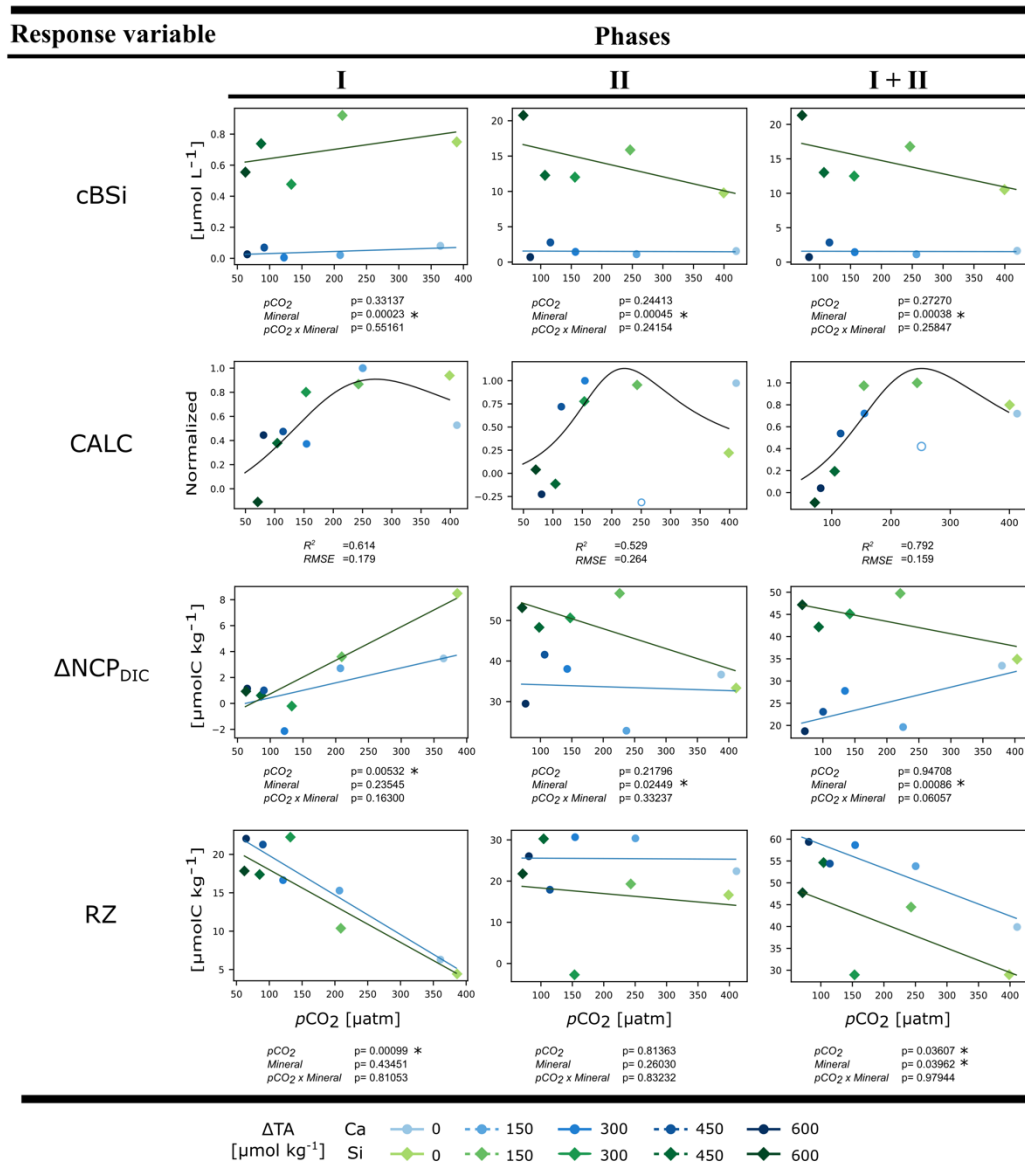
**Figure S4:** Cumulative calcification (CALC) (a), cumulative  $F_{\text{CO}_2}$  (b), and net community production (NCP) obtained from  $\text{O}_2$  incubation measurements – re-fitted from Marín-Samper et al. (2024) (c) over time.



**Figure S5: Calculations supporting calcification estimates.** Cumulative coccolithophore counts ( $\text{cells mL}^{-1}$ ) from flow cytometry measurements (Cytosense, Cytobuoy, Netherlands) vs estimated cumulative calcification (CALC) (a), and normalized cumulative  $\text{CaCO}_3$  production potential (CCPP) vs  $p\text{CO}_2$  (b). The hollow circle has been excluded from analysis as an outlier, \*  $p < 0.05$ .



**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.



**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.