

Global Biogeochemical Cycles

Supporting Information for

Modeling iron and light controls on the summer *Phaeocystis antarctica* bloom in the Amundsen Sea Polynya

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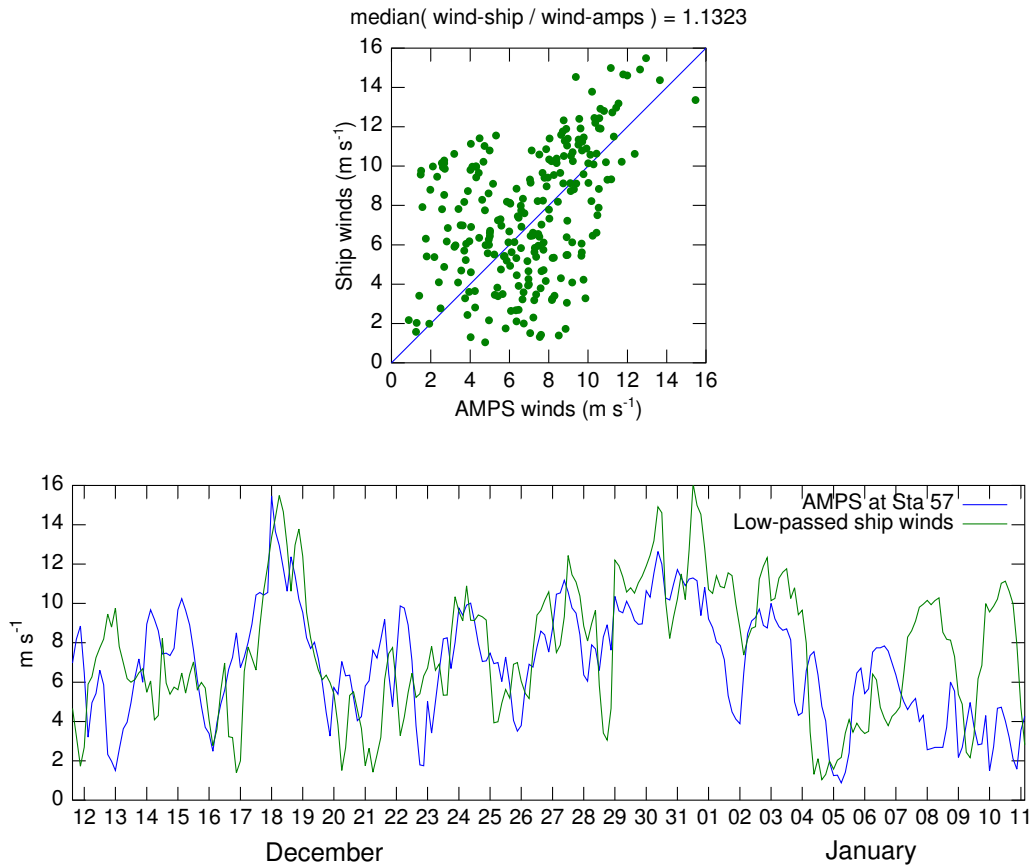
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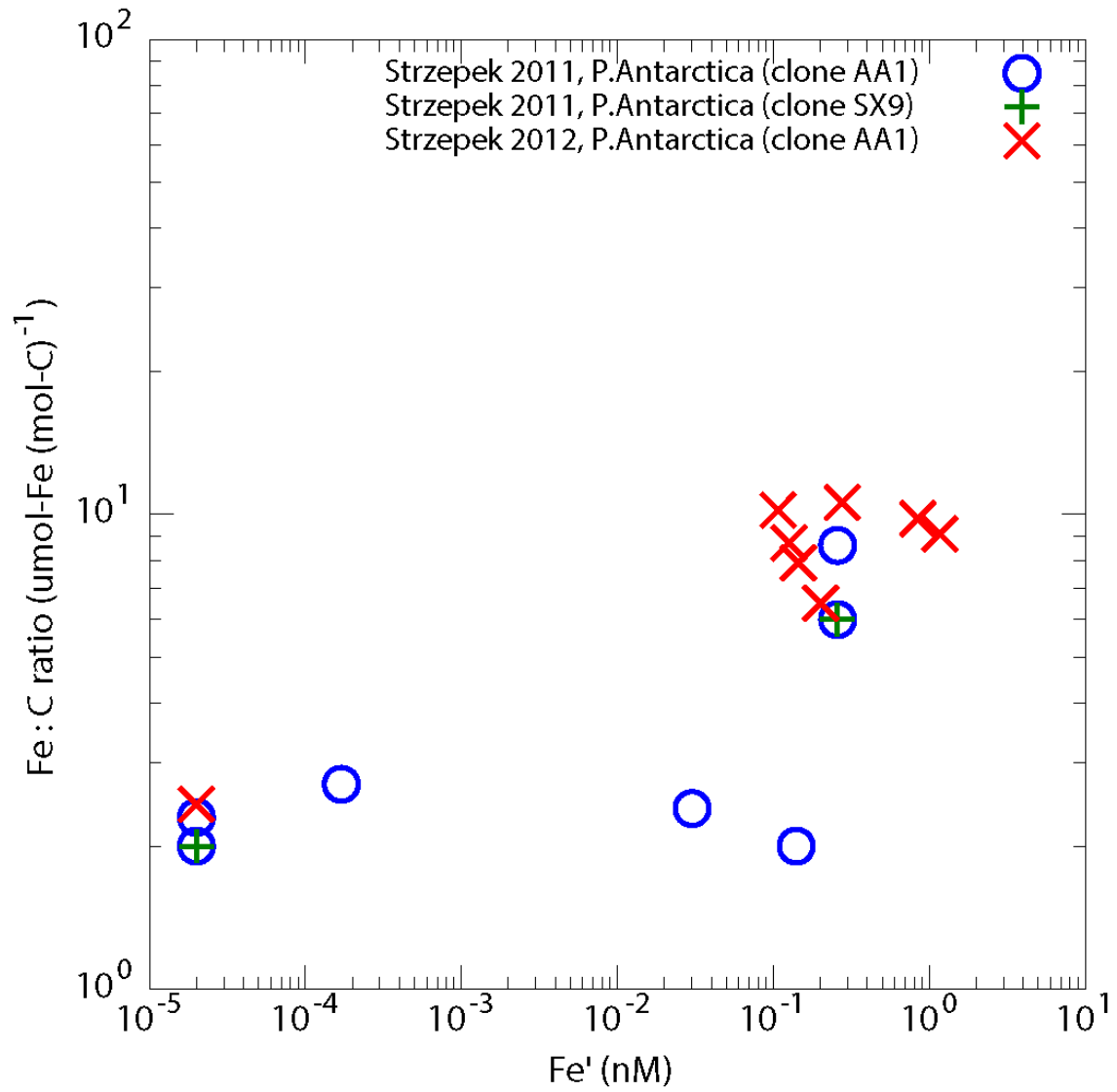
Introduction

Supplementary Figure S1 provides more model-data comparisons. Supplementary Figure S2 shows the data motivating our choice of Fe:C ratio. Supplementary Figure S3 shows detailed model output for all stations used in this study.

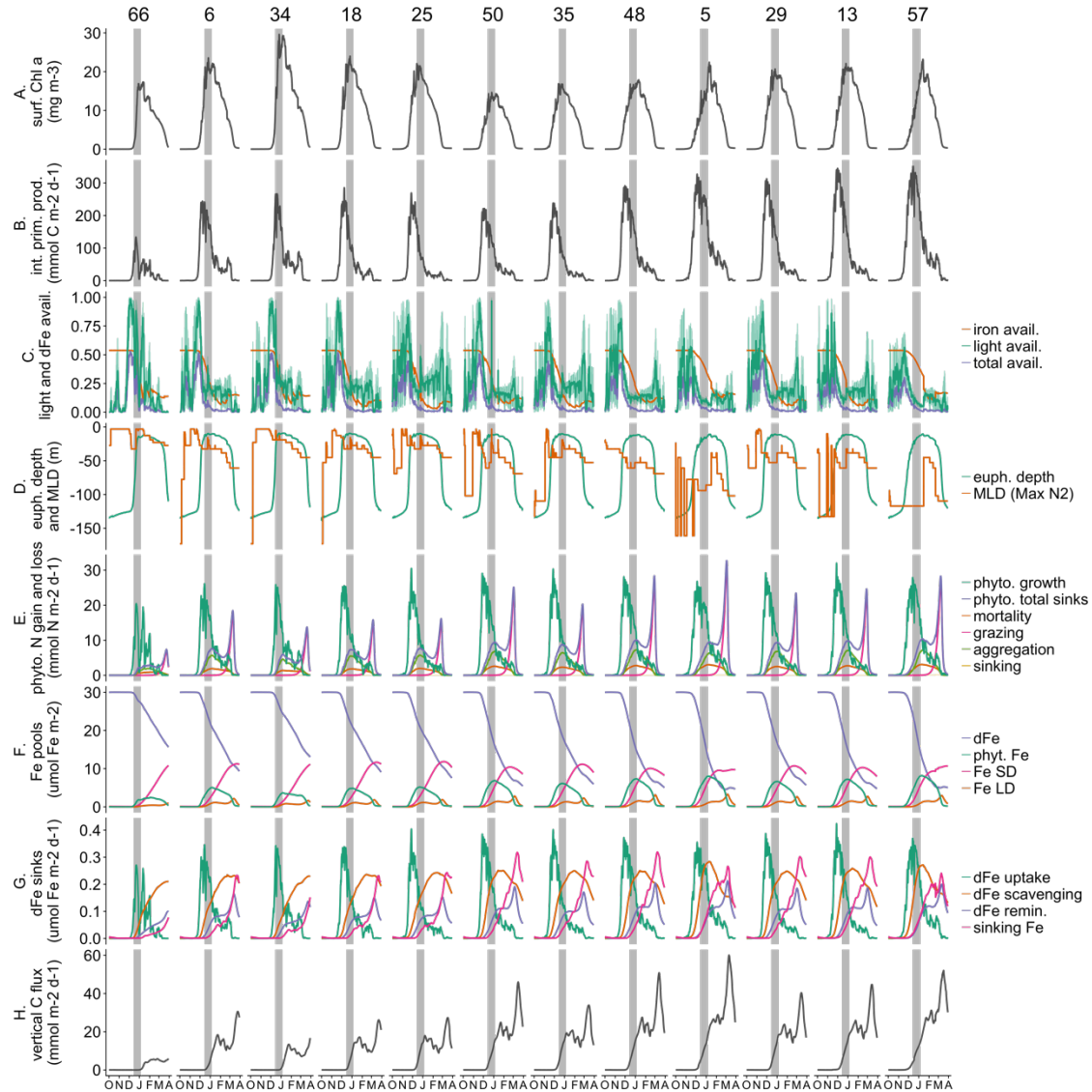


Figure

S1. Comparison between AMPS winds and winds measured from the ship during ASPIRE. The AMPS winds (Powers et al., 2012) were from inside the polynya (Station-57) and have a 3-hour resolution. The ship winds have a resolution of 1 minute and were filtered with a cutoff period of 6 hours for consistency with the AMPS winds. Upper panel: Scatter plot of AMPS winds and ship winds. Bottom panel: Time-series of the two wind products for the ASPIRE period.



S2. Experimental data for *Phaeocystis antarctica* (Strzepek et al., 2011, 2012).



S3. Timelines of A) surface Chl *a*, B) integrated gross primary production, C) light, iron, and combined light and iron availability (see Equations (17), (19), and (21) in Section 2.8) over the mixed layer, D) euphotic depth and mixed layer depth (MLD), E) phytoplankton growth and losses integrated over the top 100 m, F) Fe concentration in different pools integrated over the top 100 m, G) dFe fluxes integrated over the top 100 m, and H) 100 m vertical carbon fluxes for all 12 stations, arranged from shallowest to deepest average MLD. The green shaded regions in each panel in C) show the light saturation at the 10% and 90% daily light levels. The vertical gray bars show the period ASPIRE data is available.