

## SUPPLEMENTAL INFORMATION

### Seasonal photoacclimation in the North Pacific Transition Zone

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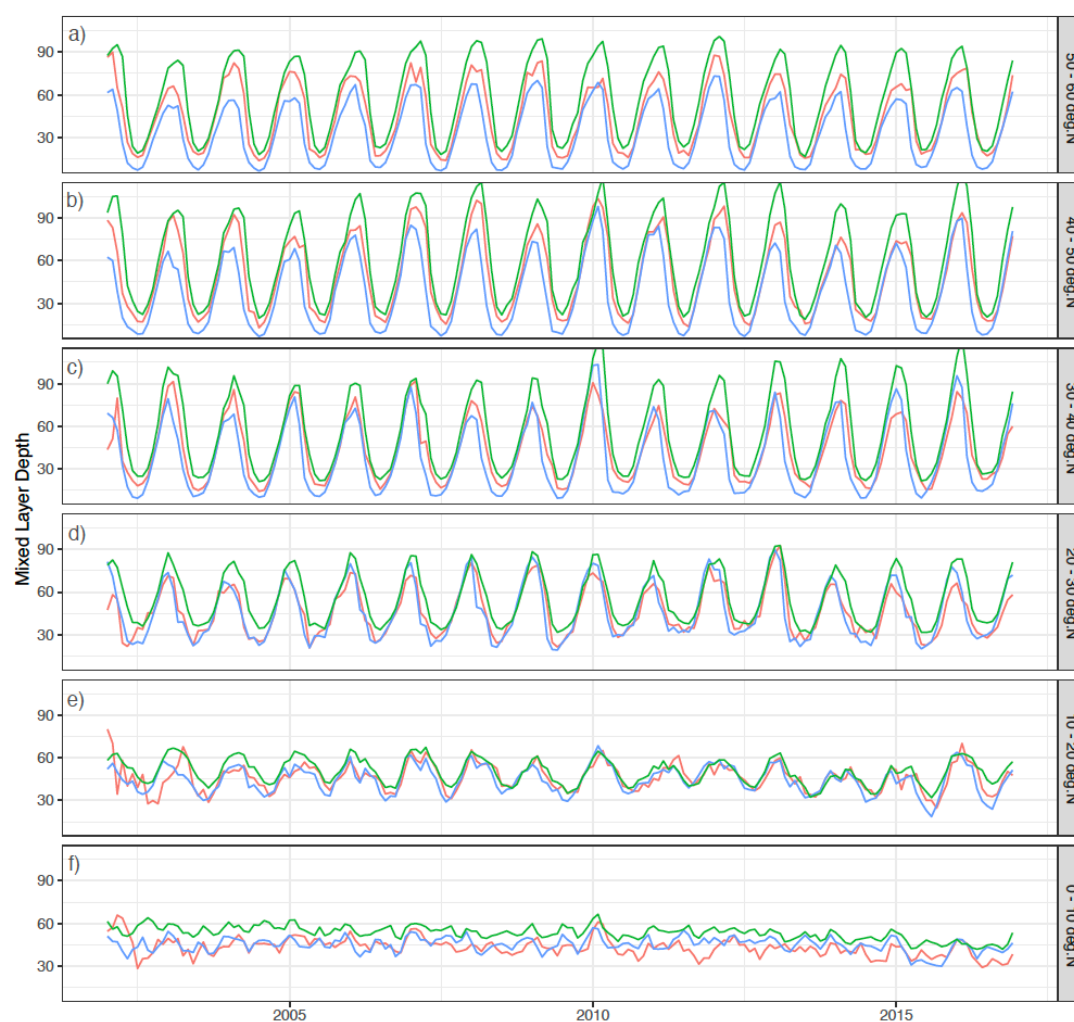


Figure S1. Time series of the three mixed layer estimates considered in this study. Each panel corresponds to a ten-degree latitude band (labels on the right of each panel). Argo observations are given in red, HyCOM reanalysis is in green, SODA reanalysis is in blue. We note small deviations in the amplitude across mixed layer estimates but no appreciable deviation in phasing which controls the correlations analyzed in the paper.

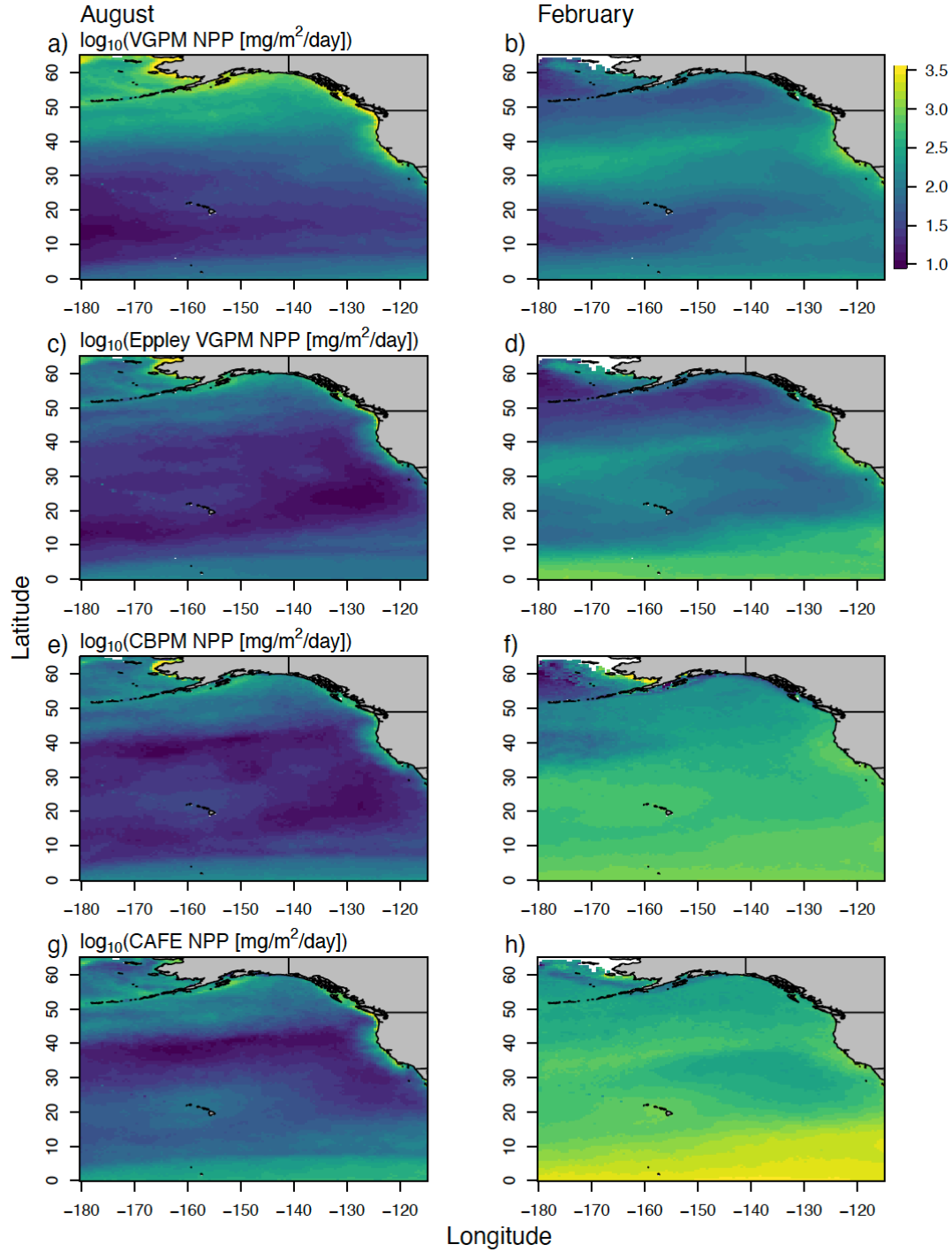


Figure S2. Comparison of August (left column) and February (right column) net primary productivity according to four different satellite based net primary productivity models. Model acronym is given in left column panel labels. See main text for details.

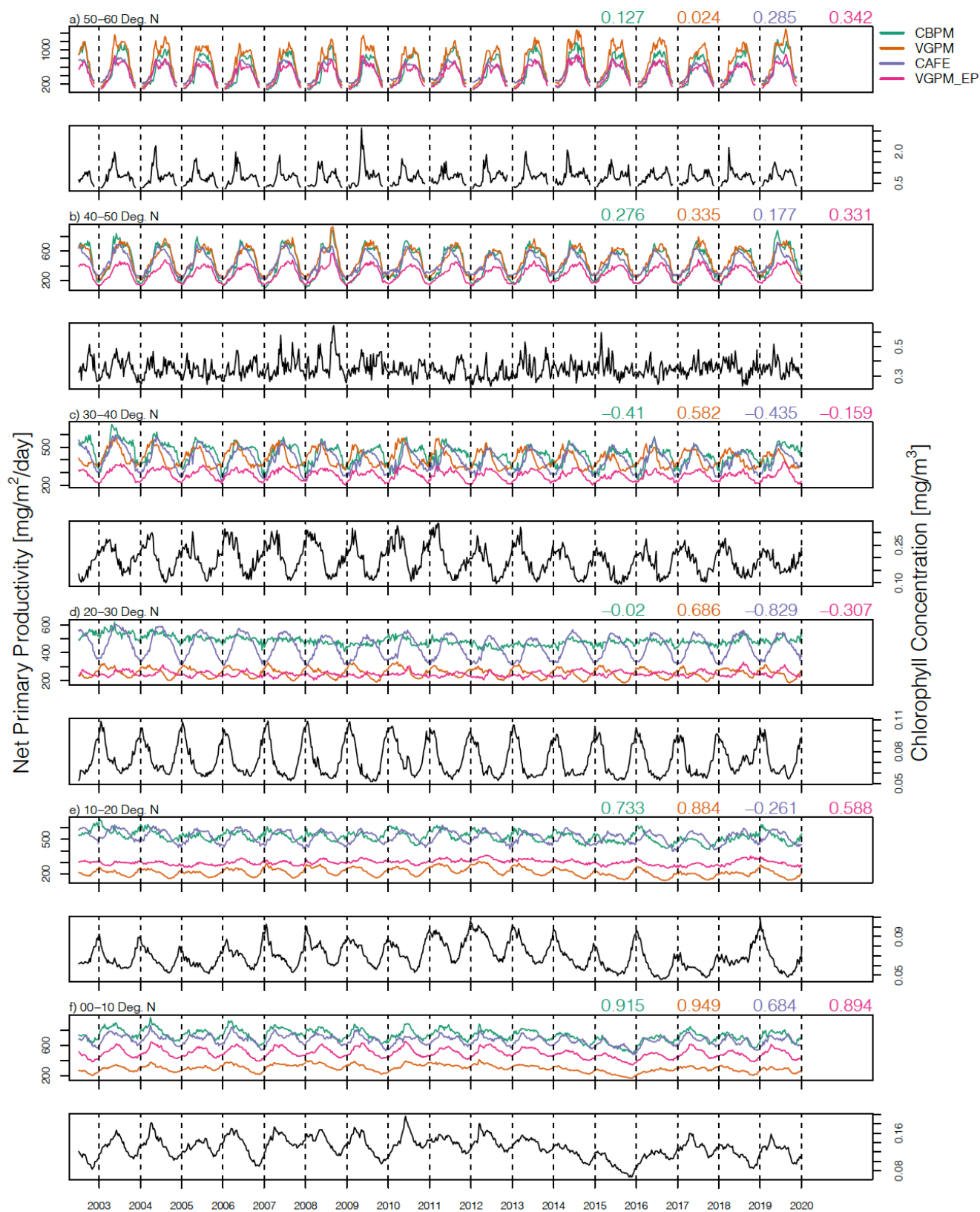


Figure S3. Time series and interannual correlations between four net primary productivity models and chlorophyll. Each pair of panels gives time series for a ten-degree latitude band (labeled in the top left). Net primary productivity models are colored. Carbon-based productivity model (CBPM) is green; vertically generalized productivity model (VGPM) is orange; carbon, assimilation, and fluorescence-resolving model (CAFÉ) is blue; vertically generalized productivity model with the Eppley temperature dependence (VGPM\_EP) is in red. The chlorophyll time series corresponding to each latitude band is given in black under each net primary productivity panel. Colored numbers give the correlation coefficient between each net primary productivity model and chlorophyll.

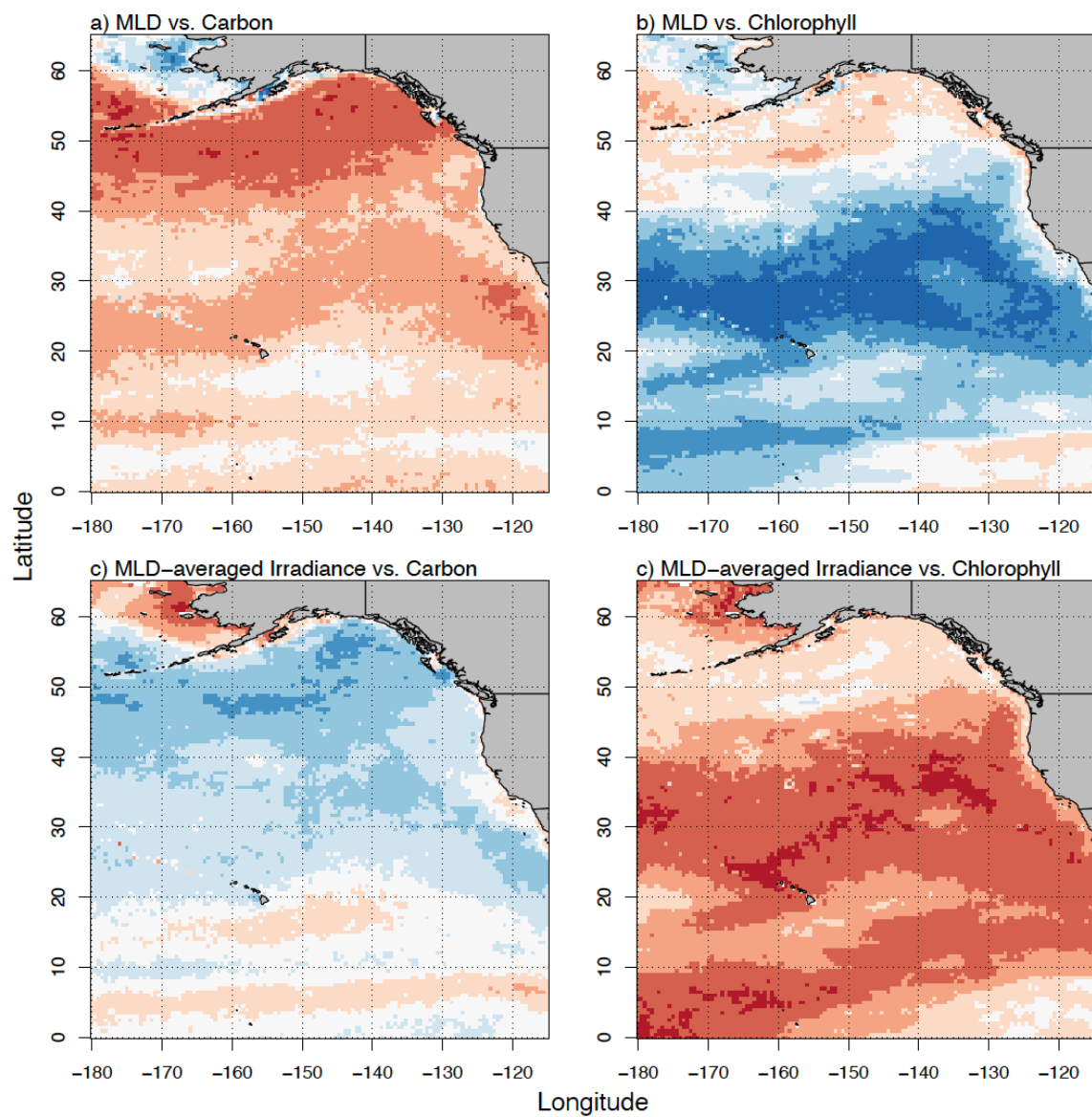


Figure S4. As in Figure 6 of the main text but using mixed layer depth estimates from the Simple Ocean Data Assimilation (SODA) reanalysis product. See main text for details.

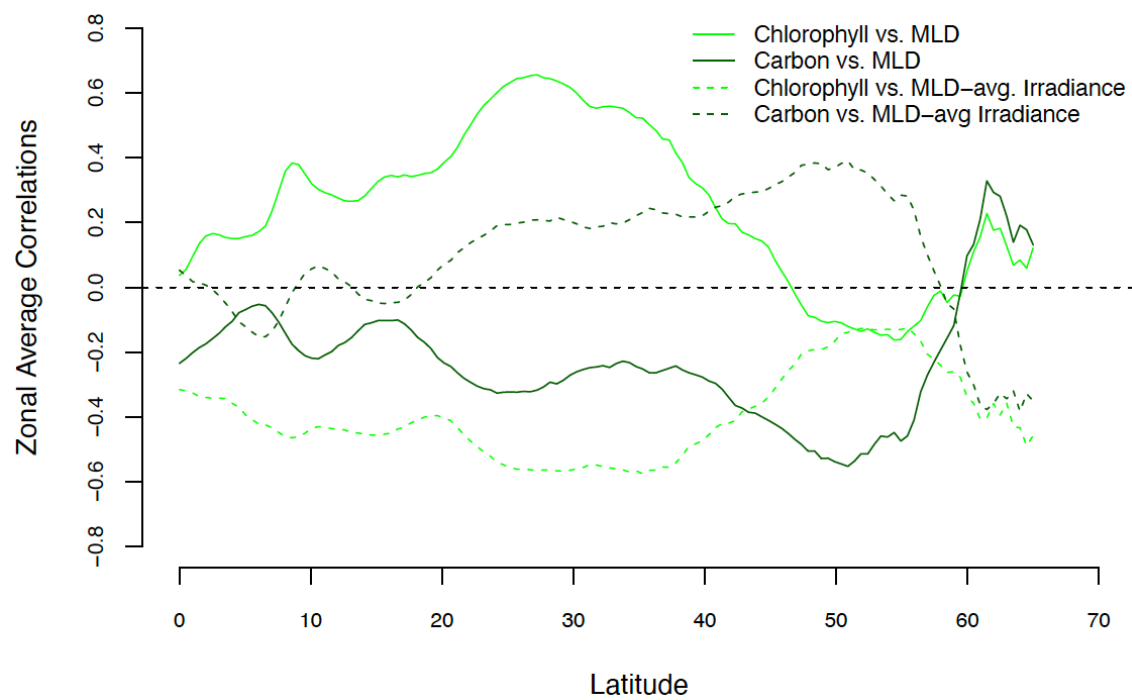


Figure S5. As in Figure 7 of the main text but using mixed layer depth estimates from the Simple Ocean Data Assimilation (SODA) mixed layer depth reanalysis product. See main text for details.

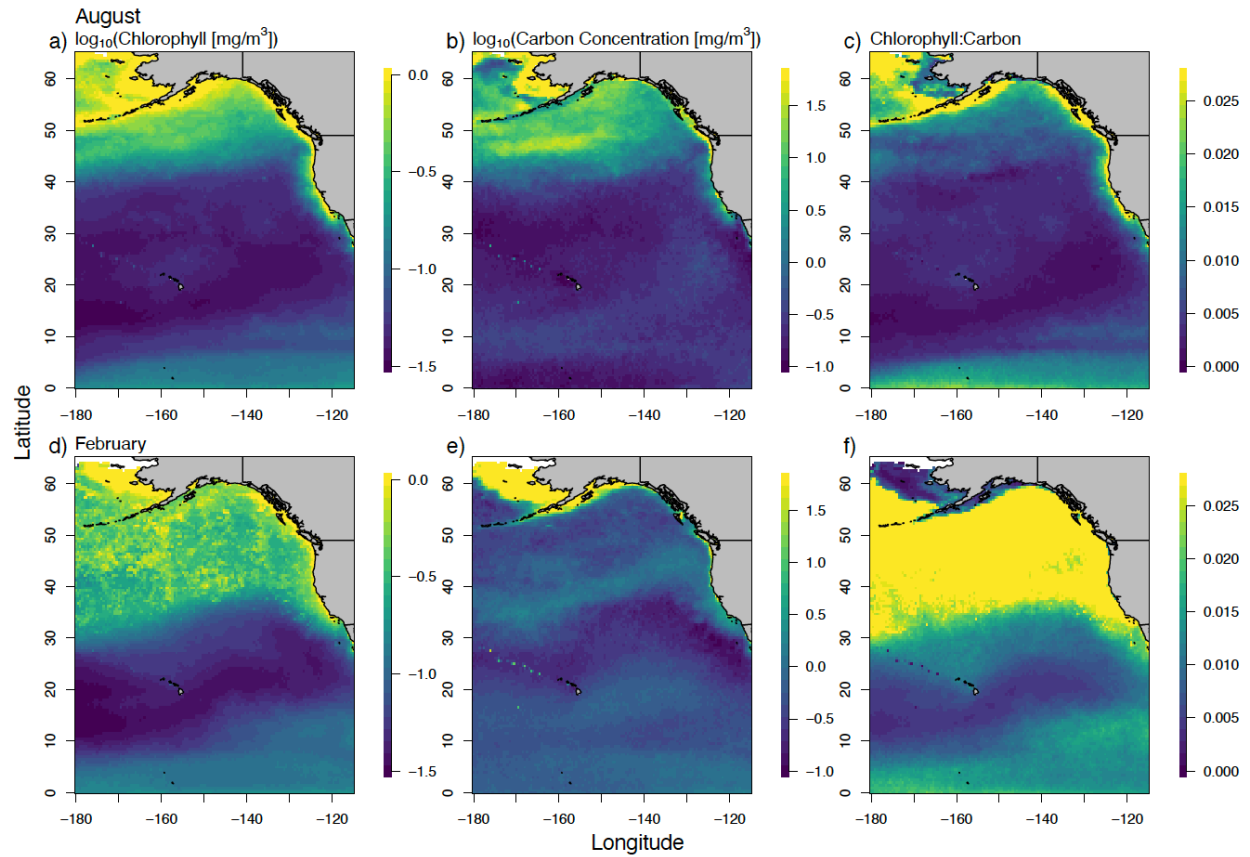


Figure S6. As in Figure 1 of the main text but using chlorophyll concentrations and backscatter coefficients estimated from the Garver-Siegel-Maritorena (GSM) ocean color inversion algorithm (Maritorena et al., 2002). Backscatter coefficients are converted to phytoplankton carbon estimates using the equations given in Behrenfeld et al., (2005) and Westberry et al., (2008).

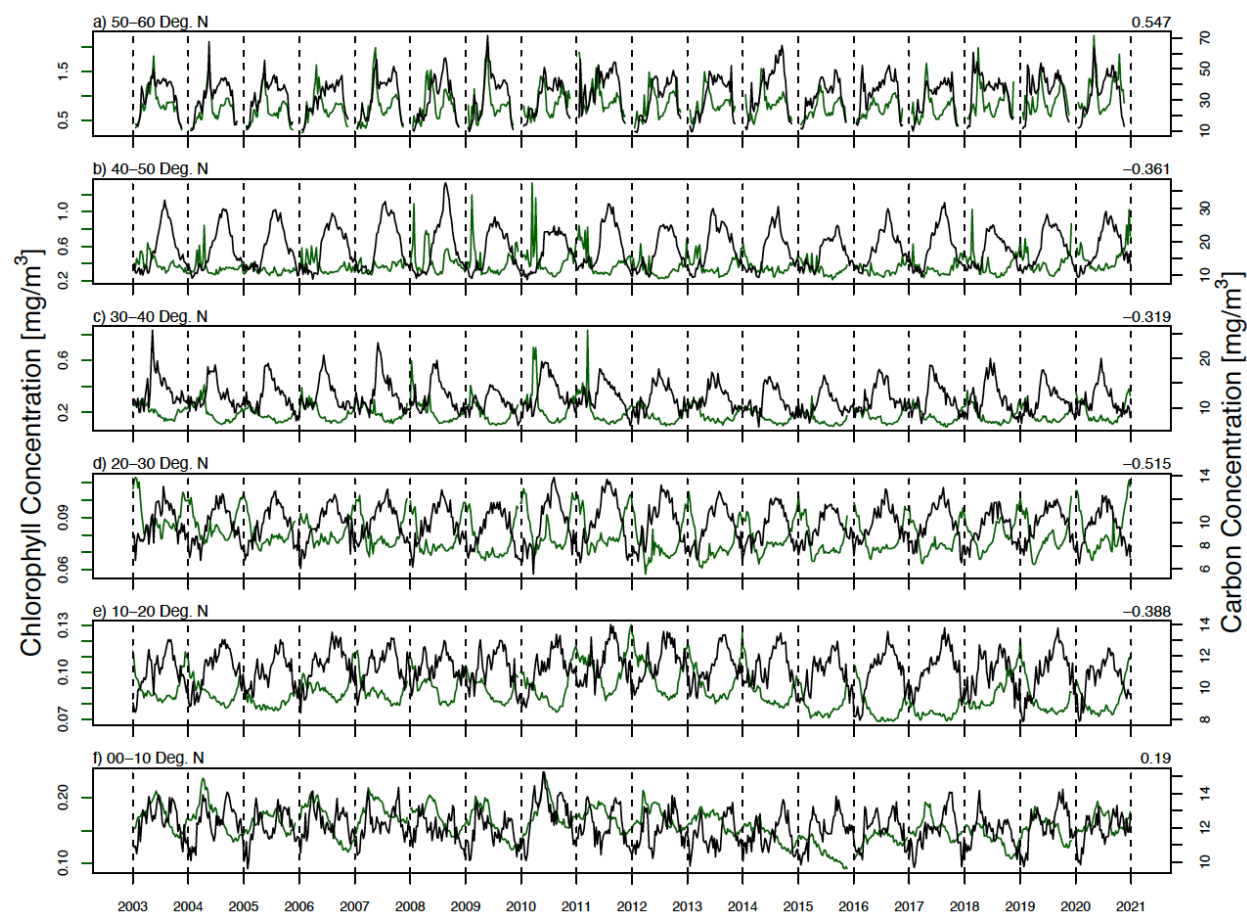


Figure S7. As in Figure 2 of the main text but using chlorophyll concentrations and backscatter coefficients estimated from the Garver-Siegel-Maritorena (GSM) ocean color inversion algorithm (Maritorena et al., 2002).

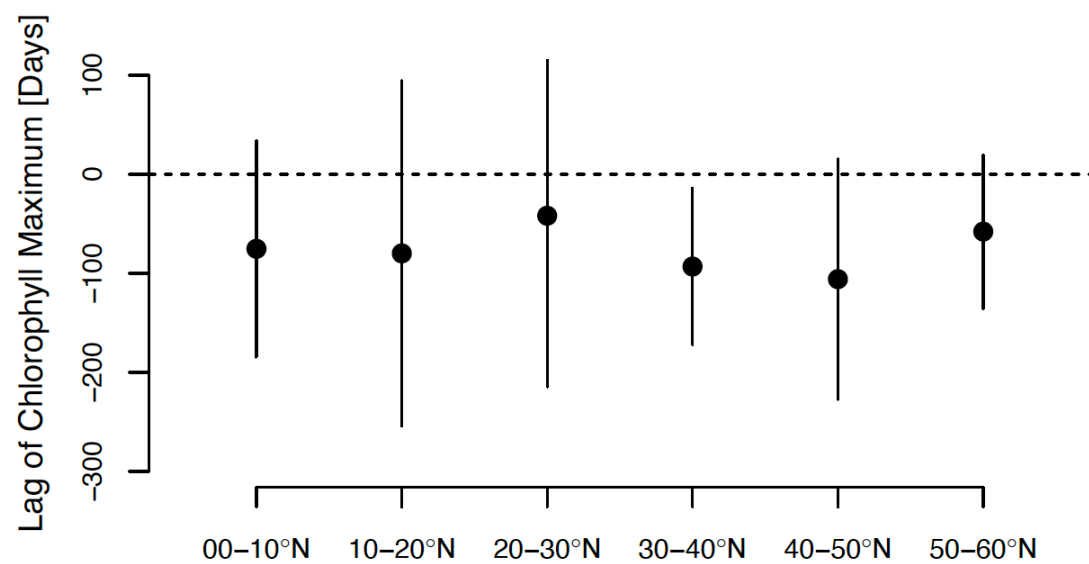


Figure S8. As in Figure 3 of the main text but using chlorophyll concentrations and backscatter coefficients estimated from the Garver-Siegel-Maritorena (GSM) ocean color inversion algorithm (Maritorena et al., 2002).

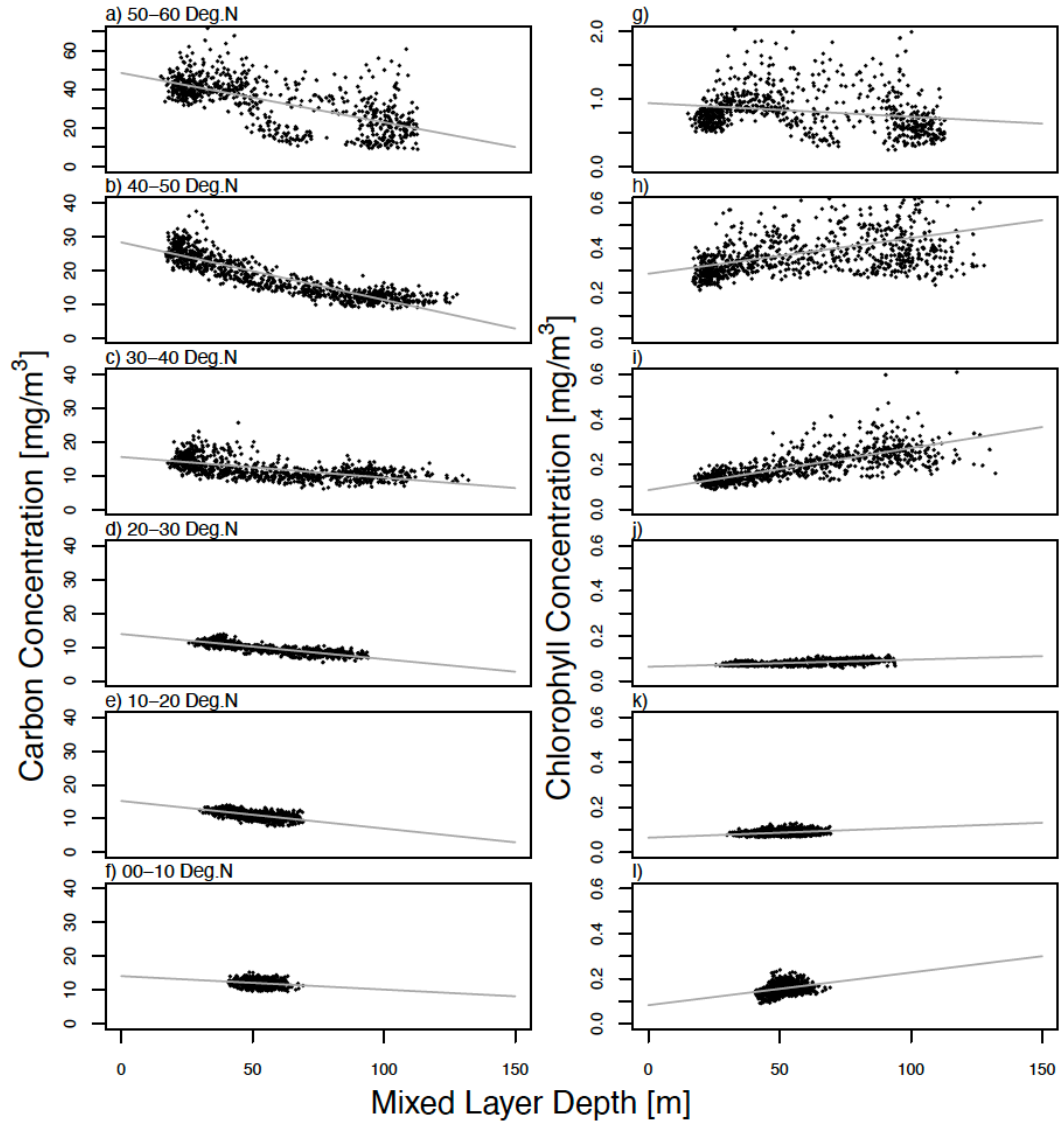


Figure S9. As in Figure 4 of the main text but using chlorophyll concentrations and backscatter coefficients estimated from the Garver-Siegel-Maritorena (GSM) ocean color inversion algorithm (Maritorena et al., 2002).

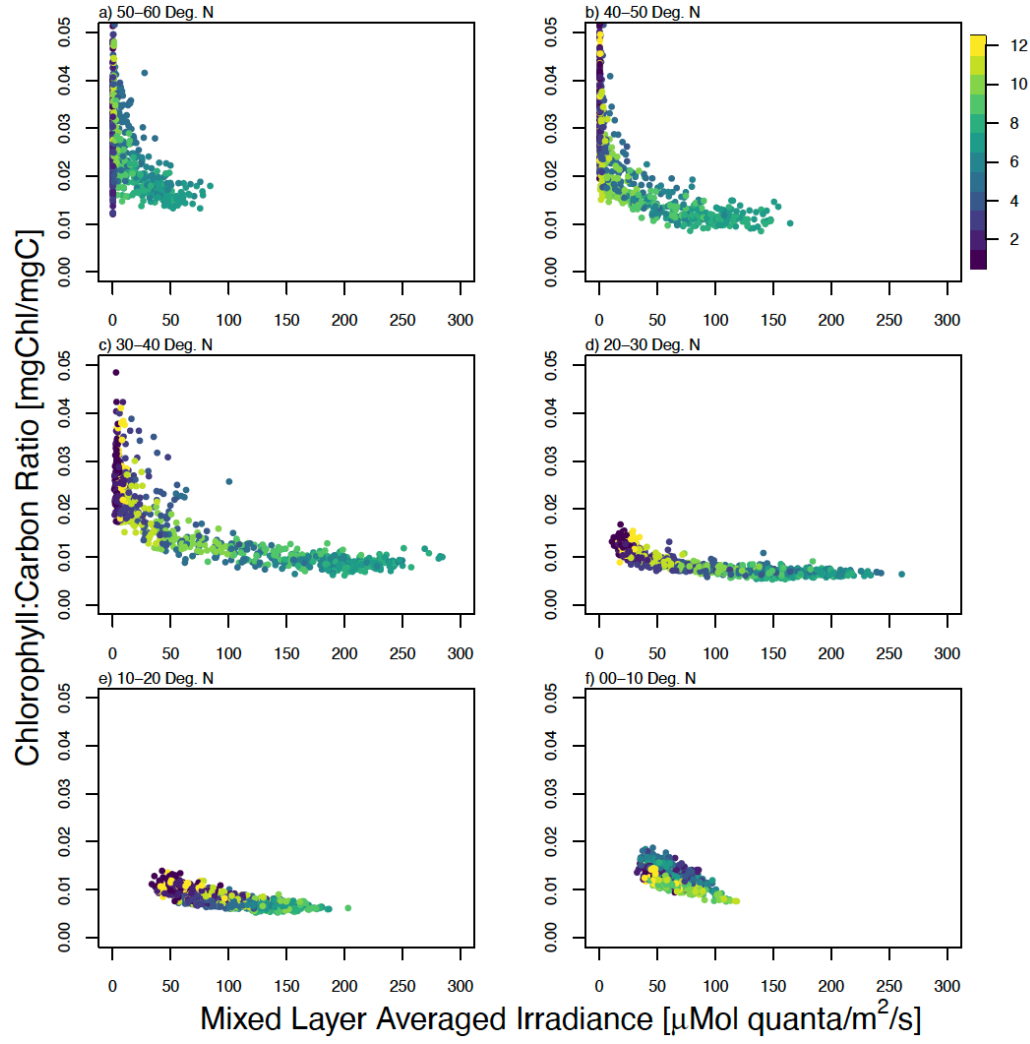


Figure S10. As in Figure 8 of the main text but using chlorophyll concentrations and backscatter coefficients estimated from the Garver-Siegel-Maritorena (GSM) ocean color inversion algorithm (Maritorena et al., 2002).