

Figure S1. (a) Scatter plot of chlorophyll biomass interpolated using ordinary Kriging CB_2 versus chlorophyll biomass interpolated using optimal interpolation (OI) CB_3 . (b) As in panel b), but for chlorophyll biomass from equation (1) CB_1 versus CB_3 . Red lines are linear least-square fits. Equations for the least square fits and squares of correlation coefficients are given in upper left. Dashed black lines are 1-to-1 lines.

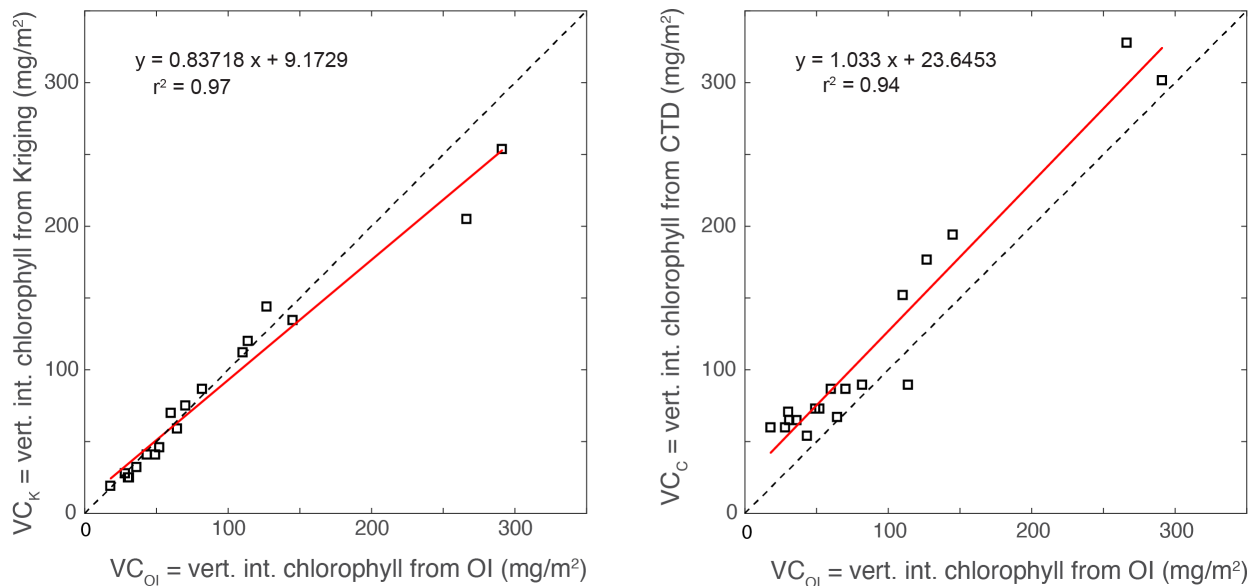


Figure S2. (a) Scatter plot of vertically integrated chlorophyll biomass VC_K using ordinary Kriging versus vertically integrated chlorophyll using optimal interpolation VC_{OI} . (b) As in (a), but for vertically integrated chlorophyll from CTD casts from Table 1 of (Brzezinski & Washburn, 2011) versus VC_{OI} . Red lines are linear least-square fits. Equations for the least square fits and squares of correlation coefficients are given in upper left. Dashed black lines are 1-to-1 lines.

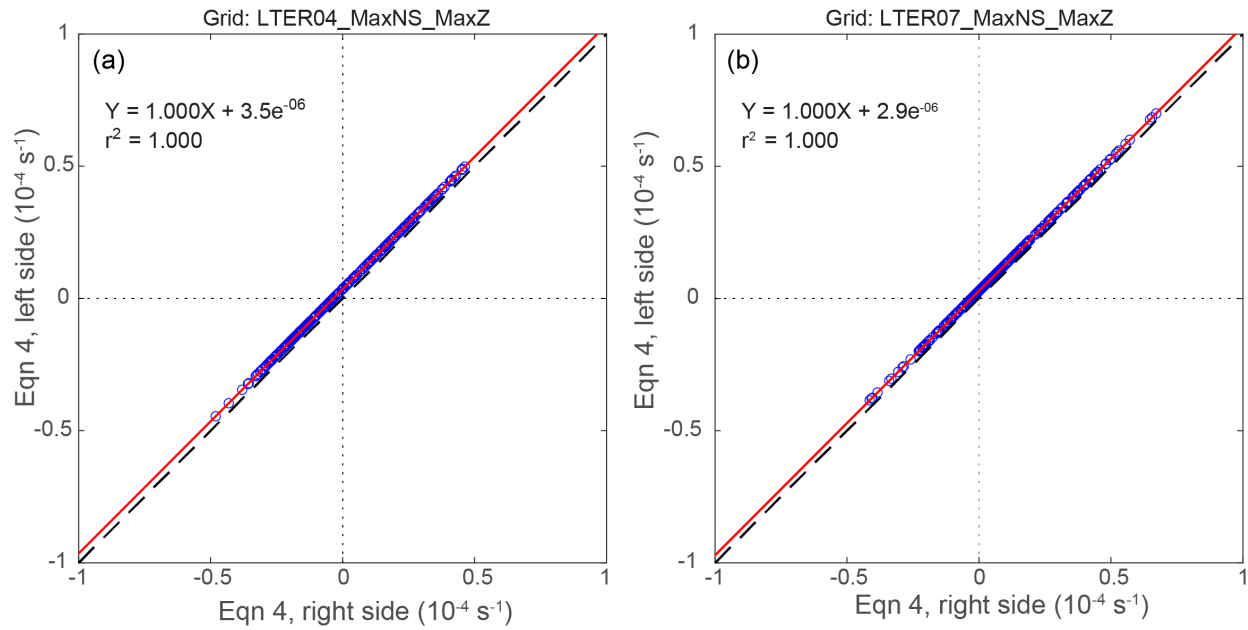


Figure S3. Scatter plot of the left-hand versus right-hand sides of equation (5) for (a) cruise 4 and (b) cruise 7. Equations for the least square fits and squares of correlation coefficients are given in upper left. Dashed black lines are 1-to-1 lines.

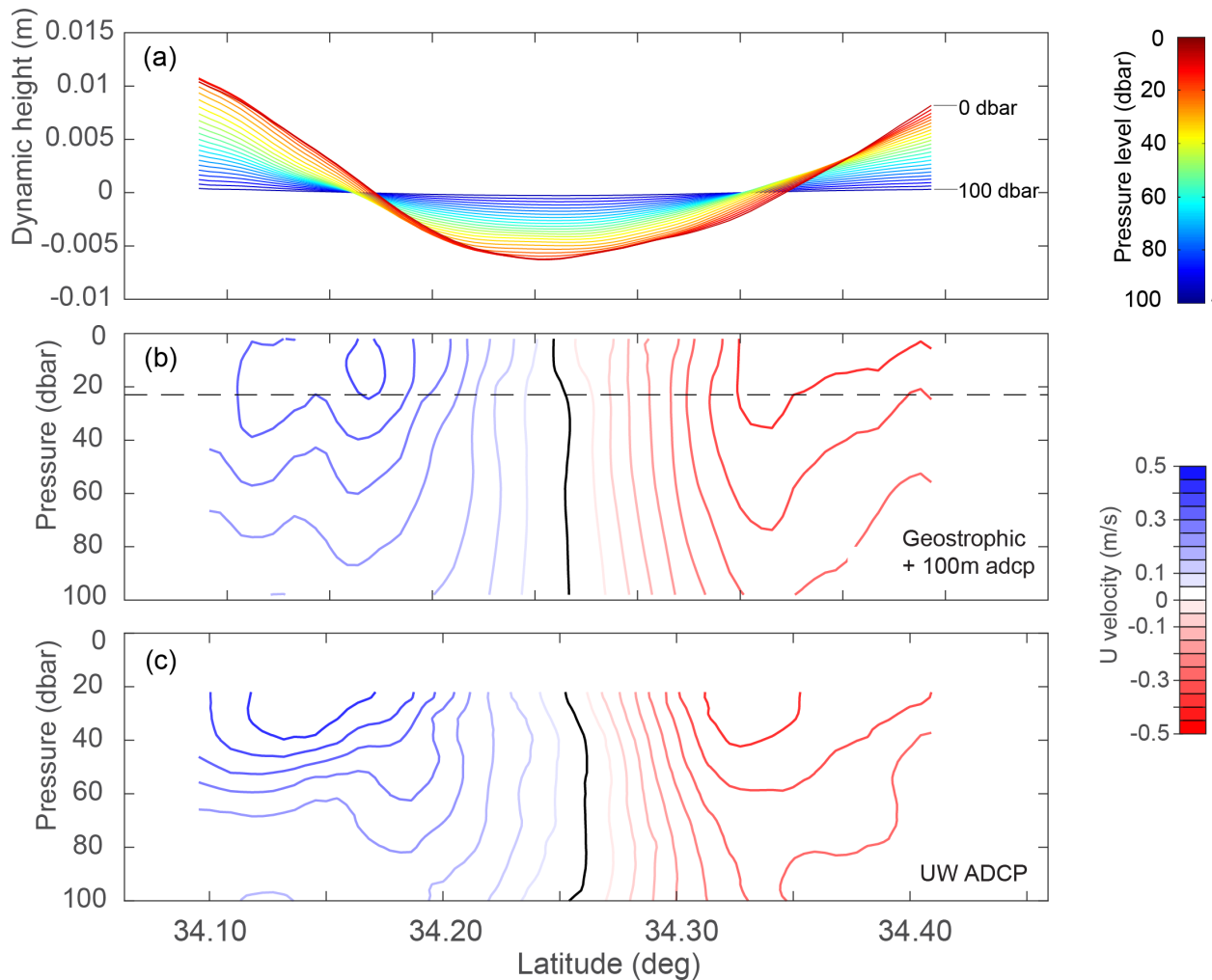


Figure S4. a) Horizontal profiles along line C during cruise 7 of dynamic height for a reference pressure of 100 dbar with mean values at each pressure level subtracted. Color bar to right indicates pressure levels. b) Vertical section of u-component of geostrophic velocity u_g from equation (2) added to u-component of ADCP at 100 dbar. No ADCP data were available above the dashed line at 24 dbar. c) Vertical section of u-component of velocity measured by ADCP. Color bar to right indicates u-velocities (positive eastward).

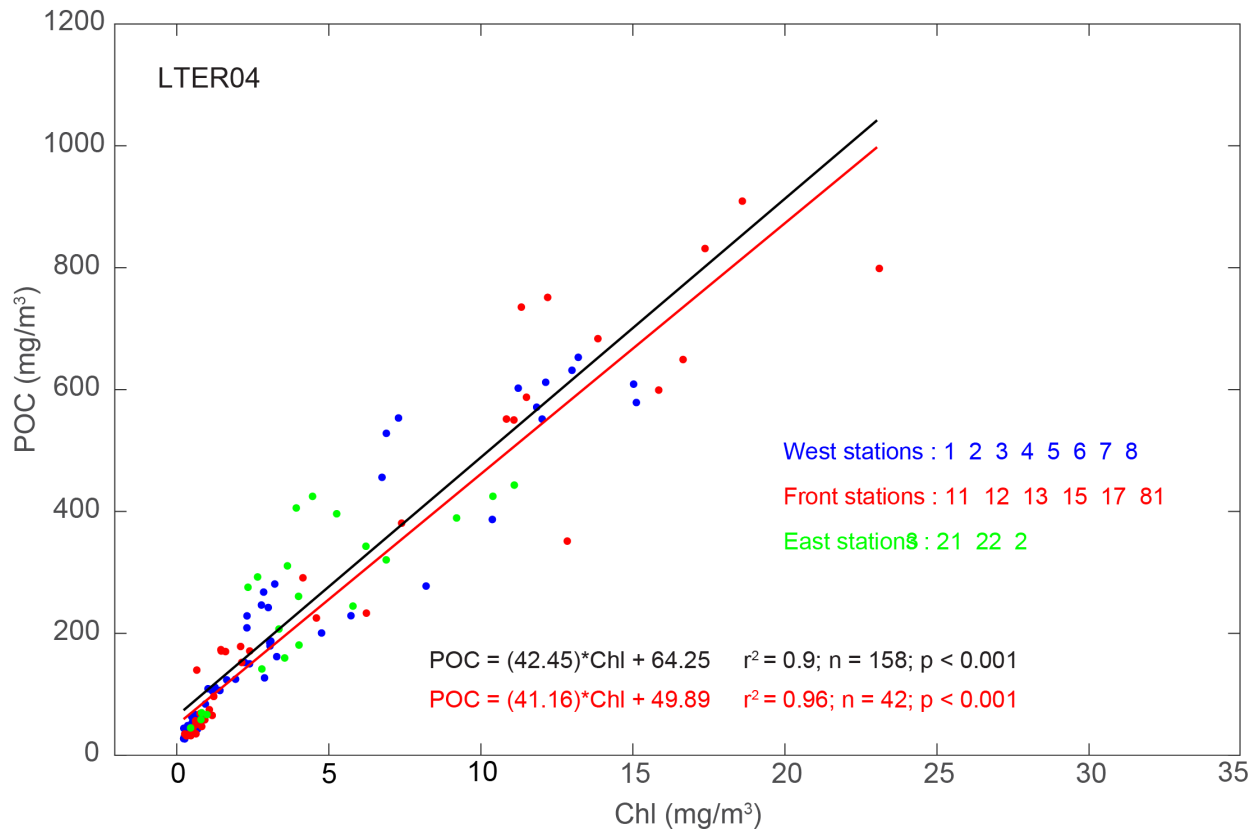


Figure S5. Scatter plot of chlorophyll (Chl) versus particulate organic carbon (POC) for bottle samples collected during cruise 4 at “west stations” (blue dots), “front stations” (red dots), and “east stations” (green dots). Station locations are shown in Fig. 1. Red line is the least-square fit for the front stations and black line is the fit for the west, front, and east stations.

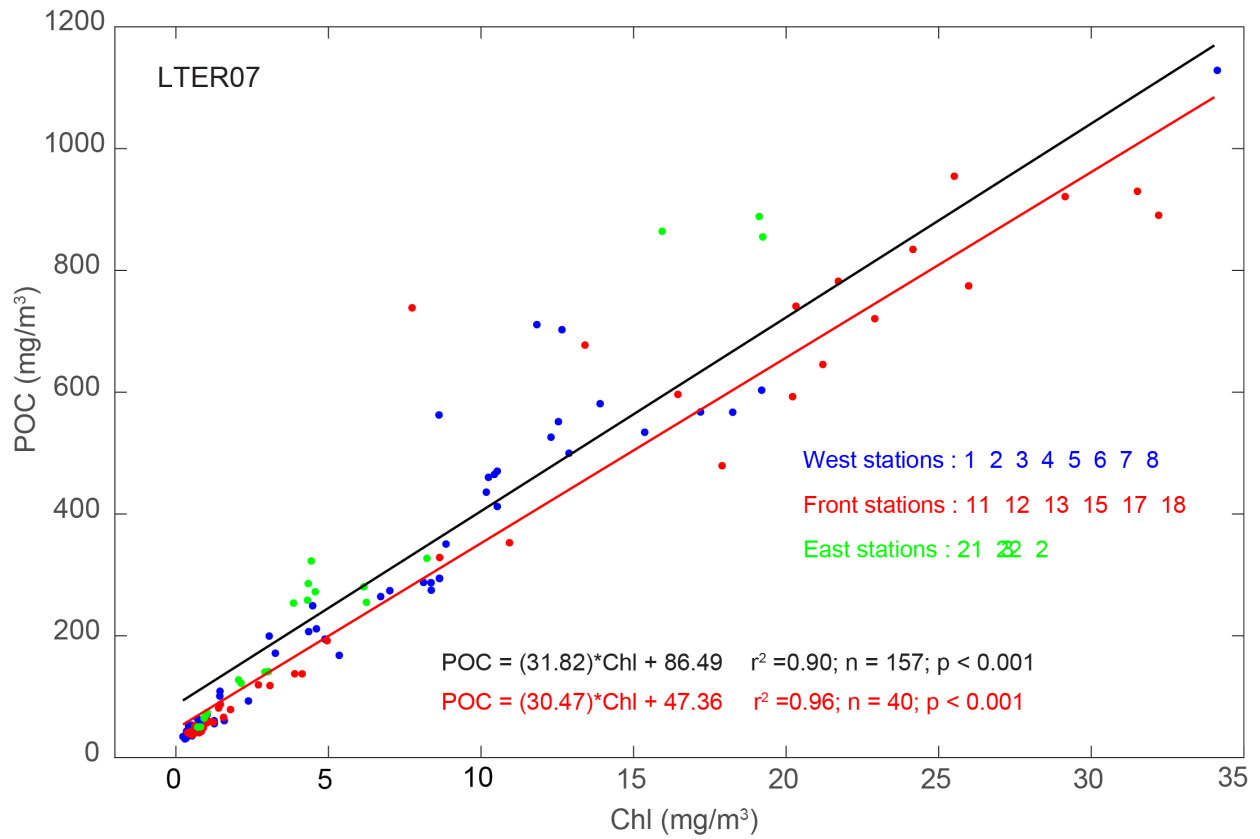


Figure S6. As Fig. S5, but for cruise 7.

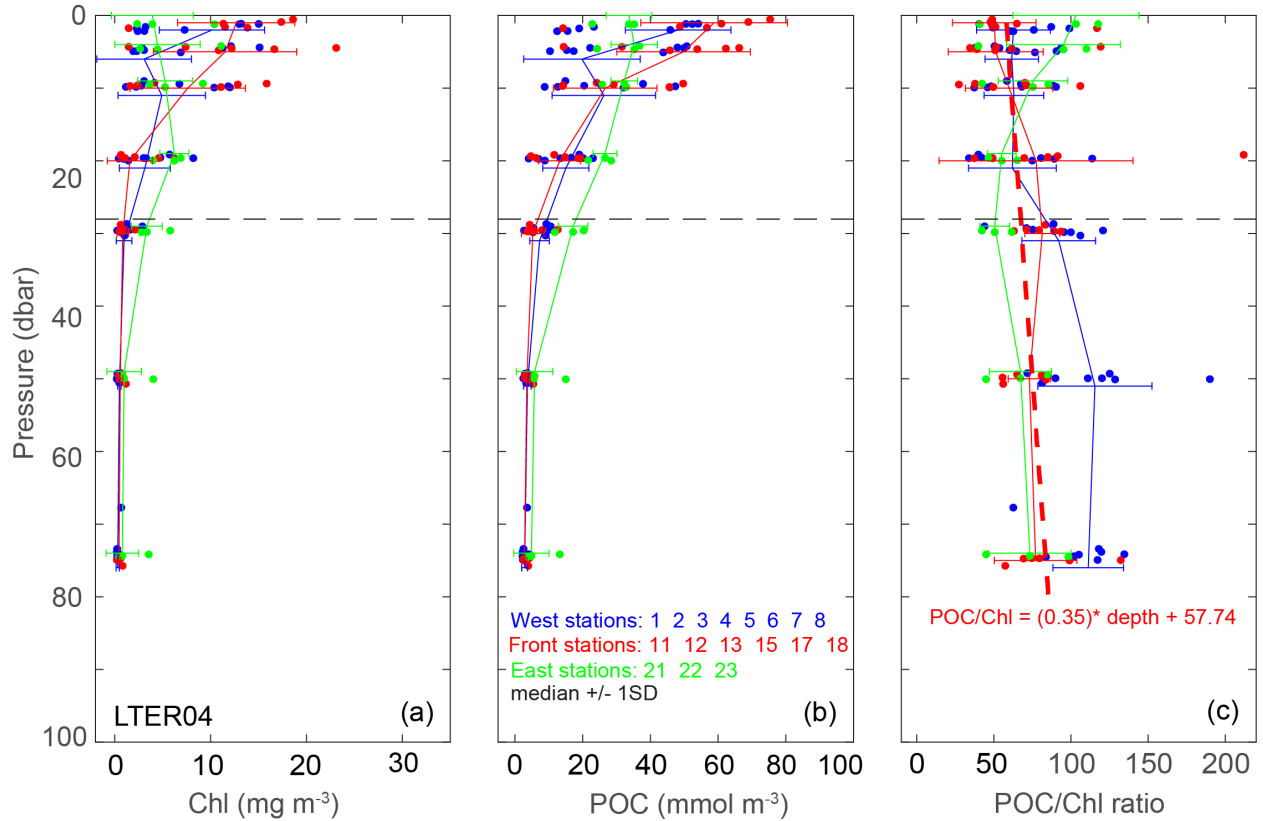


Figure S7. Vertical profiles for cruise 4 of (a) chlorophyll (Chl), (b) particulate organic carbon (POC), and (c) POC/Chl ratio for “west stations” (blue), “front stations” (red), and “east stations” (green). Blue, red, and green lines connect median values. Dashed line in panel c) is a least-square fit to the medians. Bars are standard deviations centered on medians. Horizontal dashed lines indicate p1%.

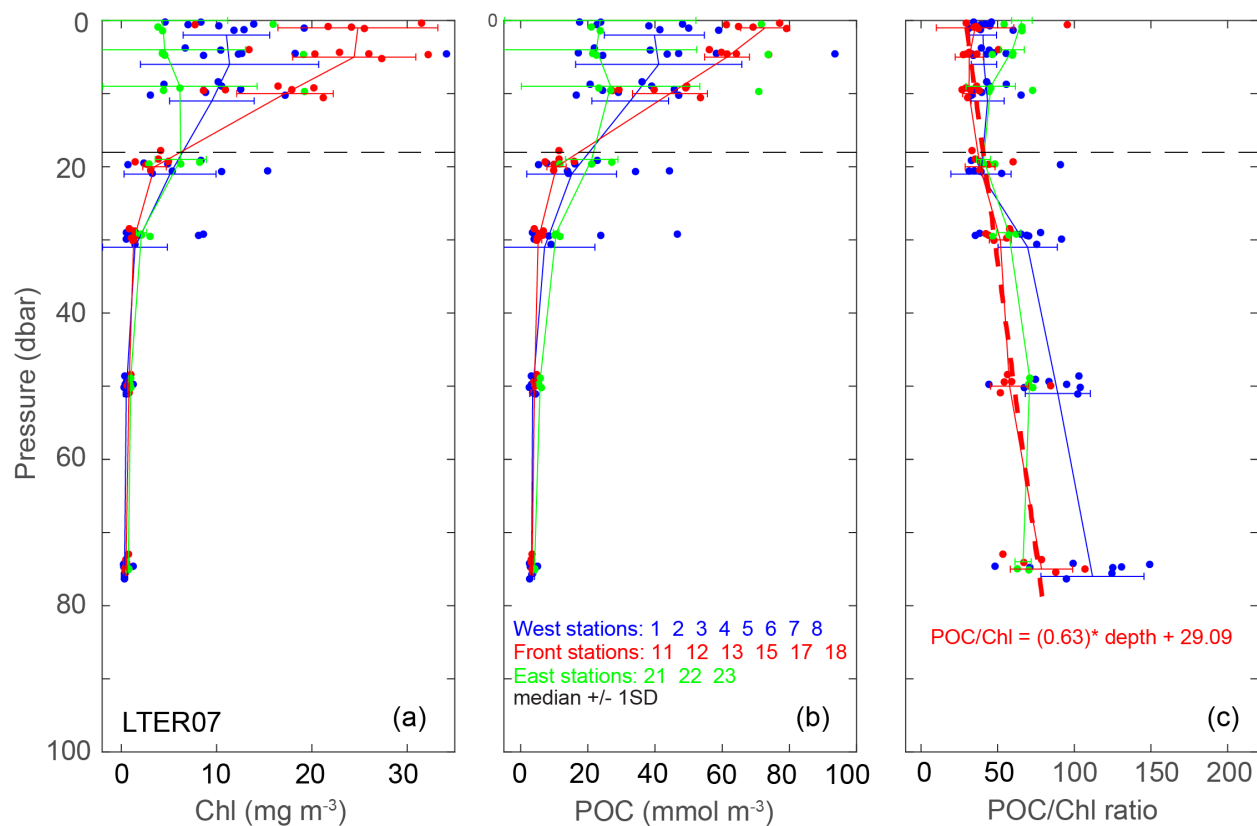


Figure S8. As Fig. S7, but for cruise 7.

LITERATURE CITED

Brzezinski MA, Washburn L (2011) Phytoplankton primary productivity in the Santa Barbara Channel: Effects of wind-driven upwelling and mesoscale eddies. *J Geophys Res Oceans* 116:C12013 <https://doi.org/10.1029/2011JC007397>