The following supplement accompanies the article

Relationship between light, community composition, and the electron requirement for carbon fixation in natural phytoplankton

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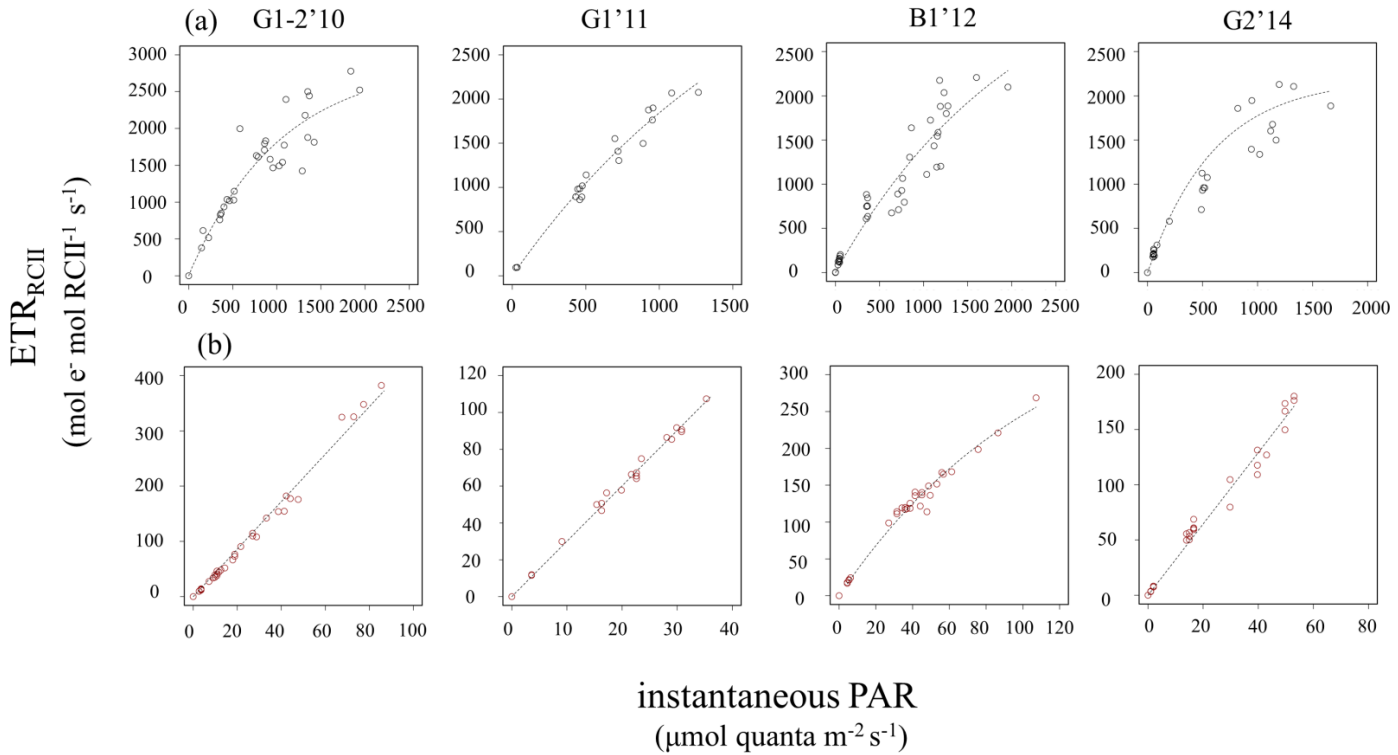

Fig. S1 Examples of the relationship between PAR (µmol quanta m^{-2} s^{-1}) and ETR_{RCII} (mol e^- mol $RCII^{-1}$ s^{-1}) for phytoplankton populations at 4 stations from within the (a) samples for the upper mixed layer data which exposed to light saturating conditions, the relationship between ETR_{RCII} and PAR was described by exponential fits and (b) data from SCM layers where light intensities were not high enough to cause ETR_{RCII} saturation, simple linear least-square regression fitting was

employed (except B1'12). Dashed lines are the exponential or linear fittings.

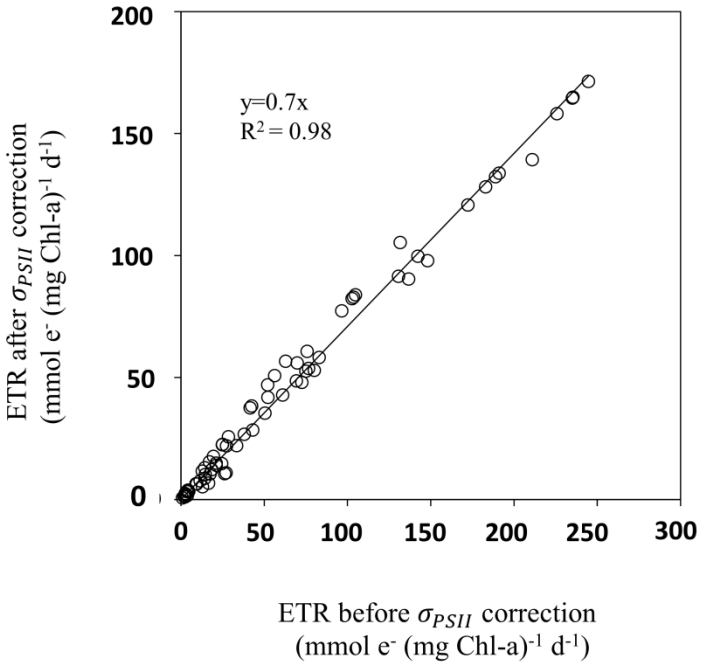

Fig. S2 Plot of ETRs (mmol e^- (mg Chl-a)$^{-1}$ d^{-1}) before and after σ_{PSII} spectra correction.

Table S1 Spearman correlation coefficients for correlations between daily K_C and environmental variables. Temp. = temperature, Sal. = salinity, $a_{ph}^* = a_{ph}^*(440)$, Micro, Nano and Pico represents fraction of micro-, nano- and pico- phytoplankton, respectively.

	PAR	Temp.	Sal.	Chla	NO_3^-+NO_2^-	PO_4^{3-}	DSi	a_{ph}^*	micro	nano	pico
K_C	.798**	.477**	-.165	-.270*	-.512**	-.393**	-.177	.313*	-.344*	-.212	.688**
	n=59	n=59	n=59	n=59	n=59	n=59	n=59	n=46	n=59	n=59	n=59

** indicates significance of the correlation at the 0.01 significant level

* indicates significance of the correlation at the 0.05 significant level

Table S2 Influence of various environmental and biological variable on *K*c, estimated by multiply linear regression analysis. Temp. = temperature, Sal. = salinity, $a_{ph}^* = a_{ph}^*(440)$, N = NO_x^-, P = PO_4^{3-}, Si = DSi. Micro, Nano and Pico represents fraction of micro-, nano- and pico-phytoplankton, respectively.

No. of predictor variables	Variables	R^2
1	PAR	0.662
2	PAR, Chla	0.675
3	PAR, Chla, Temp.	0.683
4	PAR, Chla, Temp. Sal.	0.685
5	PAR, Chla, Temp. Sal. a_{ph}^*	0.685
6	PAR, Chla, Temp. Sal. a_{ph}^*, N	0.700
7	PAR, Chla, Temp. Sal. a_{ph}^*, N, P	0.704
8	PAR, Chla, Temp. Sal. a_{ph}^*, N, P, Si	0.707
9	PAR, Chla, Temp. Sal. a_{ph}^*, N, P, Si, Micro	0.723
10	PAR, Chla, Temp. Sal. a_{ph}^*, N, P, Si, Micro, Nano	0.779
11	PAR, Chla, Temp. Sal. a_{ph}^*, N, P, Si, Micro, Nano, Pico	0.792

Table S3 Mean (standard deviation) of relative $1/n_{PSII}$ with time of day at surface of each cruise. Welch t-test results are shown comparing the difference between the time series mean value.

Station	Relative $1/n_{PSII}$	p
GW1'07	0.88(0.07)	0.08
B2'07	0.86 (0.15)	0.06
GS5'08	0.96 (0.11).	0.10
G1'08	0.95 (0.13)	0.01
G1'09	0.93 (0.1)	0.01
G1-1'10	0.91 (0.06)	0.06
G1-2'10	0.85 (0.13)	0.02
G1'11	0.98 (0.33)	0.01
G1'13	0.71 (0.06)	0.02
W1'13	0.81 (0.11)	0.05
C1'14	0.82 (0.17)	0.11
G2'14	0.83 (0.08)	0.13