



Supplement of

Environmental controls on the elemental composition of a Southern Hemisphere strain of the coccolithophore *Emiliania huxleyi*

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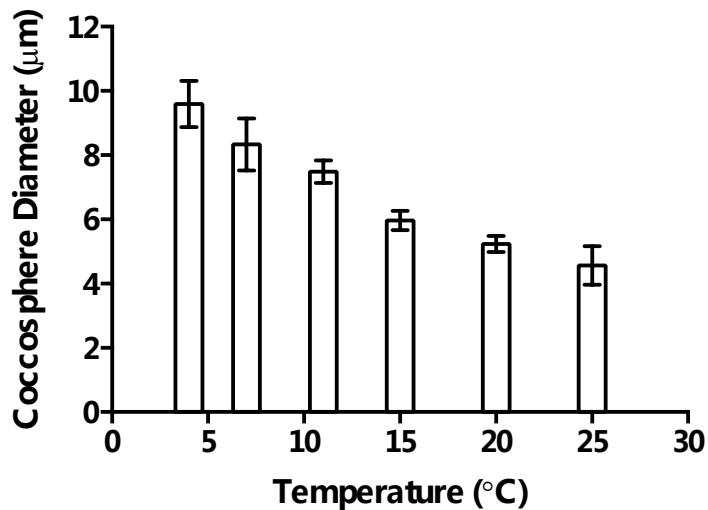
Table S1. The fitted parameters and the goodness of fit (Burham and Anderson 1998) from the equation fittings of *Emiliania huxleyi* elemental composition vs. different environmental drivers.

Physiological metrics	Driver	Equation	Fitted parameters	Goodness of fit*
	Irradiance	$f(S) = Q_{max} \frac{S}{S + k + \frac{S^2}{K_{inh}}}$	$Q_{max} = 18.07$ $k = 18.67$ $K_{inh} = 1562$	$R^2 = 0.69$ $DF = 12$
Cellular POC	Temperature	$f(T) = (Q_0 - Q_c)e^{-kT} + Q_c$	$Q_0 = 51.76$ $Q_c = 7.21$ $k = 0.18$	$R^2 = 0.90$ $DF = 15$
	pCO_2	$f(S) = Q_{max} \frac{S}{S + K_m}$	$Q_{max} = 16.36$ $K_m = 44.86$	$R^2 = 0.36$ $DF = 15$
Cellular PIC	Temperature	$f(T) = (Q_0 - Q_c)e^{-kT} + Q_c$	$Q_0 = 206.9$ $Q_c = 6.94$ $k = 0.29$	$R^2 = 0.85$ $DF = 9$
	Irradiance	$f(S) = \frac{S + k + \frac{S^2}{K_{inh}}}{SR_{max}}$	$R_{max} = 1.49$ $k = 11.15$ $K_{inh} = 1753$	$R^2 = 0.74$ $DF = 13$
PIC:POC	Temperature	$f(T) = ae^{bT} \left[1 - \left(\frac{T - z}{w/2} \right)^2 \right]$	$a = 1.05$ $b \sim 0$ $z = 17.24$ $w = 38.95$	$R^2 = 0.38$ $DF = 14$
	pCO_2	$f(S) = (R_0 - R_c)e^{-kS} + R_c$	$R_0 = 2.07$ $R_c = 0.82$ $k = 0.01$	$R^2 = 0.74$ $DF = 12$
	Nitrate	$f(S) = Q_{max} \frac{S}{S + K_m}$	$Q_{max} = 2.23$ $K_m = 6.13$	$R^2 = 0.76$ $DF = 14$
Cellular PON	Temperature	$f(T) = (Q_0 - Q_c)e^{-kT} + Q_c$	$Q_0 = 5.79$ $Q_c = 1.07$ $k = 0.11$	$R^2 = 0.93$ $DF = 13$
	Nitrate	$f(S) = Q_{max} \frac{S}{S + K_m}$	$Q_{max} = 0.31$ $K_m = 2.46$	$R^2 = 0.64$ $DF = 16$
	Phosphate	$f(S) = Q_{max} \frac{S}{S + K_m}$	$Q_{max} = 0.36$ $K_m = 2.44$	$R^2 = 0.96$ $DF = 12$
Cellular POP	Temperature	$f(T) = (Q_0 - Q_c)e^{-kT} + Q_c$	$Q_0 = 2.29$ $Q_c = 0.20$ $k = 0.22$	$R^2 = 0.96$ $DF = 15$
	pCO_2	$f(S) = Q_{max} \frac{S}{S + K_m}$	$Q_{max} = 0.37;$ $K_m = 82.40$	$R^2 = 0.65$ $DF = 16$
	Nitrate	$f(S) = (R_0 - R_c)e^{-kT} + R_c$	$R_0 = 1312$ $R_c = 57.47$ $k = 0.34$	$R^2 = 0.95$ $DF = 13$
C:Chl- <i>a</i>	Phosphate	$f(R) = b - aR$	$a = 0.74;$ $b = 74.18$	$R^2 = 0.54$ $F (1,11)=13.10;$ $p<0.05$
	Irradiance	$f(R) = b - aR$	$a = -0.10;$ $b = 49.22$	$R^2 = 0.89$ $F (1,14)=108.1;$ $p<0.0001$

Physiological metrics	Driver	Equation	Fitted parameters	Goodness of fit*
Temperature		$f(T) = (R_0 - R_c)e^{-kT} + R_c$	$R_0 = 534$ $R_c = 51.89$ $k = 0.45$	$R^2 = 0.77$ $DF = 15$
	pCO_2	$f(S) = R_{max} \frac{S}{S + K_m}$	$R_{max} = 78.61$; $K_m = 50.21$	$R^2 = 0.48$ $DF = 15$

*Parameters representing the goodness of fit include R^2 (the correlation coefficient) and DF (degree of freedom) for the non-linear regressions; and R^2 , F value, and p value (F and p values test whether the slope is significantly different from zero, with a significant level when $p < 0.05$) for the linear regression.

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10 **Figure S1. The coccospHERE diameter at the six temperature treatments from the temperature manipulation experiment (>30 cells measured for each treatment).**