Overcalcified forms of the coccolithophore *Emiliania huxleyi* in high CO_2 waters are not pre-adapted to ocean acidification.

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SUPPLEMENTARY MATERIALS

Supplementary Section S1

Variation in relative abundance of E. huxleyi morphotypes with depth.

We note that the dominant morphotype of *Emiliania huxleyi* was usually the same at the surface and deeper in the water column (Fig. S1-S2). One exception was a station near Punta Lengua de Vaca (Tongoy Station 18) where lightly calcified morphotypes dominated below the thermocline and R/overcalcified morphotypes dominated above (Fig. S1f). Another exception was the station 2 in the JF survey, where the lightly calcified morphotypes were dominant within and below the picnocline but the A morphotype was dominant, although at the lower total abundance (Fig. S1h). Table S3 (Supplementary section S3) gives abundances with depth at the stations shown in Fig. S1-S2.

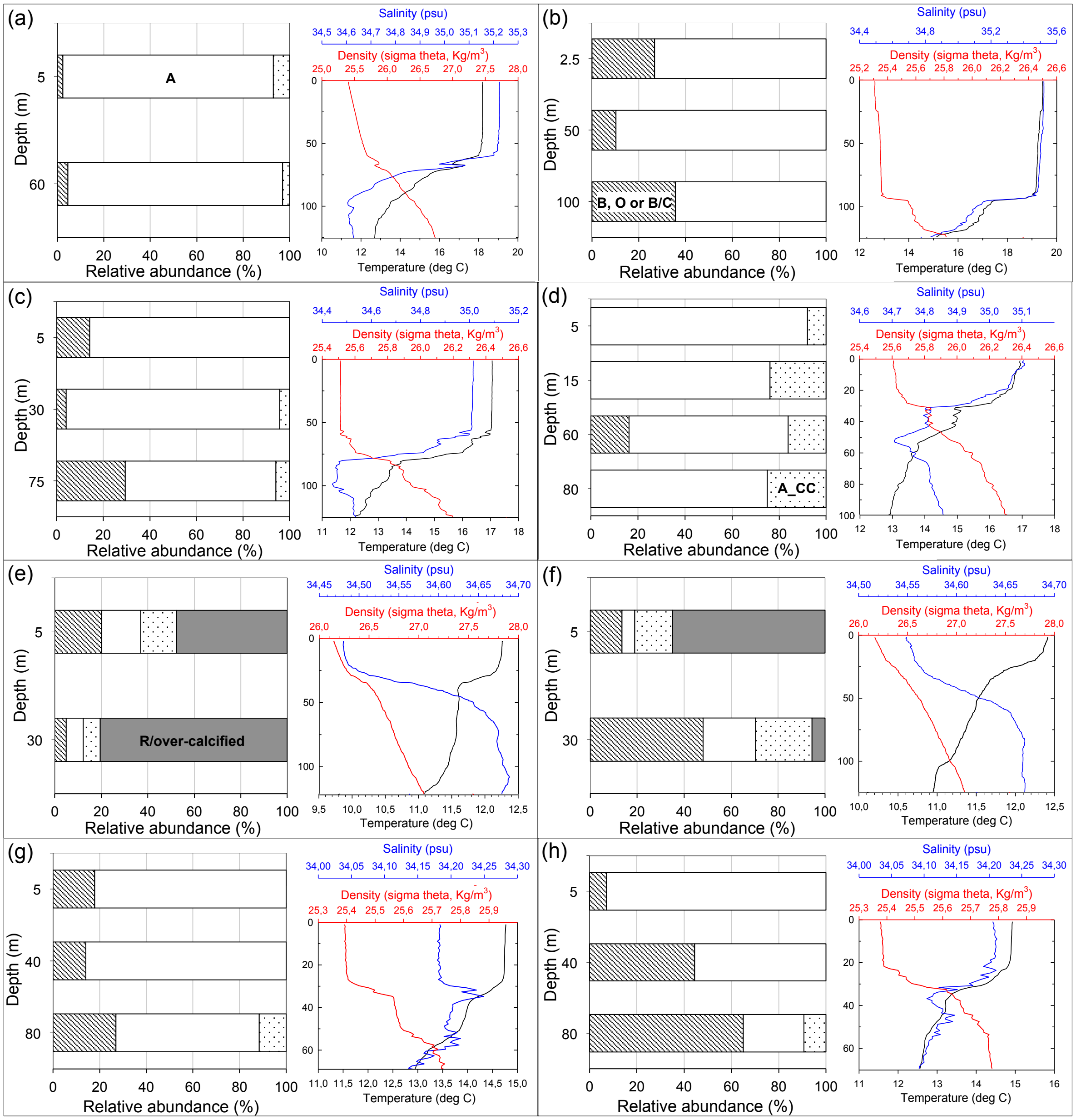

Figure S1. Relative abundances of *Emiliania huxleyi* morphotypes in the upper water column by study site. In a-d), e-f) and g-h) the relative abundances yielded by *E. huxleyi* morphotypes in NBP cruise (st. H04, H13, H19, BB2f), Tongoy Bay (st. 01 and 18) and Juan Fernandez surveys (st. 01, 02) are shown, respectively. Temperature (black), salinity (blue) and density (red) profiles for each station are shown at the right. Morphotypes are indicated on the bars.

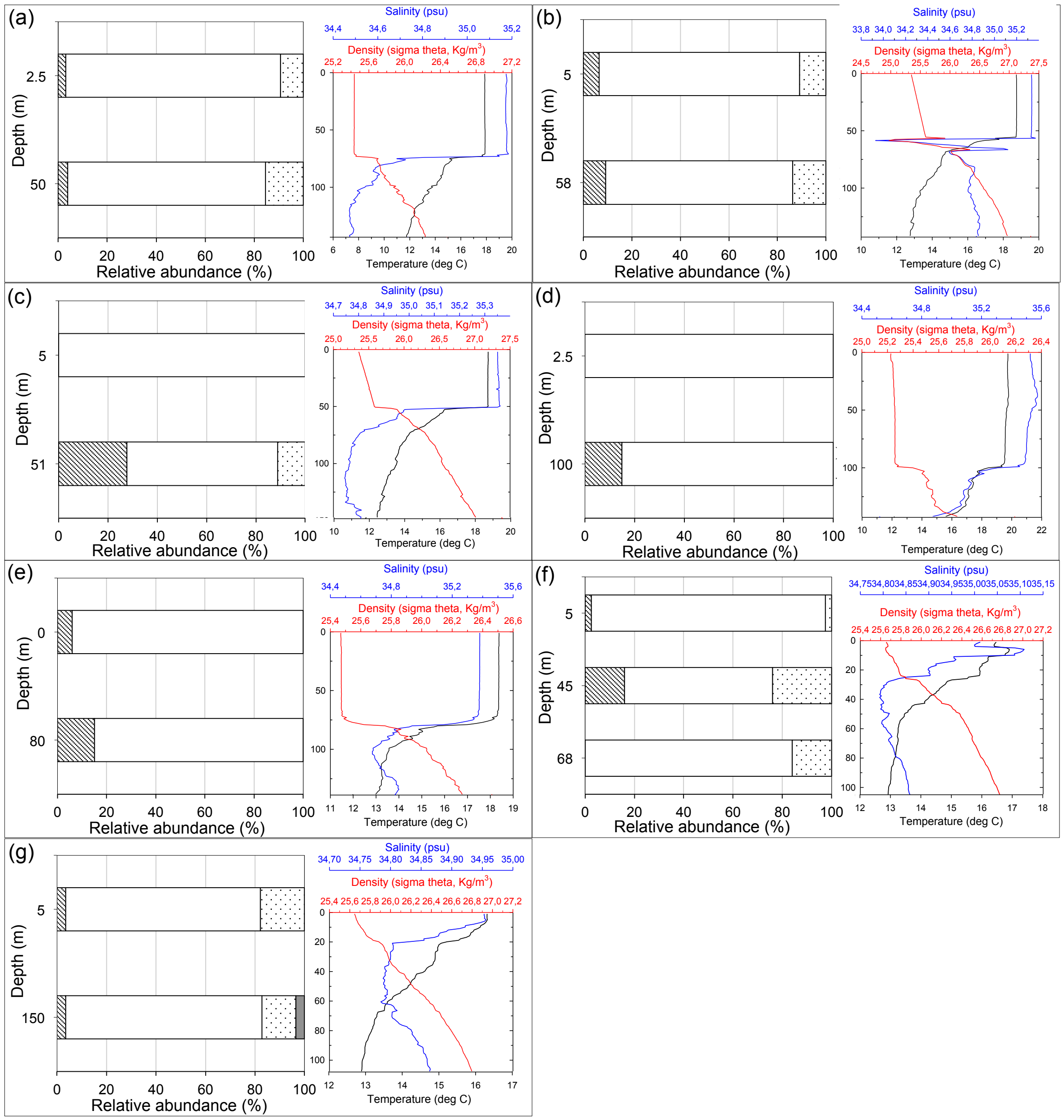

Figure S2. Relative abundances of *Emiliania huxleyi* morphotypes in the upper water column. In a-g) the relative abundances yielded by *E. huxleyi* morphotypes in NBP cruise (st. H01, BB1a, BB1b, H10, H17, BB2b, BB2c) are shown in panels a-g. Temperature (black), salinity (blue) and density (red) profiles for each station are shown at the right. Morphotypes are as in Fig. S1. A conductivity sensor error in BB1a caused a spike that was not filtered out successfully.

Supplementary Section S2

Redundancy analysis (RDA) methodology used and RDA results for Emiliania huxleyi morphotype distributions constrained by environmental variables.

To determine the abiotic variables driving the *Emiliania huxleyi* populations a redundancy analysis (RDA) was performed (rda function in vegan package Oksanen et al., 2007, performed in RStudio version 1.0.143 for mac OS). RDA is a direct constrained method that combine multivariate multiple linear regression with principal component analysis (Borcard et al., 2011). To RDA analyses we followed the methodology provide by Borcard et al. (2011). The variation in *E. huxleyi* morphotypes (matrix composed by relative abundances) were regressed on environmental conditions (temperature, salinity and *p*CO2), while controlling for sampling location (vector of offshore distances in km). To test for significance of RDA model and axis the pseudo-F statistic was calculated by set a minimal number of 1,000 sample permutations (Borcard et al., 2011). As linear dependencies between environmental variables can inflated the regression coefficient (Borcard et al., 2011), variance inflation factors were checked after each RDA analysis (vif.cca function in vegan package). RDA results are plotted in Fig. S3.

References.

Borcard, D., Gillet, F. and Legendre, P. 2011. Numerical ecology with R. Springer Science+Business Media. pp. 306.

Oksanen, J., Blanchet, F., Kindt, R., Legendre, P., Minchin, P., O'Hara, R., Simpson, G., Solymos, P., Stevens, M. and Wagner, H. 2007. Vegan: Community Ecology Package. R package version 2.3-1. Available at: https://cran.r-project.org/web/packages/vegan/index.html (last accessed 16 July 2017).

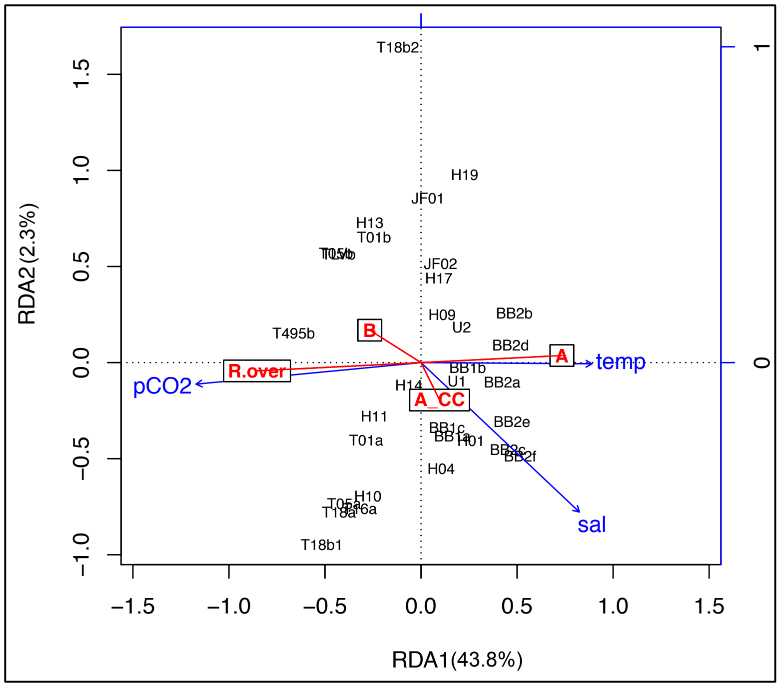

Figure S3. Redundancy analysis results for *Emiliania huxleyi* morphotype distributions constrained by environmental variables. The relative abundances of *E. huxleyi* morphotypes (red labels) from surface stations (black labels) were constrained by three environmental variables (blue arrows). Percentage of variance explained by each RDA axis are displayed. Only the first RDA axis appeared to be significant ($p < 0.05$). RDA triplot was performed with site scores and scaling 2.

Supplementary Section S3

Tables of environmental parameters and coccolithophore species.

Table S1. Environmental data for the Eastern South Pacific corresponding to spring 2011 (JF and TONa surveys), 2012 (TONb,c and QUI surveys) and winter 2013 (NBP cruise) periods. na – no available data. No obs – Not observed.

Station ID	Latitude (South)	Longitude (West)	Z (m)	Offshore distance (km)	Temp. (ºC)	Sal. (PSU)	MLD (m)	O_2 (µmol Kg^{-1})	Fluoro. (mg m^{-3})	pCO_2 (µatm)	pH	HCO_3^-	CO_3^{2-} (µmol kg SW^{-1})	Revelle factor	Ωcal	SiO_4 (µM)	PO_4^{3-} (µM)	NO_3^- (µM)
JF01	-33.596	-78.630	5	650	14.76	34.18	34	201.0	na	353.9	8.09	1847.8	164.1	11.124	3.93	na	na	na
JF02	-33.660	-78.602	5	645	14.91	34.21	31	195.1	na	333.5	8.11	1840.0	173.2	10.808	4.15	na	na	na
TON01a	-30.117	-71.619	5	23	12.25	34.48	no obs.	185.6	na	718.0	7.81	2035.6	87.9	15.681	2.10	12.70	na	17.12
TON05a	-30.181	-71.573	5	11	12.72	34.49	no obs.	174.0	na	658.9	7.85	2032.0	97.2	15.032	2.32	na	na	na
TON16a	-30.248	-71.650	5	1	12.35	34.54	no obs.	164.9	na	614.0	7.88	2031.5	103.3	14.665	2.47	18.24	na	17.06
TON18a	-30.247	-71.694	5	6	12.40	34.55	no obs.	161.2	na	620.8	7.87	2033.4	101.9	14.742	2.43	17.90	na	16.32
TON01b	-30.117	-71.619	5	23	14.10	33.83	na	na	na	635.2	7.86	1990.1	101.7	14.604	2.44	1.55	1.63	8.83
TON05b	-30.181	-71.573	5	11	13.90	34.18	na	na	na	637.7	7.86	2009.6	103.4	14.569	2.47	2.11	1.51	9.06
TON18b	-30.247	-71.694	5	6	14.10	34.44	na	na	na	559.7	7.92	1991.8	117.6	13.663	2.81	2.02	1.38	5.70
TON495c	-30.495	-71.774	5	8	13.54	34.50	na	na	na	809.4	7.77	2073.9	85.6	15.995	2.05	na	na	na
TONLVc	-30.238	-71.652	5	2	14.40	34.00	na	na	na	723.6	7.82	2037.8	95.2	15.231	2.28	na	na	na
TON18c	-30.247	-71.694	5	6	14.46	34.60	na	na	na	618.7	7.88	2010.7	110.1	14.138	2.63	na	na	na
QUI01	-33.379	-71.734	15	4	14.12	34.41	na	na	na	934.0	7.71	2089.2	77.2	16.601	1.84	na	2.2	11.03
HYDRO01	-22.216	-74.227	2.5	414	17.88	35.18	73	221.0	0.895	396.0	8.06	1896.3	180.7	10.776	4.31	0.98	0.64	0.71
HYDRO04	-17.092	-78.635	5	701	18.19	35.22	66	184.1	0.928	412.2	8.04	1905.7	177.8	10.886	4.24	1.56	0.77	1.45
BB1a	-13.999	-81.199	5	532	18.75	35.34	57	177.9	0.867	413.5	8.04	1902.7	181.8	10.759	4.33	na	na	na
BB1b	-13.921	-81.277	5	527	18.76	35.35	51	177.3	1.075	416.6	8.04	1905.6	180.9	10.793	4.31	1.70	0.78	2.20
BB1c	-13.710	-81.389	5	560	18.82	35.39	66	181.4	1.564	418.1	8.04	1906.8	180.9	10.798	4.31	na	na	na
HYDRO09	-12.992	-82.198	5	622	19.24	35.42	na	183.4	0.916	405.2	8.05	1892.0	187.4	10.572	4.46	na	na	na
HYDRO10	-16.749	-85.998	2.5	1424	19.77	35.53	99	218.0	0.459	398.6	8.05	1882.7	193.8	10.375	4.62	0.96	0.59	0.45
HYDRO11	-16.749	-84.998	0	1307	19.77	35.50	79	215.1	0.103	409.7	8.04	1890.2	190.0	10.494	4.53	1.16	0.64	0.74
HYDRO13	-16.750	-83.000	2.5	1094	19.43	35.52	94	217.8	0.530	403.9	8.05	1891.4	189.7	10.507	4.52	1.17	0.66	1.14
HYDRO14	-16.749	-82.000	0	1010	19.24	35.51	99	229.4	0.434	405.9	8.05	1895.3	188.0	10.563	4.48	1.27	0.70	1.82
HYDRO17	-16.749	-79.000	0	674	18.38	35.38	79	222.6	0.335	402.5	8.05	1900.0	183.0	10.720	4.36	1.23	0.66	1.38
U1	-19.467	-76.150	5	623	17.53	35.14	na	na	na	444.8	8.01	1932.8	164.9	11.396	3.93	na	na	na
HYDRO19	-21.499	-73.499	5	355	17.06	35.02	74	226.9	0.705	389.7	8.06	1897.1	175.9	10.923	4.20	1.01	0.61	1.48
U2	-21.502	-73.246	5	329	16.68	34.89	na	na	na	396.0	8.05	1903.4	171.4	11.087	4.09	na	na	na
BB2a	-20.419	-70.675	5	53	17.20	35.11	na	na	na	448.0	8.01	1939.2	161.6	11.514	3.85	na	na	na
BB2b	-20.769	-70.659	5	48	16.81	35.09	26	179.3	1.296	464.3	8.00	1951.2	155.3	11.784	3.70	1.98	0.99	3.23
BB2c	-20.755	-70.650	5	47	16.30	34.96	19	174.4	0.996	490.7	7.97	1968.6	145.8	12.217	3.48	2.08	1.15	4.24
BB2d	-20.742	-70.644	5	47	16.69	34.98	na	na	na	467.9	7.99	1953.5	153.1	11.876	3.65	na	na	na
BB2e	-20.748	-70.657	5	47	17.14	35.10	na	na	na	457.2	8.00	1945.4	158.9	11.630	3.79	na	na	na
BB2f	-20.732	-70.682	5	52	16.92	35.10	30	217.6	1.527	453.0	8.01	1942.0	160.3	11.568	3.82	na	na	na

Table S2. Relative abundances (in %) of coccolithophore species found in the environmental surveys in this study.

Cruise or survey		Juan Fernández 2011						Tongoy Bay 2011						Tongoy Bay 2012a			Tongoy Bay 2012b			El Quisco 2012	
Station ID		01			02			01		05	16	18		01	05	18	495	LV	18	01	
Depth (m)		5	40	80	5	40	80	5	30	5	5	5	30	5	5	5	5	5	5	5	15
Coccolithophore species	Family																				
Emiliania huxleyi	Noelaerhabdaceae	81.43	74.03	70.27	63.64	85.71	69.84	91.30	95.35	81.36	92.50	72.55	79.71	84.62	78.90	95.50	100.0	93.62	81.42	100.0	100.0
Reticulofenestra parvula		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gephyrocapsa ericsonii		10.00	2.60	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gephyrocapsa muellerae		7.14	14.29	13.51	9.09	4.76	4.76	3.26	2.33	11.86	5.00	25.49	4.35	6.73	15.60	3.60	0.00	4.26	16.81	0.00	0.00
Gephyrocapsa oceanica		0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.33	3.39	0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00
Rhabdosphaera clavigera	Rhabdosphaeraceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Palusphaera vandelii		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discosphaera tubifera		0.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acanthoica quattrospina		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Algirosphaera robusta		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera ossa	Syracosphaeraceae	0.00	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera prolongata		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera squamigera		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera molischii		0.00	0.00	0.00	0.00	0.00	0.00	3.26	0.00	3.39	0.00	0.00	4.35	2.88	0.00	0.00	0.00	2.13	0.88	0.00	0.00
Syracosphaera pulchra		1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera cf. bannockii		0.00	1.30	0.00	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera histrica		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera anthos		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera lamina		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Michaelsarsia elegans		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ophiaster formosus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calciosolenia brasiliensis	Calciosoleniaceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calciosolenia murrayi		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.92	0.00	0.00	0.00	0.00	0.00	0.00
Oolithotus antillarum	Calcidiscaceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calcidiscus leptoporus		0.00	1.30	13.51	4.55	0.00	25.40	1.09	0.00	0.00	0.00	0.00	4.35	3.85	0.00	0.00	0.00	0.00	0.88	0.00	0.00
Hayaster perplexus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Umbilicosphaera sibogae		0.00	0.00	2.70	18.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisphaera unicornis	Alisphaerace	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Alisphaera pinnigera		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Umbellosphaera irregularis	Umbellosphaeraceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Umbellosphaera tenuis		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pontosphaera syracusana	Pontosphaeraceae	0.00	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scyphosphaera apsteinii		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helicosphaera carteri	Helicosphaeraceae	0.00	1.30	0.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.96	1.83	0.90	0.00	0.00	0.00	0.00	0.00
Helicosphaera hyalina		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pappomonas sp. type 2	Papposphaera	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Florisphaera profunda	a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gladiolithus flabellatus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coronosphaera mediterranea	b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tetralithoides quadrilaminata	c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table S2. Continued.

Cruise		NBP 2013																			
Station ID		H01		H04		BB1a		BB1b		BB1c	H09	H10			H11	H13			H14	H17	
Depth (m)		2.5	50	5	60	5	58	5	51	5	0-70	2.5	60	100	0	2.5	50	100	0	0	80
Coccolithophore species	Family																				
Emiliania huxleyi	Noelaerhabdaceae	41.77	35.00	42.57	67.00	67.14	66.67	31.67	39.22	44.05	65.74	62.50	83.87	88.46	77.14	82.35	84.47	58.33	75.96	46.30	38.83
Reticulofenestra parvula		20.25	12.50	37.62	15.00	12.86	16.67	38.33	13.73	28.57	13.89	12.50	4.84	0.00	4.29	4.41	5.83	4.17	6.73	14.81	20.39
Gephyrocapsa ericsonii		26.58	47.50	17.82	13.00	15.71	11.11	20.00	21.57	20.24	13.89	7.14	6.45	6.41	4.29	10.29	6.80	9.72	14.42	37.04	39.81
Gephyrocapsa muellerae		2.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gephyrocapsa oceanica		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rhabdosphaera clavigera	Rhabdosphaeraceae	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Palusphaera vandelii		0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00
Discosphaera tubifera		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acanthoica quattrospina		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	1.28	1.43	1.47	0.00	0.00	0.00	0.00	0.00
Algirosphaera robusta		1.27	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera ossa	Syracosphaeraceae	2.53	1.25	0.00	1.00	0.00	0.00	0.00	0.00	1.19	0.00	3.57	0.00	0.00	1.43	1.47	0.00	1.39	0.96	0.93	0.00
Syracosphaera prolongata		1.27	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera squamigera		0.00	0.00	1.98	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	0.00	0.00	4.29	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera molischii		0.00	0.00	0.00	0.00	1.43	0.00	1.67	0.00	0.00	1.85	0.00	0.00	0.00	1.43	0.00	0.97	1.39	0.00	0.00	0.00
Syracosphaera pulchra		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera cf. bannockii		0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.00	1.85	3.57	0.00	0.00	0.00	0.00	0.97	1.39	0.96	0.00	0.00
Syracosphaera histrica		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera anthos		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Syracosphaera lamina		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Michaelsarsia elegans		1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ophiaster formosus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.39	0.00	0.00	0.00
Calciosolenia brasiliensis	Calciosoleniaceae	0.00	0.00	0.00	0.00	1.43	0.00	1.67	0.00	0.00	0.93	0.00	1.61	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00
Calciosolenia murrayi		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00
Oolithotus antillarum	Calcidiscaceae	1.27	2.50	0.00	0.00	0.00	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.97	1.39	0.00	0.93	0.97
Calcidiscus leptoporus		0.00	0.00	0.00	1.00	0.00	2.78	6.67	19.61	1.19	1.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hayaster perplexus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.39	0.00	0.00	0.00
Umbilicosphaera sibogae		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisphaera unicornis	Alisphaeraceae	0.00	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisphaera pinnigera		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.39	0.00	0.00	0.00
Umbellosphaera irregularis	Umbellosphaeraceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Umbellosphaera tenuis		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00
Pontosphaera syracusana	Pontosphaeraceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scyphosphaera apsteinii		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helicosphaera carteri	Helicosphaeraceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helicosphaera hyalina		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pappomonas sp. type 2	Papposphaera	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Florisphaera profunda	a	0.00	0.00	0.00	0.00	0.00	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.89	0.96	0.00	0.00
Gladiolithus flabellatus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.39	0.00	0.00	0.00
Coronosphaera mediterranea	b	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tetralithoides quadrilaminata	c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.78	0.00	0.00	0.00

Table S2. Continued.

Cruise		NBP 2013 (continuation)																		
Station ID		U1	H19			U2	BB2a		BB2b			BB2c	BB2d	BB2e	BB2f					
Depth (m)		5	5	30	75	5	5	88	5	45	68	5	5	5	5	15	30	60	80	100
Coccolithophore species	Family																			
Emiliania huxleyi	Noelaerhabdaceae	15.49	48.00	32.47	51.43	65.79	47.57	41.94	39.80	50.00	39.68	38.89	42.99	40.20	40.30	31.34	48.57	44.93	38.46	32.79
Reticulofenestra parvula		29.58	8.00	6.49	5.71	7.89	25.24	33.87	26.53	25.00	26.98	30.56	29.91	29.41	29.85	46.27	27.14	33.33	38.46	29.51
Gephyrocapsa ericsonii		50.70	30.67	49.35	27.14	13.16	24.27	16.13	26.53	16.67	26.98	22.22	16.82	27.45	26.87	16.42	18.57	14.49	13.85	36.07
Gephyrocapsa muellerae		0.00	0.00	1.30	2.86	3.95	2.91	6.45	5.10	3.33	6.35	8.33	8.41	1.96	2.99	4.48	5.71	5.80	4.62	0.00
Gephyrocapsa oceanica		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	4.62	1.64
Rhabdosphaera clavigera	Rhabdosphaeraceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Palusphaera vandelii		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discosphaera tubifera		0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Acanthoica quattrospina		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Algirosphaera robusta		0.00	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Syracosphaera ossa	Syracosphaeraceae	1.41	5.33	1.30	2.86	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera prolongata		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera squamigera		1.41	1.33	0.00	0.00	1.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera molischii		0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.00	0.00	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera pulchra		0.00	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera cf. bannockii		0.00	0.00	1.30	0.00	0.00	0.00	0.00	1.02	0.00	0.00	0.00	1.87	0.00	0.00	1.49	0.00	0.00	0.00	0.00
Syracosphaera histrica		0.00	0.00	0.00	1.43	1.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera anthos		0.00	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syracosphaera lamina		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Michaelsarsia elegans		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ophiaster formosus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calciosolenia brasiliensis	Calciosoleniaceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calciosolenia murrayi		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oolithotus antillarum	Calcidiscaceae	1.41	0.00	1.30	1.43	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calcidiscus leptoporus		0.00	2.67	2.60	2.86	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hayaster perplexus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Umbilicosphaera sibogae		0.00	0.00	0.00	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisphaera unicornis	Alisphaeraceae	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisphaera pinnigera		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Umbellosphaera irregularis	Umbellosphaeraceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Umbellosphaera tenuis		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pontosphaera syracusana	Pontosphaeraceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scyphosphaera apsteinii		0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helicosphaera carteri	Helicosphaeraceae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helicosphaera hyalina		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pappomonas sp. type 2	Papposphaera	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Florisphaera profunda	a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gladiolithus flabellatus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coronosphaera mediterranea	b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tetralithoides quadrilaminata	c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

a – nannoliths *incertae sedis*, b – genus *incertae sedis*, c – narrow-rimmed placoliths.

Table S3. Absolute abundances of coccolithophores recorded in stations that appear in Fig. S1-S2.

Station ID	Depth (m)	Total coccolithophore abundances (10^3 cells L^{-1})
H04	5	20.1
	60	17.3
H13	2.5	33.3
	50	33.8
	100	5.0
H19	5	19.8
	30	44.5
	75	17.7
BB2f	5	38.9
	15	26.1
	60	na
	80	na
TON01	5	25.7
	30	7.6
TON18	5	5.8
	30	30.4
JF01	5	29.7
	40	14.7
	80	3.1
JF02	5	3.3
	40	24.5
	80	3.4
H01	2.5	44.5
	50	51.6
BB1a	5	22.6
	58	14.4
BB1b	5	10.3
	51	2.7
H10	2.5	43.3
	100	14.0
H17	0	42.7
	80	13.6
BB2b	5	48.5
	45	2.0
	68	3.1
BB2c	5	39.3
	150	na

na – no available data