

Table S1. Physical and chemical properties in mesocosms. Control: 8, 10, 12; Treatment: 7, 9, 11.

Mesocosm	Year	Month	Day	Hour	Minute	Salinity	Temp (°C)	DO (umol/kg)	NO ₂ ⁻ (umol/kg)	NO ₃ ⁻ (umol/kg)	NH ₄ ⁺ (umol/kg)	PO ₄ ³⁻ (umol/kg)	Si(OH) ₄ (umol/kg)	TA (umol/kg)	pH _{NBS}	TCO ₂ (umol/kg)	pCO ₂ (uatm)	Ω _{arag}	HCO ₃ ⁻ (umol/kg)	CO ₃ ²⁻ (umol/kg)
7	2006	6	21	12	0	35.1	27.8	256.0	0.035	0.232	0.428	0.202	8.594	2019.5	8.06	1788.8	494	2.57	1615.6	160.2
8	2006	6	21	12	0	35.1	27.8	279.5	0.037	0.245	0.480	0.129	8.341	2102.2	8.28	1740.0	274	3.93	1487.9	244.8
9	2006	6	21	12	0	35.1	27.8	247.7	0.033	0.207	0.360	0.107	8.287	1947.8	7.93	1780.2	677	1.94	1641.7	120.7
10	2006	6	21	12	0	35.0	27.9	263.3	0.032	0.174	0.395	0.105	7.753	2111.7	8.19	1803.3	359	3.40	1582.2	211.7
11	2006	6	21	12	0	35.0	27.7	242.9	0.071	0.149	0.386	0.112	7.882	1965.0	7.87	1821.5	800	1.73	1692.5	107.7
12	2006	6	21	12	0	35.0	27.7	274.0	0.033	0.106	0.653	0.093	7.729	2107.3	8.23	1777.1	319	3.61	1543.6	225.1
7	2006	6	21	16	0	35.3	27.0	230.6	0.018	0.257	0.323	0.165	7.340	2075.0	7.97	1886.0	644	2.19	1731.8	136.9
8	2006	6	21	16	0	35.1	27.0	242.9	0.034	0.256	0.429	0.102	7.378	2120.2	8.20	1810.9	349	3.39	1589.2	212.3
9	2006	6	21	16	0	35.2	26.9	226.4	0.026	0.271	0.225	0.097	7.044	2007.9	7.82	1884.0	925	1.57	1761.0	98.0
10	2006	6	21	16	0	35.2	27.1	238.6	0.028	0.136	0.281	0.094	7.177	2175.4	8.15	1888.2	413	3.21	1676.4	200.7
11	2006	6	21	16	0	35.2	26.9	226.1	0.051	0.178	0.256	0.095	6.933	1992.8	7.79	1880.2	992	1.46	1761.9	91.5
12	2006	6	21	16	0	35.2	26.9	240.1	0.029	0.166	0.500	0.096	7.628	2151.5	8.18	1850.7	374	3.32	1632.5	208.2
7	2006	6	21	20	0	35.4	26.3	184.8	0.042	0.341	0.289	0.168	6.662	2072.8	7.78	1962.7	1053	1.47	1841.6	92.3
8	2006	6	21	20	0	35.2	26.3	177.5	0.068	0.479	0.486	0.132	6.894	2188.7	7.99	1988.1	643	2.35	1823.1	147.4
9	2006	6	21	20	0	35.2	26.3	187.3	0.056	0.348	0.225	0.133	7.132	2011.0	7.66	1943.6	1385	1.11	1836.2	69.4
10	2006	6	21	20	0	35.2	26.3	183.0	0.065	0.452	0.291	0.124	7.265	2167.8	8.00	1963.9	620	2.37	1798.1	148.8
11	2006	6	21	20	0	35.2	26.2	186.3	0.078	0.453	0.279	0.125	6.832	1997.6	7.62	1943.2	1519	1.01	1838.3	63.2
12	2006	6	21	20	0	35.2	26.2	178.4	0.060	0.533	0.563	0.136	7.434	2174.7	7.99	1975.6	639	2.32	1812.0	146.1
7	2006	6	22	0	0	35.4	26.0	186.3	0.021	0.220	0.244	0.134	5.985	2111.2	7.77	2004.8	1098	1.45	1883.2	91.4
8	2006	6	22	0	0	35.2	26.0	171.4	0.037	0.319	0.462	0.122	6.411	2219.0	7.92	2050.0	785	2.06	1898.9	129.5
9	2006	6	22	0	0	35.2	26.0	187.6	0.026	0.139	0.212	0.096	6.650	2039.0	7.63	1981.7	1510	1.04	1874.5	65.6
10	2006	6	22	0	0	35.2	25.9	182.4	0.035	0.195	0.247	0.097	7.069	2207.5	7.98	2012.8	665	2.29	1850.0	144.4
11	2006	6	22	0	0	35.2	25.9	187.0	0.054	0.338	0.223	0.101	6.637	2023.3	7.61	1972.7	1573	0.99	1867.0	62.2
12	2006	6	22	0	0	35.2	25.9	177.2	0.032	0.228	0.496	0.102	6.864	2209.5	7.94	2032.8	740	2.13	1878.6	133.7
7	2006	6	22	4	0	35.4	25.8	184.5	0.038	0.311	0.258	0.141	5.883	2086.5	7.71	2002.4	1261	1.26	1888.2	79.3
8	2006	6	22	4	0	35.3	25.8	170.8	0.054	0.410	0.452	0.115	6.881	2209.1	7.88	2058.0	865	1.88	1915.3	118.7
9	2006	6	22	4	0	35.3	25.8	187.0	0.039	0.381	0.222	0.109	6.453	2055.6	7.58	2014.0	1719	0.94	1907.2	59.2
10	2006	6	22	4	0	35.2	25.8	180.2	0.051	0.383	0.271	0.110	7.062	2194.0	7.94	2018.6	735	2.10	1865.9	132.4
11	2006	6	22	4	0	35.2	25.7	185.1	0.071	0.378	0.243	0.111	6.536	2031.5	7.56	1996.7	1784	0.89	1891.4	55.8
12	2006	6	22	4	0	35.3	25.7	175.6	0.066	0.542	0.654	0.102	7.232	2204.0	7.90	2045.3	819	1.95	1899.7	122.9
7	2006	6	22	8	0	35.4	26.0	218.4	0.038	0.369	0.315	0.134	7.216	2078.0	7.87	1935.2	835	1.75	1802.1	110.1
8	2006	6	22	8	0	35.2	26.0	224.2	0.050	0.421	0.394	0.118	7.445	2176.7	8.06	1944.7	528	2.64	1764.1	166.0
9	2006	6	22	8	0	35.3	26.0	219.9	0.036	0.343	0.245	0.112	7.206	2020.6	7.74	1927.6	1134	1.30	1814.4	81.9
10	2006	6	22	8	0	35.3	26.0	220.2	0.058	0.384	0.294	0.106	7.433	2172.7	8.04	1950.3	556	2.54	1775.0	160.0
11	2006	6	22	8	0	35.2	25.9	217.8	0.070	0.435	0.269	0.124	7.281	2010.3	7.70	1931.5	1248	1.19	1822.3	74.6
12	2006	6	22	8	0	35.2	25.9	225.1	0.049	0.421	0.485	0.129	7.131	2168.0	8.05	1942.3	540	2.57	1765.4	161.9
7	2006	6	22	12	0	35.3	27.7	253.8	0.017	0.248	0.359	0.133	7.591	2054.8	8.08	1810.8	474	2.71	1628.8	169.4
8	2006	6	22	12	0	35.3	27.6	272.2	0.030	0.251	0.488	0.111	8.009	2145.1	8.28	1777.6	279	4.00	1520.3	249.9
9	2006	6	22	12	0	35.2	27.7	249.9	0.018	0.121	0.319	0.112	7.483	1999.6	7.94	1825.1	676	2.03	1680.8	126.3
10	2006	6	22	12	0	35.2	27.8	260.3	0.034	0.121	0.347	0.089	7.520	2162.5	8.20	1842.2	357	3.55	1611.7	221.1
11	2006	6	22	12	0	35.2	27.5	241.6	0.060	0.111	0.322	0.104	7.274	1986.7	7.89	1834.3	766	1.81	1700.7	113.3
12	2006	6	22	12	0	35.2	27.6	269.7	0.025	0.161	0.528	0.122	7.592	2152.4	8.24	1810.2	316	3.76	1567.5	234.4

Table S2. Total alkalinity data and calculations of net ecosystem calcification (NEC). Control mesocosms: 8, 10, 12; Treatment mesocosms: 7, 9, 11.

1. Measured total alkalinity ($\mu\text{mol kg}^{-1}$)								
Time:	12:00	16:00	20:00	00:00	04:00	08:00	12:00	Flowrate ($\text{kg m}^{-2} \text{h}^{-1}$)
Mesocosm								
8	2102.2	2120.2	2188.7	2219.0	2209.1	2176.7	2145.1	358.2
10	2111.7	2175.4	2167.8	2207.5	2194.0	2172.7	2162.5	321.2
12	2107.3	2151.5	2174.7	2209.5	2204.0	2168.0	2152.4	323.4
7	2019.5	2075.0	2072.8	2111.2	2086.5	2078.0	2054.8	381.6
9	1947.8	2007.9	2011.0	2039.0	2055.6	2020.6	1999.6	342.7
11	1965.0	1992.8	1997.6	2023.3	2031.5	2010.3	1986.7	336.0
Seawater input								
Control (8, 10, 12)	2163.2	2200.5	2185.9	2196.4	2215.9	2196.5	2197.0	
Treatment (7)	2045.2	2082.5	2067.9	2078.4	2097.9	2078.5	2079.0	
(9)	1980.8	2018.1	2003.6	2014.0	2033.5	2014.1	2014.6	
(11)	1980.0	2017.3	2002.7	2013.1	2032.6	2013.2	2013.8	

2. Observed rate of change in total alkalinity per m^2 per hour ($\text{mmol m}^{-2} \text{h}^{-1}$), $d\text{TA}/dt = (\text{TA}_{t2} - \text{TA}_{t1}) / (t_2 - t_1)$ $\text{mmol kg}^{-1} / (4 \text{ h} * 1.357 \text{ m}^2) * 475 \text{ L} * 1.023 \text{ kg L}^{-1}$								
Time interval:	12:00-16:00	16:00-20:00	20:00-00:00	00:00-04:00	04:00-08:00	08:00-12:00		
Mesocosm								
8	-	1.6	6.1	2.7	-0.9	-2.9	-2.8	
10	-	5.7	-0.7	3.6	-1.2	-1.9	-0.9	
12	-	4.0	2.1	3.1	-0.5	-3.2	-1.4	
7	-	5.0	-0.2	3.4	-2.2	-0.8	-2.1	
9	-	5.4	0.3	2.5	1.5	-3.1	-1.9	
11	-	2.5	0.4	2.3	0.7	-1.9	-2.1	

3. Calculated total input of total alkalinity per hour ($\text{mmol m}^{-2} \text{h}^{-1}$), $F_{\text{inTA}} = (F_{\text{inTA},t2} + F_{\text{inTA},t1})/2$ $\text{mmol kg}^{-1} * \text{Flowrate kg m}^{-2} \text{h}^{-1}$								
Time interval:	12:00-16:00	16:00-20:00	20:00-00:00	00:00-04:00	04:00-08:00	08:00-12:00		
Mesocosm								
8	-	781.5	785.6	784.8	790.2	790.2	786.8	
10	-	700.9	704.5	703.9	708.7	708.7	705.7	
12	-	705.7	709.4	708.7	713.5	713.6	710.5	
7	-	787.5	791.9	791.1	796.8	796.8	793.2	
9	-	685.1	689.0	688.3	693.4	693.4	690.2	
11	-	671.5	675.3	674.6	679.7	679.7	676.5	

4. Calculated total output of total alkalinity per hour ($\text{mmol m}^{-2} \text{h}^{-1}$), $F_{\text{outTA}} = (F_{\text{outTA},t2} + F_{\text{outTA},t1})/2$ $\text{mmol kg}^{-1} * \text{Flowrate kg m}^{-2} \text{h}^{-1}$								
Time interval:	12:00-16:00	16:00-20:00	20:00-00:00	00:00-04:00	04:00-08:00	08:00-12:00		
Mesocosm								
8	-	756.2	771.7	789.4	793.0	785.4	774.0	
10	-	688.6	697.6	702.7	707.0	701.4	696.3	
12	-	688.7	699.6	709.0	713.7	707.0	698.7	
7	-	781.2	791.4	798.3	800.9	794.6	788.5	
9	-	677.7	688.5	693.9	701.5	698.4	688.8	
11	-	664.9	670.4	675.5	681.2	679.0	671.5	

5. Calculated NEC ($\text{mmol m}^{-2} \text{h}^{-1}$), $\text{NEC} = (F_{\text{inTA}} - F_{\text{outTA}} - d\text{TA}/dt)/2$								
Time interval:	12:00-16:00	16:00-20:00	20:00-00:00	00:00-04:00	04:00-08:00	08:00-12:00		
Mesocosm								
8	-	11.8	3.9	-3.6	-1.0	3.8	7.8	
10	-	3.3	3.8	-1.2	1.5	4.6	5.1	
12	-	6.5	3.8	-1.7	0.1	4.9	6.6	
7	-	0.7	0.4	-5.3	-1.0	1.5	3.4	
9	-	1.0	0.1	-4.0	-4.8	-0.9	1.7	
11	-	2.1	2.3	-1.6	-1.1	1.3	3.6	

6. Average NEC								
Control		7.2	3.8	-2.2	0.2	4.4	6.5	
Std		4.3	0.0	1.3	1.2	0.5	1.4	
Treatment		1.3	0.9	-3.6	-2.3	0.6	2.9	
Std		0.7	1.2	1.9	2.2	1.3	1.1	