

Table S1: Results of generalized least squares model (glS) testing for the effect of temperature (T), CO₂, time and the interaction effect of temperature and CO₂ (T × CO₂), time and temperature (time × T), time and CO₂ (time × CO₂) and the interaction of time, temperature and CO₂ (time × T × CO₂) over the entire course of experimental time. Significant results are in bold.

*p ≤ 0.05, ** p < 0.01, *** p < 0.001.

Response variable	factor	df residual	t-value	P
(log) Total phytoplankton C (μg L ⁻¹)	T	136	0.40650	0.6850
	CO ₂	136	-1.41829	0.1484
	time	136	-1.81855	0.0712
	T × CO ₂	136	1.52885	0.1286
	time × T	136	-2.44663	0.0157*
	time × CO ₂	136	2.27327	0.0246*
(log) inedible phytoplankton C (μg L ⁻¹)	time × T × CO ₂	136	1.72325	0.0871
	T	136	0.46224	0.6446
	CO ₂	136	-1.39230	0.1661
	time	136	-1.84390	0.0674
	T × CO ₂	136	1.51706	0.1316
	time × T	136	-2.23612	0.0270*
Edible phytoplankton C (μg L ⁻¹)	time × CO ₂	136	2.44929	0.0156*
	time × T × CO ₂	136	1.55347	0.1226
	T	136	-1.722063	0.0873
	CO ₂	136	-1.406631	0.1618
	time	136	-0.113228	0.9100
	T × CO ₂	136	1.019974	0.3096
Inedible flagellates > 100 μm C (μg L ⁻¹)	time × T	136	-4.374546	<0.001***
	time × CO ₂	136	-4.007652	<0.001***
	time × T × CO ₂	136	2.489965	0.0140*
	T	136	-0.136382	0.8917
	CO ₂	136	-2.221123	0.0280
	time	136	-4.241355	<0.001***
(log) filamentous cyanobacteria C (μg L ⁻¹)	T × CO ₂	136	0.105978	0.9158
	time × T	136	-2.153234	0.0331*
	time × CO ₂	136	-0.290570	0.7718
	time × T × CO ₂	136	1.341232	0.1821
	T	136	-1.201710	0.2318
	CO ₂	136	1.163015	0.2417
Phytoplankton < 5 μm C (μg L ⁻¹)	time	136	-3.039261	0.0029**
	T × CO ₂	136	2.231858	0.0274*
	time × T	136	1.463984	0.1457
	time × CO ₂	136	2.758938	0.0067**
	time × T × CO ₂	136	-1.378534	0.1705
	T	136	0.7633037	0.4466
Edible flagellates 5-100 μm C (μg L ⁻¹)	CO ₂	136	-0.5613302	0.5755
	time	136	1.3070283	0.1934
	T × CO ₂	136	0.7633287	0.4466
	time × T	136	-0.0953977	0.9241
	time × CO ₂	136	1.8449223	0.0672
	time × T × CO ₂	136	-0.0862737	0.9314
Diatom C (μg L ⁻¹)	T	136	-2.133546	0.0347*
	CO ₂	136	-2.305907	0.0226*
	time	136	-0.226604	0.8211
	T × CO ₂	136	2.024677	0.0449*
	time × T	136	-2.840604	0.0052**
	time × CO ₂	136	-2.860836	0.0049**
	time × T × CO ₂	136	1.523333	0.1300
	T	136	-0.111106	0.9117

T. muelleri C ($\mu\text{g L}^{-1}$)	CO ₂	136	1.240776	0.2168
	time	136	1.040369	0.3000
	T x CO ₂	136	-1.576518	0.1172
	time x T	136	-4.124063	<0.001***
	time x CO ₂	136	-3.574167	<0.001***
	time x T x CO ₂	136	2.750142	0.0068**
	T	136	-1.876498	0.0627
	CO ₂	136	-3.207634	0.0017**
	time	136	-5.623833	<0.001***
	T x CO ₂	136	1.778010	0.0776
T. longissimus C ($\mu\text{g L}^{-1}$)	time x T	136	-0.608874	0.5436
	time x CO ₂	136	0.709675	0.4791
	time x T x CO ₂	136	-0.180114	0.8573
	T	136	2.418613	0.0169*
	CO ₂	136	-0.265923	0.7907
	time	136	-1.245801	0.2150
	T x CO ₂	136	-2.377907	0.0188*
	time x T	136	-3.947985	<0.001***
	time x CO ₂	136	-1.727249	0.0864
	time x T x CO ₂	136	3.294387	0.0013**
(log) N. spumigena C ($\mu\text{g L}^{-1}$)	T	101	2.505452	0.0138
	CO ₂	101	0.975317	0.3317
	time	101	1.670423	0.0979
	T x CO ₂	101	-2.127387	0.0358*
	time x T	101	-7.362956	<0.001***
	time x CO ₂	101	-4.247658	<0.001***
	time x T x CO ₂	101	5.098848	<0.001***
	T	136	0.651282	0.5160
	CO ₂	136	1.984623	0.0492*
	time	136	5.733659	<0.001***
Dolichospermum sp. C ($\mu\text{g L}^{-1}$)	T x CO ₂	136	-0.873599	0.4346
	time x T	136	1.333287	0.1847
	time x CO ₂	136	0.396260	0.6925
	time x T x CO ₂	136	0.222790	0.8240
	T	136	0.495375	0.6211
	CO ₂	136	-0.592927	0.5542
	time	136	2.450446	0.0155*
	T x CO ₂	136	0.948159	0.3447
	time x T	136	-0.597510	0.5512
	time x CO ₂	136	1.412443	0.1601
(log) Phytoplankton <5 μm only chl a C ($\mu\text{g L}^{-1}$)	time x T x CO ₂	136	-0.118890	0.9055
	T	136	0.922033	0.3581
	CO ₂	136	-0.704094	0.4826
	time	136	3.209547	0.0017**
	T x CO ₂	136	0.827448	0.4094
	time x T	136	0.469603	0.6394
	time x CO ₂	136	0.176067	0.8605
	time x T x CO ₂	136	-0.153293	0.8784
	T	100	1.902030	0.0600
	CO ₂	100	3.244998	0.0016**
(log) P. cordatum C ($\mu\text{g L}^{-1}$)	time	100	2.651227	0.0093**
	T x CO ₂	100	1.062248	0.2907
	time x T	100	-2.404264	0.0180*
	time x CO ₂	100	-2.004831	0.0477*
	time x T x CO ₂	100	1.032104	0.3045
	T	95	-0.531658	0.5962
	CO ₂	95	-2.043635	0.0438*
	time	95	2.8031170	0.0061**
	T x CO ₂	95	-0.100642	0.9200
	time x T	95	-3.877390	<0.001***
(log) P. micans. C ($\mu\text{g L}^{-1}$)	time x CO ₂	95	-5.531063	<0.001***
	time x T x CO ₂	95	1.710434	0.0904

(log) <i>Dinophysis</i> sp. C (µg L ⁻¹)	T	117	-0.5729424	0.5678
	CO ₂	117	-1.6081819	0.1105
	time	117	-0.5294375	0.5975
	T x CO ₂	117	0.1183348	0.9061
	time x T	117	-0.8114814	0.4187
	time x CO ₂	117	-0.9800786	0.3291
	time x T x CO ₂	117	0.5783711	0.5641
(log) <i>Teleaulax</i> sp. C (µg L ⁻¹)	T	97	0.592606	0.5548
	CO ₂	97	0.995937	0.3218
	time	97	-5.818348	<0.001***
	T x CO ₂	97	-0.002460	0.9980
	time x T	97	-2.147911	0.0342*
	time x CO ₂	97	0.143754	0.8860
	time x T x CO ₂	97	0.434634	0.6648
<i>D. brightwellii</i> C (µg L ⁻¹)	T	136	0.540498	0.5897
	CO ₂	136	1.625296	0.1064
	time	136	-1.250117	0.2134
	T x CO ₂	136	-1.009871	0.3144
	time x T	136	-2.357429	0.0198*
	time x CO ₂	136	-2.718498	0.0074**
	time x T x CO ₂	136	1.389876	0.1671
(log) C:N	T	136	0.10248	0.9185
	CO ₂	136	-2.32444	0.0216*
	time	136	-2.75305	0.0067**
	T x CO ₂	136	0.65283	0.5150
	time x T	136	-1.17532	0.2419
	time x CO ₂	136	0.34342	0.7318
	time x T x CO ₂	136	0.89226	0.3738
(log) C:P	T	135	0.073795	0.9413
	CO ₂	135	-0.308615	0.7581
	time	135	-2.036997	0.0436*
	T x CO ₂	135	0.480963	0.6313
	time x T	135	-0.945909	0.3459
	time x CO ₂	135	0.143486	0.8861
	time x T x CO ₂	135	0.637329	0.5250
(log) N:P	T	135	0.025618	0.9796
	CO ₂	135	0.275553	0.7833
	time	135	-1.176182	0.2416
	T x CO ₂	135	0.274838	0.7839
	time x T	135	-0.517482	0.6057
	time x CO ₂	135	0.004110	0.9649
	time x T x CO ₂	135	0.322713	0.7474
Total dissolved N (µmol L ⁻¹)	T	136	-1.056225	0.2927
	CO ₂	136	1.165196	0.2460
	time	136	-2.361684	0.0196*
	T x CO ₂	136	0.173842	0.8622
	time x T	136	0.862194	0.3901
	time x CO ₂	136	-0.948315	0.3447
	time x T x CO ₂	136	-0.090732	0.9278
PO ₄ ³⁻ (µmol L ⁻¹)	T	136	2.785997	0.0061**
	CO ₂	136	0.046277	0.9632
	time	136	-1.127801	0.2613
	T x CO ₂	136	-2.081611	0.0393*
	time x T	136	-2.045220	0.0428*
	time x CO ₂	136	-0.217879	0.8279
	time x T x CO ₂	136	1.495799	0.1370
Si ₄ ²⁻ (µmol L ⁻¹)	T	136	-0.753690	0.4523
	CO ₂	136	1.289303	0.1994
	time	136	-1.343862	0.1812
	T x CO ₂	136	-1.132702	0.2593
	time x T	136	1.362630	0.1753
	time x CO ₂	136	-1.504951	0.1347

Table S2: Results of generalized least squares model (gls) testing for the effect of temperature (T), CO₂, and the interaction effect of temperature and CO₂ (T x CO₂) during the first period. Significant results are in bold. *p≤ 0.05, ** p< 0.01, *** p< 0.001.

Response variable	factor	df residual	t-value	p
% inedible flagellates > 100 µm on total phytopl. C	T	8	-3.938717	0.0043**
	CO ₂	8	-4.952595	0.0011**
	T x CO ₂	8	1.774507	0.1139
% edible flagellates 5-100 µm on total phytopl. C	T	8	-5.186859	<0.001***
	CO ₂	8	-5.028351	0.0010**
	T x CO ₂	8	2.562598	0.0335*
% filamentous cyanobacteria on total phytopl. C	T	8	-0.845068	0.4226
	CO ₂	8	3.644613	0.0065**
	T x CO ₂	8	0.766174	0.4656
% diatoms on total phytopl. C	T	8	-1.854671	0.1008
	CO ₂	8	0.307481	0.7663
	T x CO ₂	8	-1.364703	0.2095
% phytopl. < 5 µm on total phytopl. C	T	8	3.831281	0.0050**
	CO ₂	8	0.972288	0.3594
	T x CO ₂	8	-1.773242	0.1141
(log) Total phytoplankton C (µg L ⁻¹)	T	8	-0.73772	0.4818
	CO ₂	8	-0.86633	0.4115
	T x CO ₂	8	3.73264	0.0058***
Inedible phytoplankton C (µg L ⁻¹)	T	8	-0.808801	0.4420
	CO ₂	8	-0.635514	0.5428
	T x CO ₂	8	4.519636	0.0020**
Edible phytoplankton C (µg L ⁻¹)	T	8	-5.006703	0.0010**
	CO ₂	8	-3.675923	0.0063**
	T x CO ₂	8	0.490532	0.6369
(log) Inedible flagellates >100 µm C (µg L ⁻¹)	T	8	-3.25951	0.0115*
	CO ₂	8	-5.12617	<0.001**
	T x CO ₂	8	2.35489	0.0463*
(log) Filamentous cyanobacteria	T	8	-1.136689	0.2886
	CO ₂	8	3.320493	0.0105*
	T x CO ₂	8	2.891799	0.0201*
Phytoplankton < 5 µm C (µg L ⁻¹)	T	8	1.4585787	0.1828
	CO ₂	8	0.2243038	0.8281
	T x CO ₂	8	0.9180968	0.3854
(log) Edible flagellates 5-100 µm C (µg L ⁻¹)	T	8	-5.194249	0.008**
	CO ₂	8	-4.684095	0.0016*
	T x CO ₂	8	3.302352	0.0108*
Diatom C (µg L ⁻¹)	T	8	-1.992757	0.0834
	CO ₂	8	-0.016442	0.9873
	T x CO ₂	8	-0.375598	0.7170
<i>T. muelleri</i> C (µg L ⁻¹)	T	8	-5.004930	<0.001***
	CO ₂	8	-7.271299	<0.001***
	T x CO ₂	8	4.206430	<0.001***
<i>T. longissimus</i> C (µg L ⁻¹)	T	8	-1.920386	0.0911
	CO ₂	8	-2.431088	0.0411*
	T x CO ₂	8	0.745374	0.4774
<i>N. spumigena</i> C (µg L ⁻¹)	T	8	-1.144287	0.2856
	CO ₂	8	3.28363	0.0111*
	T x CO ₂	8	2.887418	0.0203*

<i>Dolichospermum</i> sp. C ($\mu\text{g L}^{-1}$)	T	8	0.6752069	0.5186
	CO ₂	8	1.3080453	0.2272
	T x CO ₂	8	-0.4429917	0.6695
Phytoplankton < 5 μm only chl <i>a</i> C ($\mu\text{g L}^{-1}$)	T	8	1.3756529	0.2062
	CO ₂	8	0.2156383	0.8347
	T x CO ₂	8	0.9926941	0.3499
Pico-cyanobacteria C ($\mu\text{g L}^{-1}$)	T	8	2.6358914	0.0299*
	CO ₂	8	0.3342436	0.7468
	T x CO ₂	8	-0.5469482	0.5993
(log) <i>P. cordatum</i> C ($\mu\text{g L}^{-1}$)	T	8	-3.897752	0.0046**
	CO ₂	8	-5.693473	<0.001***
	T x CO ₂	8	1.365857	0.2091
(log) <i>P. micans</i> C ($\mu\text{g L}^{-1}$)	T	8	-3.188228	0.0128*
	CO ₂	8	-4.480483	0.0021**
	T x CO ₂	8	0.089412	0.9310
<i>Dinophysis</i> sp.C ($\mu\text{g L}^{-1}$)	T	8	-3.307566	0.0107*
	CO ₂	8	-8.436744	<0.001***
	T x CO ₂	8	1.424640	0.1921
<i>Teleaulax</i> sp.C ($\mu\text{g L}^{-1}$)	T	8	-0.908663	0.3901
	CO ₂	8	3.122997	0.0142*
	T x CO ₂	8	1.122079	0.2944
<i>D. brightwellii</i> C ($\mu\text{g L}^{-1}$)	T	8	0.385084	0.7102
	CO ₂	8	0.009844	0.9924
	T x CO ₂	8	-0.387490	0.7085
(log) C:N	T	8	-0.956588	0.3668
	CO ₂	8	-3.127289	0.0141*
	T x CO ₂	8	1.955480	0.0863
C:P	T	8	-0.447313	0.6665
	CO ₂	8	0.020187	0.9844
	T x CO ₂	8	2.586698	0.0323*
N:P	T	8	0.287896	0.7807
	CO ₂	8	2.491033	0.0375*
	T x CO ₂	8	0.827418	0.4320

Table S3: Results of generalized least squares model (gls) testing for the effect of temperature (T), CO₂ and the interaction effect of temperature and CO₂ (T x CO₂) during the second period. Significant results are in bold. * $p \leq 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Response variable	factor	df residual	t-value	<i>p</i>
Total phytoplankton C ($\mu\text{g L}^{-1}$)	T	8	-1.423629	0.1924
	CO ₂	8	1.588208	0.1509
	T x CO ₂	8	1.870230	0.0984
Inedible phytoplankton C ($\mu\text{g L}^{-1}$)	T	8	-1.269216	0.2400
	CO ₂	8	1.774299	0.1139
	T x CO ₂	8	1.791950	0.1109
(log) Edible phytoplankton C ($\mu\text{g L}^{-1}$)	T	8	-5.006703	0.0010**
	CO ₂	8	-3.675923	0.0063**
	T x CO ₂	8	0.490532	0.6369
(log) Inedible flagellates > 100 μm C ($\mu\text{g L}^{-1}$)	T	8	-5.097679	0.009**
	CO ₂	8	-2.672748	0.0282*
	T x CO ₂	8	1.220660	0.2570
(log) Filamentous cyanobacteria C ($\mu\text{g L}^{-1}$)	T	8	1.599105	0.1485
	CO ₂	8	6.531437	<0.001***
	T x CO ₂	8	0.119481	0.9087
Phytoplankton < 5 μm C ($\mu\text{g L}^{-1}$)	T	8	0.052991	0.9590
	CO ₂	8	1.450211	0.1850

	T x CO ₂	8	0.412471	0.6908
(log) Edible flagellates 5-100 µm	T	8	-6.693784	<0.001***
C (µg L ⁻¹)	CO ₂	8	-6.924401	<0.001***
	T x CO ₂	8	1.273975	0.2384
(log) Diatom C (µg L ⁻¹)	T	8	-3.154914	0.0135*
	CO ₂	8	-1.531894	0.1641
	T x CO ₂	8	-0.244293	0.8132
(log) <i>T. muelleri</i> C (µg L ⁻¹)	T	8	-4.420674	0.0022**
	CO ₂	8	-1.918598	0.0913
	T x CO ₂	8	0.524755	0.6140
(log) <i>T. longissimus</i> C (µg L ⁻¹)	T	8	-6.391495	<0.001***
	CO ₂	8	-4.789403	0.0014**
	T x CO ₂	8	3.052888	0.0158*
(log) <i>N. spumigena</i> C (µg L ⁻¹)	T	8	0.061508	0.9525
	CO ₂	8	5.413742	<0.001***
	T x CO ₂	8	1.991594	0.0816
<i>Dolichospermum</i> sp. C (µg L ⁻¹)	T	8	0.725673	0.4888
	CO ₂	8	0.6850857	0.5126
	T x CO ₂	8	0.6783824	0.5167
Phytoplankton < 5 µm only chl <i>a</i>	T	8	-0.2342063	0.8207
C (µg L ⁻¹)	CO ₂	8	1.7470336	0.1188
	T x CO ₂	8	0.4161874	0.6882
(log) Pico-cyanobacteria C	T	8	1.200001	0.2645
(µg L ⁻¹)	CO ₂	8	-0.245088	0.8126
	T x CO ₂	8	0.370596	0.7206
(log) <i>P. cordatum</i> C (µg L ⁻¹)	T	7	-4.251501	0.0038**
	CO ₂	7	-6.426122	<0.001***
	T x CO ₂	7	1.171489	0.2797
(log) <i>P. micans</i> C (µg L ⁻¹)	T	4	-1.7314318	0.1584
	CO ₂	4	-2.0778204	0.1963
	T x CO ₂	4	0.9579617	0.3923
<i>Dinophysis</i> sp.C (µg L ⁻¹)	T	8	-8.143823	<0.001***
	CO ₂	8	-9.722616	<0.001***
	T x CO ₂	8	4.513311	0.0020**
(log) <i>Teleaulax</i> sp. C (µg L ⁻¹)	T	5	-4.854862	0.0047**
	CO ₂	5	1.182049	0.2903
	T x CO ₂	5	0.111846	0.9153
(log) <i>D. brightwellii</i> C (µg L ⁻¹)	T	8	-2.3473104	0.0469*
	CO ₂	8	-1.1657632	0.2773
	T x CO ₂	8	-0.0719142	0.9444
C:N	T	8	-3.84145	0.0049**
	CO ₂	8	-4.58708	0.0018**
	T x CO ₂	8	4.47006	0.0021**
C:P	T	8	-1.058106	0.3209
	CO ₂	8	0.388403	0.7078
	T x CO ₂	8	0.820492	0.4357
N:P	T	8	-0.510356	0.6236
	CO ₂	8	1.394792	0.2006
	T x CO ₂	8	0.056534	0.9563

Table S4: Results of generalized least squares model (glS) testing for the effect of CO₂ under high and low temperature for the edible and inedible species separately. Significant results are in bold. *p≤ 0.05, ** p< 0.01, *** p< 0.001.

Response variable	factor	df residual	t-value	p
<i>T. muelleri</i> C first period (µg L ⁻¹)	CO ₂ warm	4	-1.496190	0.2089
	CO ₂ cold	4	-6.5866618	0.0028**
<i>T. longissimus</i> C second period (µg L ⁻¹)	CO ₂ warm	4	0.0881402	0.9340
	CO ₂ cold	4	-4.863399	0.0083**
<i>N. spumigena</i> C bloom (µg L ⁻¹)	CO ₂ warm	4	6.141194	0.0036**
	CO ₂ cold	4	4.38497	0.0118*
<i>P. micans</i> C second period (µg L ⁻¹)	CO ₂ warm	4	0.6741999	0.5371
	CO ₂ cold	4	-0.6298045	0.5630
<i>P. cordatum</i> C second period (µg L ⁻¹)	CO ₂ warm	4	-0.3194113	0.7654
	CO ₂ cold	4	-0.1399214	0.8955
<i>Dinophysis</i> sp. C second period (µg L ⁻¹)	CO ₂ warm	4	-4.426824	0.0115*
	CO ₂ cold	4	-8.128184	0.0012**