Supplemental Material, Table S1. Pairwise correlations between the relative abundances of 22 phytoplankton taxa. Significant correlations at $p<0.05$ are in bold/italics, those significant at Bonferroni-adjusted $p<0.05/21$ are also underlined.

r	ca	cca	cc	cd	cn	cyc	da	dt	ds	dcx	fcx	fk	fps	fr	fri	guc	coc	nix	parm	pet	psl
cca	0.11																				
cc	***0.40***	-0.12																			
cd	0.25	-0.05	<u>***0.47***</u>																		
cn	***0.36***	0.16	***-0.28***	-0.26																	
cyc	-0.03	-0.07	-0.07	0.01	-0.02																
da	***0.43***	0.07	0.26	***0.40***	-0.02	0.14															
dt	-0.26	0.12	***-0.38***	***-0.42***	0.14	-0.17	-0.20														
ds	0.22	<u>***0.59***</u>	-0.27	-0.32	<u>***0.58***</u>	-0.11	-0.03	***0.29***													
dcx	***0.31***	0.26	0.02	0.02	***0.36***	-0.15	0.07	-0.09	***0.47***												
fcx	-0.27	-0.22	-0.07	-0.27	-0.20	-0.08	-0.23	-0.12	***-0.36***	<u>***-0.61***</u>											
fk	0.26	-0.07	***0.39***	0.27	-0.02	0.04	***0.29***	***-0.42***	-0.15	0.14	-0.26										
fps	0.15	-0.09	-0.10	-0.10	-0.02	-0.12	-0.04	-0.10	0.02	0.20	-0.01	0.08									
fr	***-0.52***	-0.21	***-0.28***	***-0.44***	-0.26	0.15	***-0.34***	0.14	-0.22	-0.20	0.03	-0.18	-0.15								
fri	-0.02	-0.05	***0.33***	-0.03	-0.12	-0.25	-0.02	0.04	-0.17	-0.20	0.19	-0.02	0.15	-0.08							
guc	0.03	-0.14	0.23	-0.12	0.00	***0.28***	0.26	***-0.30***	-0.08	0.03	-0.01	0.08	-0.18	0.26	-0.10						
coc	-0.25	0.06	-0.13	-0.25	-0.06	0.04	-0.21	0.24	0.20	0.25	***-0.34***	-0.08	0.13	0.17	-0.02	-0.01					
nix	-0.20	***0.31***	***-0.41***	***-0.50***	0.16	0.08	-0.15	***0.45***	***0.41***	0.02	-0.10	***-0.42***	-0.09	0.09	0.02	-0.13	***0.41***				
parm	-0.14	***0.36***	-0.23	-0.25	<u>***0.52***</u>	-0.03	-0.08	0.11	***0.49***	0.27	-0.17	-0.23	-0.19	-0.13	-0.05	-0.02	0.01	0.25			
pet	-0.08	0.10	-0.08	-0.16	-0.12	-0.10	-0.22	0.20	0.19	0.23	-0.20	-0.08	***0.39***	-0.14	-0.09	-0.11	<u>***0.66***</u>	***0.40***	-0.04		
psl	***0.48***	0.08	0.08	0.05	***0.29***	0.02	0.06	-0.22	***0.31***	***0.52***	***-0.39***	***0.31***	<u>***0.51***</u>	***-0.49***	-0.08	0.00	0.17	-0.06	0.01	***0.38***	
ta	***0.32***	0.02	0.18	-0.13	0.12	0.00	0.09	-0.19	0.14	0.23	-0.18	<u>***0.65***</u>	0.06	-0.22	-0.08	0.11	0.03	-0.20	-0.01	-0.01	<u>***0.56***</u>

Supplemental Material, Table S2. Environmental variables showing summary statistics for each environmental variable and pairwise correlations among variables, and between environmental variable and taxa abundances. Correlations associated with p<0.05 are shown underlined, and correlations associated with Bonferonni-adjusted p<0.0028 and p<0.0026 for correlations among environmental variables and correlations between environmental variables and taxa abundances respectively, are in bold. Note, some covariates (year, SAM, min.lat.ice) are annual estimates (only 11 annual values from 2002 to 2012.

	DaysAfter1Oct	*SAM_autumn*	*SAM_prior*	*SAM_spring*	*Lat.S*	*Long.E*	*DaysSinceSeaIce*	*TimeUTC*	*min.lat.ice*	*SST*	*Salinity*	*year*	*NOx*	*PO4*	*SiO4*
unit	days	index	index	index	˚S	˚E	days	fraction	˚S	˚C	PSS	year	µM	µM	µM
average	95.83	0.00	0.065	-0.21	63.26	142	65.12	0.504	-61.7	0.635	33.75	2007	27.13	1.677	26.13
min	19.96	-0.66	-1.35	-1.49	62.13	135.8	-26	0	-62.8	-1.8	33.2	2002	23.49	1.21	8.93
max	150.9	0.62	1.957	1.14	64.32	147.9	366	0.984	-60.5	2.977	34.14	2012	31.08	2.08	55.64
n	52	11	52	11	52	52	52	52	11	52	52	11	51	51	51
SAM_autumn	**0.32**														
SAM_prior	-0.06	_0.51_													
SAM_spring	0.04	0.56	_0.83_												
Lat.S	0.25	0.16	-0.03	-0.01											
Long.E	_**-0.63**_	-0.17	0.10	0.05	_**-0.31**_										
DaysSinceSeaIce	_0.56_	0.18	-0.03	0.07	_-0.27_	-0.27									
TimeUTC	0.09	0.29	**0.30**	0.31	-0.18	0.20	0.09								
min.lat.ice	0.20	0.13	-0.18	0.00	-0.13	0.00	-0.13	-0.03							
SST	_**0.92**_	0.27	-0.14	-0.03	0.10	_**-0.68**_	_**0.60**_	0.04	0.19						
Salinity	_-0.43_	-0.14	**0.31**	0.21	-0.14	0.23	-0.13	0.24	_**-0.61**_	**-0.41**					
year	0.18	0.27	**0.35**	0.32	0.01	-0.24	0.02	0.23	0.32	0.27	-0.06				
NOx	_**-0.77**_	_-0.39_	0.23	0.04	-0.09	_0.53_	_-0.43_	-0.03	_-0.30_	_**-0.72**_	_0.54_	-0.14			
PO4	_**-0.73**_	_**-0.56**_	-0.07	-0.26	-0.22	_**0.62**_	_-0.52_	-0.04	0.03	_**-0.70**_	0.39	-0.13	_**0.73**_		
SiO4	_-0.56_	_-0.42_	0.26	-0.05	0.09	**0.40**	_-0.49_	-0.07	-0.01	_**-0.63**_	0.39	0.09	_**0.72**_	_**0.75**_	
ca	-0.15	_0.55_	_0.57_	_0.63_	-0.08	0.20	-0.01	0.24	-0.25	-0.20	0.22	0.13	0.14	-0.10	-0.05
cc	**0.37**	**0.36**	0.27	**0.35**	0.01	-0.07	0.27	0.08	-0.05	0.25	-0.14	0.11	_-0.42_	_-0.48_	-0.29
cca	_-0.36_	-0.02	0.26	0.20	-0.22	**0.41**	-0.12	0.01	0.11	_-0.36_	-0.07	-0.07	**0.36**	**0.35**	**0.29**
cd	_0.48_	**0.38**	**0.31**	**0.29**	0.12	-0.13	**0.37**	0.16	-0.01	**0.35**	-0.17	0.20	_-0.32_	_-0.38_	-0.23
cn	_-0.70_	-0.06	_0.42_	0.24	-0.08	_0.48_	_-0.40_	0.05	_-0.33_	_-0.69_	_0.56_	-0.04	_0.71_	_0.52_	_0.60_
coc	_-0.28_	_-0.38_	_-0.42_	_-0.38_	-0.16	0.21	0.12	-0.16	-0.13	-0.25	-0.01	_-0.37_	0.22	0.25	0.02
cyc	0.13	0.09	-0.10	-0.03	0.01	0.02	**0.32**	0.24	-0.19	0.12	0.02	-0.11	-0.14	-0.23	-0.24
da	0.18	**0.37**	**0.34**	**0.27**	-0.10	-0.06	0.18	0.14	-0.05	0.13	-0.08	0.06	-0.11	_-0.34_	-0.22
dcx	_-0.57_	0.15	0.06	0.24	-0.18	_0.52_	-0.11	0.01	-0.20	_-0.57_	0.21	-0.15	**0.38**	**0.32**	0.13
ds	_-0.78_	-0.17	**0.30**	0.14	_-0.28_	_0.68_	_-0.41_	0.18	-0.18	_-0.75_	**0.36**	-0.14	_0.69_	_0.68_	_0.50_
dt	-0.18	_-0.44_	-0.08	-0.16	-0.18	0.16	-0.19	0.06	0.09	-0.17	0.23	-0.02	**0.39**	**0.44**	**0.33**
fcx	0.26	-0.06	-0.08	-0.09	0.27	_-0.58_	-0.08	-0.13	0.10	**0.35**	-0.12	0.24	-0.20	_-0.29_	-0.08
fk	0.23	_0.52_	0.16	0.25	-0.07	-0.07	0.19	-0.06	0.18	0.22	_-0.46_	-0.05	_-0.38_	_-0.43_	_-0.41_
fps	-0.13	0.22	-0.02	0.22	0.08	-0.10	-0.05	-0.09	-0.09	-0.03	0.12	0.22	0.07	0.02	-0.06
fr	0.16	_-0.39_	_-0.58_	_-0.57_	-0.09	-0.13	0.13	-0.06	0.10	0.22	-0.12	-0.24	_-0.30_	-0.01	-0.21
fri	0.11	-0.10	0.00	-0.03	0.02	-0.02	0.02	-0.17	-0.02	0.10	-0.03	0.03	-0.06	-0.07	0.00
guc	0.09	0.12	-0.06	-0.06	-0.10	0.05	0.17	0.12	0.07	0.10	-0.03	-0.02	_-0.29_	_-0.28_	-0.24
nix	_-0.47_	_-0.45_	-0.29	-0.31	-0.12	_0.42_	_-0.32_	-0.11	0.02	_-0.46_	0.09	-0.22	**0.38**	_0.50_	**0.28**
parm	_-0.60_	_-0.29_	0.15	-0.09	0.08	_0.42_	_-0.42_	-0.19	-0.18	_-0.65_	**0.36**	-0.28	_0.60_	_0.53_	_0.70_
pet	-0.25	-0.13	_-0.27_	-0.08	-0.02	0.15	-0.17	-0.12	0.11	-0.25	0.02	-0.02	0.13	0.26	0.08
psl	_-0.35_	**0.39**	0.19	**0.37**	-0.11	**0.36**	-0.09	0.12	-0.10	_-0.35_	0.18	0.01	0.20	0.22	0.03
ta	-0.16	**0.32**	0.12	0.16	-0.18	0.15	-0.11	-0.07	0.14	-0.11	-0.19	-0.15	0.00	-0.01	-0.14