

### S3. Comparison on HPLC pigment data between stations

Here, we compare the pooled HPLC pigment data for each of the two stations (OCE17, n=12 and OSP14, n=4), to gain information on differences in phytoplankton community composition between sites. Table S3.1 shows absolute and relative concentration of each pigment and pigment group.

Table S3.1: HPLC derived pigment composition at the two sampling stations OCE17 and OSP14, grouped in to chlorophylls, photoprotective carotenoids, and photosynthetic carotenoids. Values are given as absolute concentrations in  $\mu\text{g L}^{-1}$  and as relative concentrations, normalized to total pigment concentration.

		$\mu\text{g L}^{-1}$		normalized to Tpig	
abbreviation	pigment name	OCE17	OSP14	OCE17	OSP14
Chl c <sub>3</sub>	chlorophyll c3	0.04	0.02	0.018	0.042
Chl c <sub>1c2</sub>	chlorophyll c1c2	0.15	0.03	0.068	0.059
Chl b	chlorophyll b	0.17	0.04	0.074	0.066
Chl a	chlorophyll a	1.04	0.19	0.464	0.322
Chla prime	chlorophyll a prime	0.06	0.02	0.027	0.038
<b>Tchl</b>	<b>total chlorophyll</b>	<b>1.47</b>	<b>0.31</b>	<b>0.65</b>	<b>0.53</b>
peri	peridinin	0.027	0.000	0.012	0.000
19'BF	19' butanoyloxyfucoxanthin	0.016	0.018	0.007	0.031
Fuco	fucoxanthin	0.253	0.033	0.113	0.057
19'HexFuc	19' hexanoyloxyfucoxanthin	0.090	0.078	0.040	0.133
Prasino	prasinoxanthin	0.038	0.007	0.017	0.012
$\alpha$ -Caro	$\alpha$ -carotene	0.090	0.004	0.040	0.007
<b>PSC</b>	<b>photosynthetic carotenoids</b>	<b>0.26</b>	<b>0.13</b>	<b>0.117</b>	<b>0.230</b>
<b>PSP</b>	<b>PSC + Tchl</b>	<b>1.73</b>	<b>0.44</b>	<b>0.771</b>	<b>0.761</b>
Neo	neoxanthin	0.022	0.007	0.010	0.012
Viola	violaxanthin	0.027	0.011	0.012	0.018
Dd	diadinoxanthin	0.050	0.029	0.022	0.049
Allox	alloxanthin	0.099	0.007	0.044	0.012
Dt	diatoxanthin	0.009	0.003	0.004	0.006
Lut	lutein	0.002	0.005	0.001	0.009
Zea	zeaxanthin	0.031	0.056	0.014	0.095
$\beta$ -caro	$\beta$ -carotene	0.023	0.017	0.010	0.029
<b>PPC</b>	<b>photoprotective carotenoids</b>	<b>0.51</b>	<b>0.14</b>	<b>0.229</b>	<b>0.239</b>
<b>Tpig</b>	<b>total pigment</b>	<b>2.25</b>	<b>0.58</b>		

In the absence of taxonomic data from e.g. microscopy data, which is needed to establish a reliable input matrix for each region, we here did not use CHEMTAX analysis. Instead, we used the pigment data to estimate and compare the phytoplankton community at each of our sampling sites using pigment-based size classes (Claustre, 1994; Uitz et al., 2006; Vidussi et al., 2001). Here, phytoplankton size classes are estimated as:

$$f_{\text{micro}} (>20 \mu\text{m}) = (1.41 [\text{Fuco}] + 1.41 [\text{Peri}]) / \text{DP} \quad (\text{Eq. S3.1})$$

$$f_{\text{nano}} (0.2 - 2 \mu\text{m}) = (0.6 [\text{Allo}] + 0.35 [19'\text{BF} - \text{Fuco}] + 1.27 [19'\text{HF} - \text{Fuco}]) / \text{DP} \quad (\text{Eq. S3.2})$$

$$f_{\text{pico}} (2 - 20 \mu\text{m}) = (0.86 [\text{Zea}] + 1.01 [\text{TChlb}]) / \text{DP} \quad (\text{Eq. S3.3})$$

$$\text{DP} = 1.41 [\text{Fuco}] + 1.41 [\text{Peri}] + 0.6 [\text{Allo}] + 0.35 [19'\text{BF} - \text{Fuco}] + 1.27 [19'\text{HF} - \text{Fuco}] + 0.86 [\text{Zea}] + 1.01 [\text{TChlb}] \quad (\text{Eq. S3.4})$$

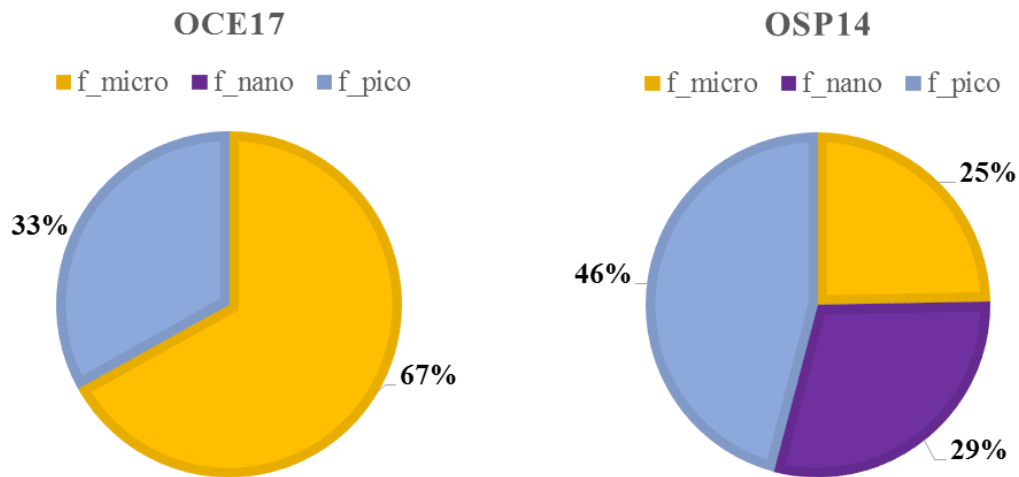


Figure S3.1: Estimates of the pigment-based size structure of the phytoplankton communities at the two sampling sites.