

**Plankton assemblage estimated with BGC-Argo floats in the Southern  
Ocean: implications for seasonal successions and particle export**

Mathieu Rembauville<sup>1</sup>, Nathan Briggs<sup>1</sup>, Mathieu Ardyna<sup>1</sup>,  
Julia Uitz<sup>1</sup>, Philippe Catala<sup>2</sup>, Christophe Penkerch<sup>1</sup>,  
Antoine Poteau<sup>1</sup>, Hervé Claustre<sup>1</sup>, Stéphane Blain<sup>2</sup>

<sup>1</sup>Sorbonne Universités, UPMC Univ Paris 06, INSU-CNRS, Laboratoire d'Océanographie de Villefranche, 181 Chemin du Lazaret, 06230 Villefranche-sur-mer, France

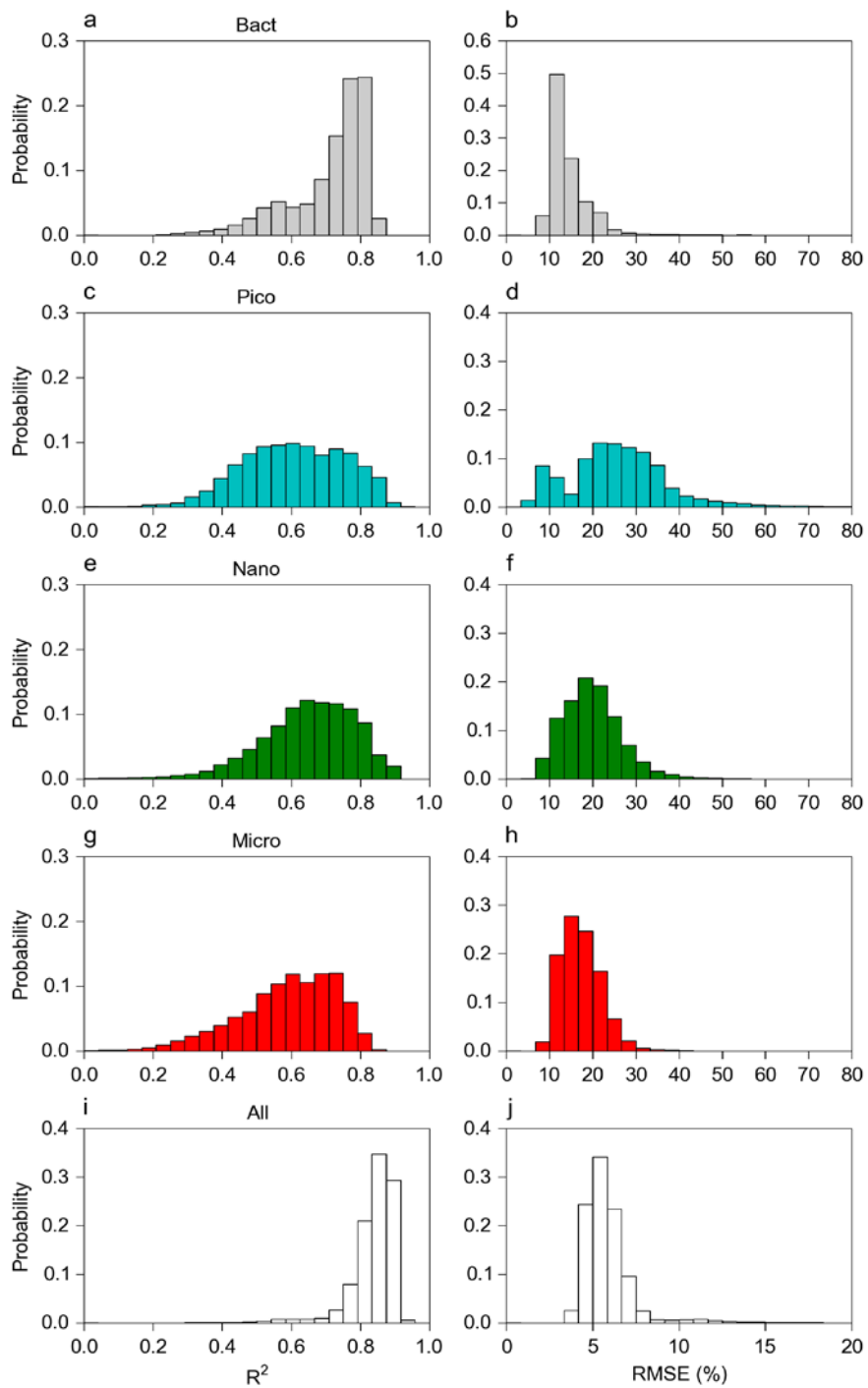
<sup>2</sup>Sorbonne Universités, UPMC Univ Paris 06, CNRS, Laboratoire d'Océanographie Microbienne (LOMIC), Observatoire Océanologique, F-66650, Banyuls/mer, France

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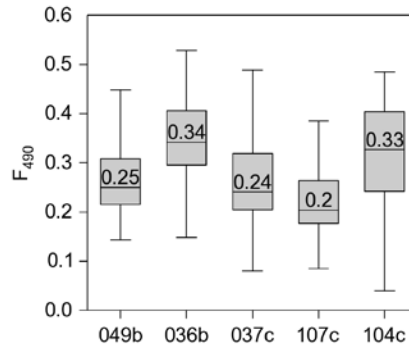
Figures S1 to S3  
Tables S1 to S3

**Additional Supporting Information (Files uploaded separately)**

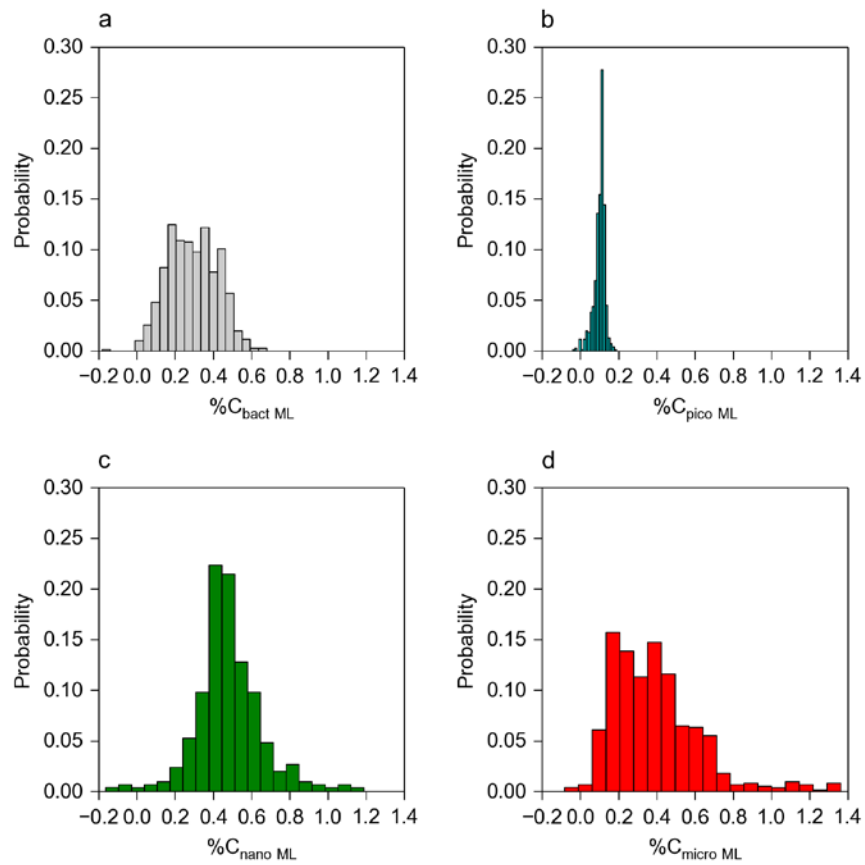
Captions for Datasets S1



**Figure S1.** Probability histograms of the results from the bootstrapping used to estimate the quality of the PLSR prediction. The dataset randomly split into 2/3 learning set, 1/3 validation set, and prediction was repeated 10 000 times.



**Figure S2.** Box and whisker plots of the  $F_{490}$  factor calculated for each float. The median value is specified.



**Figure S3.** Probability histograms of the mean  $\%C_{\text{group}}$  in the mixed layer predicted from the float data ( $n = 758$  profiles).

<b>Station</b>	<b>Date</b>	<b>Longitude (deg. East)</b>	<b>Latitude (deg. North)</b>	<b>MLD (m)</b>	<b>Zone</b>
O23	2016-10-10	62.00	-35.00	98	SAZ
O25	2016-10-12	67.77	-45.00	101	PFZ
O12	2016-10-25	72.22	-47.00	52	PFZ
TNS06	2016-10-16	72.28	-48.78	98	AAZ
TNS08	2016-10-24	72.24	-49.46	73	AAZ
A3_1	2016-10-18	72.06	-50.63	162	AAZ
A3_2	2016-10-24	72.06	-50.63	159	AAZ
KERFIX	2016-10-18	68.38	-50.68	167	AAZ
FS	2016-10-19	67.00	-52.50	182	AAZ
O11	2016-10-20	63.00	-56.50	162	AAZ
SI	2016-10-21	61.50	-58.50	143	AAZ

**Table S1.** Stations from the SOCLIM cruise used to train the PLSR (date, location, MLD: mixed layer depth)

Sample	Depth (m)	Temp. (°C)	Salinity	Chl (mg m <sup>-3</sup> )	$b_{bp}$ (10 <sup>-3</sup> m <sup>-1</sup> )	$c_p$ (10 <sup>-1</sup> m <sup>-1</sup> )	Chl: $b_{bp}$ (mg m <sup>-2</sup> )	Chl: $c_p$ (mg m <sup>-2</sup> )	$b_{bp}$ : $c_p$ (10 <sup>-2</sup> )	POC (mmol m <sup>-3</sup> )
O23_250	251	13.64	35.30	0.00	0.32	0.15	3.41	0.07	2.07	0.75
O23_100	101	15.48	35.56	0.15	0.58	0.35	263.99	4.32	1.64	1.92
O23_10	6	16.10	35.63	0.32	1.41	0.97	228.96	3.33	1.46	4.37
O25_250	251	6.44	34.19	0.00	0.31	0.16	16.18	0.32	1.99	1.05
O25_100	103	6.88	33.94	0.31	1.45	0.79	213.23	3.93	1.84	3.35
O25_10	5	7.25	33.94	0.68	1.94	1.50	353.37	4.56	1.29	7.45
O12_250	248	2.75	33.93	0.00	0.32	0.15	3.41	0.07	2.13	1.01
O12_100	99	4.03	33.79	0.13	0.88	0.50	144.92	2.54	1.75	2.63
O12_10	4	4.60	33.75	0.33	1.54	1.16	217.37	2.89	1.33	4.93
TNS06_250	248	1.98	34.09	0.00	0.34	0.16	11.27	0.24	2.13	1.33
TNS06_100	99	2.63	33.86	0.21	0.97	0.74	213.92	2.78	1.30	3.15
TNS06_100	5	2.92	33.85	0.65	1.72	1.63	379.44	4.00	1.05	7.45
TNS08_250	250	2.04	34.22	0.01	0.33	0.15	16.26	0.35	2.16	0.99
TNS08_100	100	1.92	33.92	0.08	0.58	0.30	139.66	2.66	1.90	1.93
TNS08_100	10	2.31	33.91	0.74	1.99	1.64	371.70	4.51	1.21	8.73
A3_1_250	250	1.97	34.11	0.00	0.32	0.15	12.15	0.26	2.14	0.92
A3_1_100	100	1.98	33.93	0.54	1.30	1.09	418.48	5.00	1.20	5.20
A3_1_10	4	2.23	33.92	0.94	1.72	1.48	546.26	6.36	1.16	8.07
A3_2_250	250	1.91	34.08	0.01	0.31	0.15	19.70	0.41	2.07	1.28
A3_2_100	100	2.06	33.92	0.70	1.87	1.50	376.79	4.71	1.25	8.14
A3_2_10	19	2.06	33.92	0.85	1.87	1.47	451.90	5.75	1.27	7.95
KERFIX_250	250	2.09	33.99	0.01	0.32	0.16	33.74	0.67	1.99	0.78
KERFIX_100	100	2.29	33.91	0.28	1.21	0.74	228.82	3.74	1.63	3.21
KERFIX_10	5	2.37	33.91	0.30	1.42	0.85	214.43	3.56	1.66	3.52
FS_250	248	2.08	34.13	0.00	0.31	0.15	10.54	0.21	2.03	0.67
FS_100	100	1.91	33.95	0.22	0.97	0.61	223.86	3.58	1.60	2.29
FS_10	5	2.00	33.94	0.32	1.26	0.86	256.42	3.77	1.47	3.06
O11_250	248	1.81	34.34	0.00	0.30	0.15	14.87	0.29	1.96	0.74
O11_100	100	0.34	33.99	0.35	1.05	0.80	336.39	4.41	1.31	3.22
O11_10	5	1.00	33.99	0.32	1.20	0.90	263.87	3.51	1.33	3.23
SI_250	251	1.91	34.50	0.01	0.33	0.15	30.21	0.64	2.12	0.50
SI_100	101	-1.11	33.88	0.37	0.97	0.72	384.71	5.16	1.34	2.79
SI_10	11	-1.12	33.87	0.38	0.93	0.78	408.07	4.82	1.18	3.84

**Table S2.** Hydrological, optical and biogeochemical data from the SOCLIM cruise used to train the PLSR.

Sample	%C <sub>bact</sub>	%C <sub>pico</sub>	%C <sub>nano</sub>	%C <sub>micro</sub>
O23_250	0.73	0.02	0.10	0.16
O23_100	0.09	0.21	0.53	0.16
O23_10	0.20	0.12	0.31	0.37
O25_250	0.47	0.00	0.03	0.50
O25_100	0.19	0.10	0.34	0.37
O25_10	0.09	0.08	0.30	0.54
O12_250	0.54	0.00	0.04	0.42
O12_100	0.21	0.04	0.18	0.58
O12_10	0.15	0.05	0.28	0.51
TNS06_250	0.44	0.00	0.06	0.50
TNS06_100	0.13	0.03	0.44	0.40
TNS06_100	0.06	0.01	0.31	0.62
TNS08_250	0.26	0.00	0.03	0.71
TNS08_100	0.31	0.03	0.24	0.42
TNS08_100	0.06	0.01	0.15	0.78
A3_1_250	0.35	0.00	0.07	0.57
A3_1_100	0.10	0.02	0.23	0.65
A3_1_10	0.07	0.02	0.21	0.71
A3_2_250	0.38	0.00	0.04	0.58
A3_2_100	0.12	0.01	0.07	0.80
A3_2_10	0.08	0.01	0.06	0.85
KERFIX_250	0.54	0.02	0.12	0.33
KERFIX_100	0.11	0.08	0.26	0.56
KERFIX_10	0.10	0.08	0.21	0.62
FS_250	0.47	0.00	0.04	0.49
FS_100	0.15	0.08	0.24	0.53
FS_10	0.12	0.10	0.31	0.48
O11_250	0.39	0.00	0.00	0.60
O11_100	0.09	0.05	0.29	0.57
O11_10	0.10	0.07	0.34	0.49
SI_250	0.31	0.00	0.02	0.67
SI_100	0.09	0.03	0.25	0.63
SI_10	0.08	0.03	0.25	0.64

**Table S3.** Carbon partitioning among the plankton groups for the sample collected during the SOCLIM cruise.

**Data Set S1.** Microplankton species/group, biovolume and cell abundance ( $10^4$  cell L<sup>-1</sup>) from the SOCLIM cruise (as Excel file).