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Distribution of alkylamines in surface waters around the Antarctic Peninsula and Weddell Sea

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Table S1. General characteristics of the 19 stations located in the Western Antarctic Peninsula (WAP) and the Weddell Sea (WS), presented in chronological sampling order, with indication of: coordinates, temperature, salinity, density, solar radiation (PAR) and F_v'/F_m' and the concentrations (average ± standard deviation, and number of replicates) of dissolved (mono-, di- and tri-methylamines, MMA, DMA, TMA, respectively; and diethylamine, DEA) and particulate TMA. * nd: below detection limit

Station #	**Coordinates**	**T** (°C)	**Salinity Density** (sigmaT)	**PAR** (W m^{-2}) **F_v'/F_m'**	**Dissolved alkylamines** (nM) (n=2 or 3)	**Particulate TMA** (nM) (n=1)
1 WAP	63.1728 S 60.2182 W	2.3	34.2 27.2	598.7 0.407	MMA: nd DMA: 49.4 ± 7.4 TMA: 35.6 ± 8.0 DEA: 7.5 ± 0.2	10.8
2 WAP	64.1138 S 63.0150 W	2.0	33.8 26.9	222.7 0.311	MMA: nd DMA: 132.3 ± 16.9 TMA: 16.3 ± 2.4 DEA: 6.5 ± 1.0	28.1
3 WAP	65.4277 S 64.6542 W	2.2	33.8 26.9	76.0 0.529	MMA: nd DMA: 47.4 ± 3.2 TMA: 31.8 ± 0.2 DEA: 13.3 ± 0.8	-
4 WAP	67.5983 S 69.3292 W	1.6	33.6 26.8	210.6 0.378	MMA: nd DMA: 18.8 ± 2.2 TMA: 9.4 ± 5.0 DEA: 5.9 ± 1.2	12.1
5 WAP	66.3437 S 67.4995 W	2.3	33.8 26.9	148.6 0.397	MMA: nd DMA: 7.6 ± 3.6 TMA: 8.5 ± 2.3 DEA: 5.1 ± 0.7	14.2
6 WAP	65.3712 S 63.8798 W	2.4	33.8 26.9	377.2 0.416	MMA: nd DMA: 20.5 ± 3.9 TMA: 13.4 ± 1.5 DEA: 7.4 ± 0.7	11.6
7 WAP	63.2012 S 59.0735 W	0.6	34.2 27.4	849.4 0.407	MMA: nd DMA: 73.4 ± 9.8 TMA: 30.3 ± 0.7 DEA: 8.2 ± 0.7	10.5
8 WS	64.2455 S 56.1148 W	0.3	34.3 27.5	104.4 0.473	MMA: nd DMA: 8.8 ± 0.4 TMA: 14.3 ± 0.9 DEA: 5.7 ± 0.7	11.9
9 WS	64.6483 S 55.4650 W	0.4	34.2 27.4	710.0 0.503	MMA:12.6 ± 0.1 DMA: 10.2 ± 0.2 TMA: 29.8 ± 1.2 DEA: 7.8 ± 0.02	18.4

10 WS	64.3905 S 54.2772 W	0.3	33.8 27.2	48.2 0.346	MMA:12.6 ± 0.03 DMA: 9.1 TMA: 13.0 ± 3.0 DEA: 6.1 ± 0.2	19.1
11 WS	65.2107 S 53.0985 W	-0.6	33.2 26.8	273.7 0.208	MMA:12.8 ± 0.1 DMA: 12.3 ± 0.8 TMA: 27.4 ± 2.3 DEA: 7.6 ± 0.2	10.7
12 WS	65.2857 S 53.2763 W	-0.7	33.2 26.8	199.5 0.244	MMA: nd DMA: nd TMA: 22.0 ± 2.3 DEA: 5.9 ± 0.11	13.2
13 WS	64.3150 S 52.4360 W	-0.2	33.3 26.8	106.2 0.282	MMA: nd DMA: 17.9 TMA: 35.7 ± 1.6 DEA: 6.4 ± 0.5	12.8
14 WS	62.3803 S 49.0358 W	1.9	34.0 27.1	112.9 0.272	MMA: nd DMA: nd TMA: 2.6 ± 3.2 DEA: 6.0 ± 0.5	13.4
15 WS	64.0503 S 53.8363 W	0.8	34.0 27.2	69.5 0.468	MMA: nd DMA: nd TMA: 12.7 DEA: 7.1	20.5
16 WS	64.1597 S 56.0608 W	0.2	34.1 27.4	424.6 0.380	MMA: nd DMA: nd TMA: 1.5 DEA: 6.4 ± 0.2	18.9
17 WS	64.6538 S 56.6295 W	-0.2	34.1 27.5	47.79 0.540	MMA: nd DMA: 15.3 TMA: 8.6 ± 0.5 DEA: 9.1 ± 2.2	11.4
18 WS	64.3233 S 56.5637 W	-0.2	34.2 27.5	179.2 0.232	MMA: nd DMA: 16.4 ± 2.8 TMA: 67.9 ± 52.0 DEA: 6.7 ± 0.6	9.7
19 WS	64.1077 S 56.1890 W	0.3	34.2 27.4	435.3 0.383	MMA: nd DMA: 45.9 ± 7.0 TMA: 16.9 ± 0.2 DEA: 7.8 ± 0.01	12.3

Table S2. Values of the biological parameters estimated in the 19 seawater samples where amine concentrations were estimated: Chlorophyll-a concentration expressed as µg L^{-1} and its equivalent as carbon biomass (µg C L^{-1}). Abundances (in cells mL^{-1} or virus mL^{-1}) and the equivalent biomass in terms of carbon (µg C L^{-1}) of the different microbial groups: total virus abundances and the V1, V2, V3 and V4 groups, total bacteria abundance and the HNA and LNA bacteria fractions, and the subgroups of pico- and nanophytoplankton abundances based on their size (1–2 µm, 2–7 µm, 7–15 µm, 15–20 µm and Cryptophytes) estimated by flow cytometry.

Station #	**Chlorophyll-a** (µg L^{-1}) **Biomass (**µg C L^{-1})	**Viruses Total** (virus mL^{-1}) **Biomass (**µg C L^{-1})	**V1** **V2** **V3** **V4** (virus mL^{-1})	**Bacteria Total** (cells mL^{-1}) **Biomass (**µg C L^{-1})	**Bacteria HNA** **LNA** (cells mL^{-1})	**Phyto. 1–2µm** (cells mL^{-1}) **Biomass (**µg C L^{-1})	**Phyto. 2–7µm** (cells mL^{-1}) **Biomass (**µg C L^{-1})	**Phyto. 7–15µm** (cells mL^{-1}) **Biomass (**µg C L^{-1})	**Phyto. 15–20µm** (cells mL^{-1}) **Biomass (**µg C L^{-1})	**Cryptophytes (*Cryptomonas*)** (cells mL^{-1}) **Biomass (**µg C L^{-1})
1	9.6 480	1.10E+07 2.3	10.0E+06 1.1E+06 2.7E+05 0	9.10E+05 15.3	6.4E+05 2.8E+05	1.01E+03 0.4	1.37E+03 15.0	2.84E+03 18.6	1.14E+03 12.0	1.07E+02 1.1
2	1.7 85	1.10E+07 2.3	9.63E+06 1.54E+06 2.69E+05 0	4.63E+05 7.7	2.38E+05 2.25E+05	2.12E+03 0.8	2.41E+03 26.4	8.55E+02 5.6	4.56E+01 0.5	1.03E+03 10.4
3	1.5 75	1.40E+07 2.7	1.1E+07 2.4E+06 4.8E+05 0	6.80E+05 11.3	3.4E+05 3.4E+05	3.56E+03 1.3	6.60E+02 7.2	4.86E+01 0.3	1.09E+02 1.2	1.67E+01 0.2
4	0.6 30	1.30E+07 2.5	1.0E+07 1.9E+06 4.6E+05 0	8.60E+05 14.3	4.7E+05 3.9E+05	4.53E+03 1.7	8.88E+02 9.7	8.35E+01 0.5	2.13E+01 0.2	1.97E+01 0.2
5	1.6 80	1.30E+07 2.6	1.1E+07 2.2E+06 3.3E+05 0	4.70E+05 7.8	1.6E+05 3.1E+05	3.37E+03 1.2	1.61E+03 17.7	2.75E+02 1.8	5.77E+01 0.6	4.56E+01 0.5

6	2.3 115	1.60E+07 3.1	1.2E+07 2.6E+06 6.3E+05 0	7.90E+05 13.3	4.0E+05 4.0E+05	6.72E+03 2.5	9.14E+02 10.0	8.96E+01 0.6	2.11E+02 2.2	2.58E+01 0.3
7	0.5 25	2.60E+06 0.5	2.1E+06 3.9E+05 9.9E+04 0	7.20E+05 12.0	4.8E+05 2.4E+05	1.67E+03 0.6	1.16E+03 12.8	4.07E+02 2.7	3.34E+01 0.4	6.53E+01 0.7
8	1.0 50	7.20E+06 1.4	5.7E+06 1.2E+06 2.5E+05 0	6.70E+05 11.2	3.3E+05 3.4E+05	1.73E+03 0.6	1.70E+03 18.7	3.45E+02 2.2	3.64E+01 0.4	1.52E+01 0.2
9	0.8 40	6.00E+06 1.2	4.6E+06 1.1E+06 2.6E+05 0	4.50E+05 7.5	2.4E+05 2.2E+05	5.71E+02 0.2	3.16E+03 34.6	4.72E+02 3.1	5.92E+01 0.6	4.56E+01 0.5
10	0.5 25	6.70E+06 1.3	5.3E+06 1.1E+06 2.1E+05 0	2.90E+05 4.8	8.8E+04 2.0E+05	8.90E+02 0.3	1.72E+03 18.9	5.41E+02 3.5	6.07E+01 0.6	5.68E+02 5.7
11	0.2 10	4.00E+06 0.8	3.3E+06 6.1E+05 1.1E+05 0	2.10E+05 3.6	1.1E+05 1.1E+05	3.78E+02 0.1	1.78E+03 19.5	8.35E+01 0.5	1.97E+01 0.2	5.77E+01 0.6
12	0.2 10	3.10E+06 0.6	2.2E+06 8.2E+05 1.7E+05 0	5.10E+05 8.5	1.3E+05 3.8E+05	3.13E+02 0.1	1.98E+03 21.7	4.25E+01 0.3	9.11E+00 0.1	7.44E+01 0.7
13	0.4 20	3.80E+06 0.8	2.8E+06 8.5E+05 1.8E+05 0	2.90E+05 4.8	1.0E+05 1.8E+05	3.55E+02 0.1	2.93E+03 32.1	3.70E+02 2.4	1.21E+01 0.1	3.16E+02 3.2
14	0.3 15	1.00E+07 2.0	8.5E+06 1.3E+06 3.7E+05	1.10E+06 18.2	6.1E+05 4.8E+05	9.46E+02 0.3	1.56E+03 17.1	1.49E+02 1.0	3.49E+01 0.4	1.97E+01 0.2

			0							
15	1.0 50	8.70E+06 1.7	7.3E+06 9.5E+05 4.5E+05 1.8E+05	6.10E+05 10.1	3.2E+05 2.9E+05	4.07E+02 0.2	2.14E+03 23.4	4.48E+02 2.9	1.75E+02 1.8	1.34E+02 1.3
16	0.4 20	6.40E+06 1.3	4.8E+06 1.3E+06 2.3E+05 0	1.20E+06 29.6	6.3E+05 5.4E+05	3.55E+02 0.1	1.75E+03 19.2	3.63E+02 2.4	2.73E+01 0.3	6.38E+01 0.6
17	0.5 25	6.00E+06 1.2	4.6E+06 1.2E+06 1.9E+05 0	6.10E+05 10.2	3.8E+05 2.3E+05	1.82E+02 0.1	1.96E+03 21.4	3.26E+02 2.1	3.34E+01 0.4	6.23E+01 0.6
18	0.5 25	6.10E+06 1.2	4.4E+06 1.5E+06 3.0E+05 0	7.40E+05 12.4	3.8E+05 3.6E+05	4.27E+02 0.2	2.30E+03 25.2	2.49E+03 16.2	3.29E+02 3.5	6.23E+01 0.6
19	0.6 30	6.50E+06 1.3	4.8E+06 1.4E+06 3.0E+05 0	5.50E+05 9.3	3.1E+05 2.5E+05	7.52E+02 0.3	1.88E+03 20.6	5.51E+02 3.6	5.16E+01 0.5	5.47E+01 0.5

Table S3. Abundances (cells mL^{-1}) and biomasses (µg C L^{-1}) of heterotrophic and phototrophic nanoflagellates (HNF and PNF, respectively) and the size classes based on their dimensions (≤2 µm, 2–5 µm, 5–10 µm, 10–20 µm and *Phaeocystis*), estimated by epifluorescence microscopy (note that samples #5, #9, #11, #15 were lost).

Station #	**HNF tot** (cells mL^{-1}) **Biomass** (µg C L^{-1})	**HNF ≤2 µm** (cells mL^{-1}) **Biomass** (µg C L^{-1})	**HNF 2–5 µm** (cells mL^{-1}) **Biomass** (µg C L^{-1})	**HNF 5–10 µm** (cells mL^{-1}) **Biomass** (µg C L^{-1})	**HNF 10–20 µm** (cells mL^{-1}) **Biomass** (µg C L^{-1})	**PNF tot** (cells mL^{-1}) **Biomass** (µg C L^{-1})	**PNF ≤2 µm** (cells mL^{-1}) **Biomass** (µg C L^{-1})	**PNF 2–5 µm** (cells mL^{-1}) **Biomass** (µg C L^{-1})	**PNF 5–10 µm** (cells mL^{-1}) **Biomass** (µg C L^{-1})	**PNF 10–20 µm** (cells mL^{-1}) **Biomass** (µg C L^{-1})	***Phaeocystis*** (cells mL^{-1}) **Biomass** (µg C L^{-1})
1	2 593 8.9	233 0.1	1 820 4.7	265 1.5	275 2.7	3 514 7.7	2 074 0.8	921 2.4	127 0.7	392 3.8	497 1.3
2	2 904 7.8	161 0.1	2 532 6.5	186 1.0	25 0.2	3 895 8.4	2 134 0.8	1 278 3.3	102 0.6	381 3.7	305 0.8
3	1 585 4.2	449 0.2	873 2.2	183 1.0	79 0.8	4 209 7.4	1 753 0.6	2 347 6.1	89 0.5	21 0.2	179 0.5
4	42 0.1	0 0.0	42 0.1	0 0.0	0 0.0	7 091 10.9	3 471 1.3	3 535 9.2	85 0.5	0 0.0	21 0.1
5	-	-	-	-	-	-	-	-	-	-	-
6	152 0.6	0 0.0	93 0.2	49 0.3	11 0.1	1 524 3.4	309 0.1	1 199 3.1	5 0.0	11 0.1	4 0.0
7	127 0.5	14 0.0	56 0.1	42 0.2	14 0.1	5 207 12.5	931 0.3	3 951 10.3	296 1.6	28 0.3	240 0.6
8	529 2.0	0 0.0	332 0.9	183 1.0	14 0.1	4 949 10.0	1 450 0.5	3 373 8.8	127 0.7	0 0.0	243 0.6
9	-	-	-	-	-	-	-	-	-	-	-
10	110 0.5	0 0.0	51 0.1	42 0.2	17 0.2	2 049 7.3	237 0.1	1 372 3.6	152 0.8	288 2.8	119 0.3

11	-	-	-	-	-	-	-	-	-	-	-
12	643 1.9	0 0.0	564 1.5	79 0.4	0 0.0	3 220 6.9	949 0.3	2 045 5.3	218 1.2	8 0.1	272 0.7
13	303 1.1	0 0.0	198 0.5	106 0.6	0 0.0	8 883 23.4	1 164 0.4	7 119 18.5	317 1.7	282 2.7	473 1.2
14	2 120 22.0	557 16.4	1 228 3.2	215 1.2	120 1.2	1 940 4.8	377 0.1	1 376 3.6	173 1.0	14 0.1	1 376 3.6
15	-	-	-	-	-	-	-	-	-	-	-
16	1 304 4.6	0 0.0	974 2.5	254 1.4	76 0.7	9 373 17.3	3 675 1.4	5 402 14.0	233 1.3	63 0.6	161 0.4
17	1 791 5.4	0 0.0	1 552 4.0	210 1.2	28 0.3	9 155 17.3	3 113 1.1	5 904 15.3	117 0.6	21 0.2	206 0.5
18	478 1.9	0 0.0	237 0.6	241 1.3	0 0.0	6 597 10.9	2 942 1.1	3 552 9.2	103 0.6	0 0.0	316 0.8
19	102 0.4	0 0.0	73 0.2	14 0.1	14 0.1	4 082 10.3	864 0.3	2 819 7.3	302 1.7	97 0.9	0 0.0

Table S4. Abundances (cells L^{-1}) and biomasses (µg C L^{-1}) of phytoplankton (dinoflagellate cysts, dinoflagellates 10–20 µm, 20–40 µm, >40 µm, diatoms 10–20 µm, 20–40 µm, >40 µm) and ciliates, estimated by optical microscopy. Note that microphytoplankton taxon abundances are expressed as cells L^{-1}, whereas all other microorganism and virus data in Tables S2 and S3 are reported in cells mL^{-1}.

Station #	**Dinofl. cysts** (cells L^{-1}) **Biomass (**µg C L^{-1})	**Dinofl. 10–20 µm** (cells L^{-1}) **Biomass (**µg C L^{-1})	**Dinofl. 20–40 µm** (cells L^{-1}) **Biomass (**µg C L^{-1})	**Dinofl. >40 µm** (cells L^{-1}) **Biomass (**µg C L^{-1})	**Diatoms 10–20 µm** (cells L^{-1}) **Biomass (**µg C L^{-1})	**Diatoms 20–40 µm** (cells L^{-1}) **Biomass (**µg C L^{-1})	**Diatoms >40 µm** (cells L^{-1}) **Biomass (**µg C L^{-1})	**Ciliates** (cells L^{-1}) **Biomass (**µg C L^{-1})
1	0 0.0	0 0.0	8 964 51.5	4 482 68.3	1 101 078 87.0	821 700 36.7	8 964 9.0	0 0.0
2	0 0.0	13 448 2.2	1 121 1.3	620 5.0	2 655 0.2	60 0.0	947 0.3	120 0.1
3	2 538 1.0	16 255 12.8	19 431 92.0	0 0.0	182 372 15.4	4 096 0.9	6 540 5.3	903 3.0
4	900 0.3	8 415 7.5	8 165 27.8	1 496 7.7	1 496 0.1	18 326 0.8	2 603 2.6	487 3.4
5	1 440 0.5	0 0.0	8 831 36.8	434 2.1	1 040 0.1	7 854 1.2	2 320 3.9	800 3.0
6	2 916 1.2	5 976 3.1	12 699 84.4	560 9.3	57 263 4.4	9 711 7.2	3 080 2.2	565 27.9
7	300 0.1	4 215 2.0	9 010 42.1	747 11.4	20 169 1.6	0 0.0	40 0.0	0 0.0
8	40 0.0	360 0.1	74 613 215.6	1 120 15.9	400 0.0	0 0.0	280 0.7	0 0.0
9	160 0.1	8 964 5.2	50 696 132.0	1 494 22.8	747 0.1	747 0.2	400 0.9	320 2.0
10	160	12 566	39 120	0	2 655	0	534	767

	0.1	6.4	187.8	0.0	0.2	0.0	0.2	2.5
11	40 0.0	14 593 11.4	787 2.3	0 0.0	29 733 13.2	1 814 0.2	1 067 0.7	0 0.0
12	1 087 1.3	1 494 0.4	8 964 46.6	0 0.0	280 0.0	0 0.0	747 0.6	0 0.0
13	600 0.2	1 321 0.6	12 699 66.0	747 14.3	240 0.0	0 0.0	160 1.4	2 988 9.9
14	700 0.2	11 962 4.9	5 021 22.2	289 5.3	805 0.1	2 897 0.3	2 214 4.4	660 18.2
15	940 0.3	35 388 23.6	1 174 3.4	40 0.6	19 053 1.5	935 0.3	520 3.7	60 0.3
16	280 0.1	1 923 1.1	4 481 8.2	0 0.0	600 0.0	0 0.0	1 120 3.0	561 1.2
17	6 000 2.1	38 097 23.5	1 847 7.3	0 0.0	200 0.0	747 0.4	600 0.8	0 0.0
18	20 0.0	16 437 0.9	2 615 2.3	0 0.0	747 0.0	394 0.1	1 594 0.2	307 0.2
19	0 0.0	10 480 0.6	1 247 1.5	120 1.0	1 494 0.2	454 0.2	420 0.5	0 0.0

Table S5. Values of biogeochemical and nutrient data obtained in the 19 samples of this study concerning biogeochemical parameters: Total phosphorus (TP), Total Nitrogen (TN) and Total Organic Nitrogen (TON), Particulate and Dissolved Organic Nitrogen (PON, DON), Total Organic Carbon (TOC), Particulate and Dissolved Organic Carbon (POC, DOC), and the ratio between particulate C and N (C:N), Nitrate and Nitrite, Ammonium, Silicate, Phosphate and Dimethylsulfoniopropionate (DMSP) and Dimethylsulfide (DMS) concentrations. All parameters expressed in µM except DMS and DMSP in nM. *nd: below detection limit

Station #	**TP** (µM)	**TN** **TON** (µM)	**PON** (µM)	**DON** (µM)	**TOC** (µM)	**POC** (µM)	**DOC** (µM)	**C:N**	**Nitrate** **Nitrite** (µM)	**Ammonium** (µM)	**Silicate** (µM)	**Phosphate** (µM)	**DMSP** **DMS** (nM)
1	1.5	22.7 5.5	4.4	1.1	69.2	27.9	41.4	6.3	16.2 0.22	0.8	56.5	1.5	57.8 1.49
2	4.0	28.4 2.1	1.8	nd	52.0	9.4	42.6	5.1	25.2 0.30	0.8	74.9	2.5	84.9 1.8
3	5.4	26.4 4.6	1.1	4.1	50.1	7.0	43.1	6.4	20.5 0.19	1.1	53.1	1.7	36.4 2.47
4	4.3	26.6 0.7	1.0	nd	48.2	5.9	42.3	5.8	24.7 0.31	0.9	51.7	2.1	33.2 1.25
5	5.1	28.9 7.5	1.4	6.0	56.9	8.8	48.1	6.1	20.4 0.24	0.8	49.8	1.7	53.8 1.53
6	5.7	28.4 8.2	2.2	6.0	61.3	11.8	49.5	5.5	19.7 0.19	0.3	53.3	1.7	16 1.74
7	8.4	30.6 8.7	0.6	8.1	65.5	4.5	61.0	7.1	21.0 0.17	0.7	57.7	1.9	31.7 1.36
8	9.6	34.8 8.3	1.4	6.9	55.3	9.4	45.9	6.9	24.7 0.23	1.6	59.3	2.5	40.1 1.53
9	8.3	33.4 6.96	1.0	5.9	51.8	6.6	45.3	6.5	24.1 0.24	2.1	59.4	2.5	48.6 1.35
10	4.0	27.9 5.2	1.2	4.0	45.2	7.7	37.5	6.4	20.9 0.20	1.6	48.1	2.2	35.2 1.42
11	12.6	22.6 0.1	0.6	nd	132.7	3.8	128.9	6.5	20.7 0.25	1.5	51	2.3	18.1 0.67
12	16.0	23.0 1.0	0.7	0.3	144.3	4.3	140.0	6.4	19.8 0.27	1.9	50.5	2.2	20.0 0.55
13	12.8	20.6 0.1	0.7	nd	79.7	4.4	75.3	6.2	18.5 0.22	1.9	50	2.1	43.2 1.73
14	22.1	30.1 9.1	1.0	8.1	55.0	7.9	47.1	7.9	19.9 0.24	0.9	49.2	2.2	23.9 1.34

15	19.1	20.4 3.6	1.0	2.6	45.0	5.4	39.4	5.6	15.8 0.15	0.9	48.6	1.9	31.0 1.15
16	16.9	33.3 9.6	0.6	9.0	79.0	3.8	75.2	6.2	21.9 0.20	1.6	57.6	2.4	23.3 0.6
17	26.6	32.8 9.6	0.7	9.0	52.8	4.9	47.8	7.2	20.8 0.26	2.1	55.8	2.2	23.3 0.78
18	23.5	32.6 10.0	0.7	9.3	50.3	4.5	45.8	6.7	20.9 0.20	1.5	56.3	2.3	26.6 0.57
19	38.9	38.0 12.5	1.0	11.5	137.9	6.2	131.7	6.1	23.1 0.30	2.0	60.1	2.6	19.1 0.87

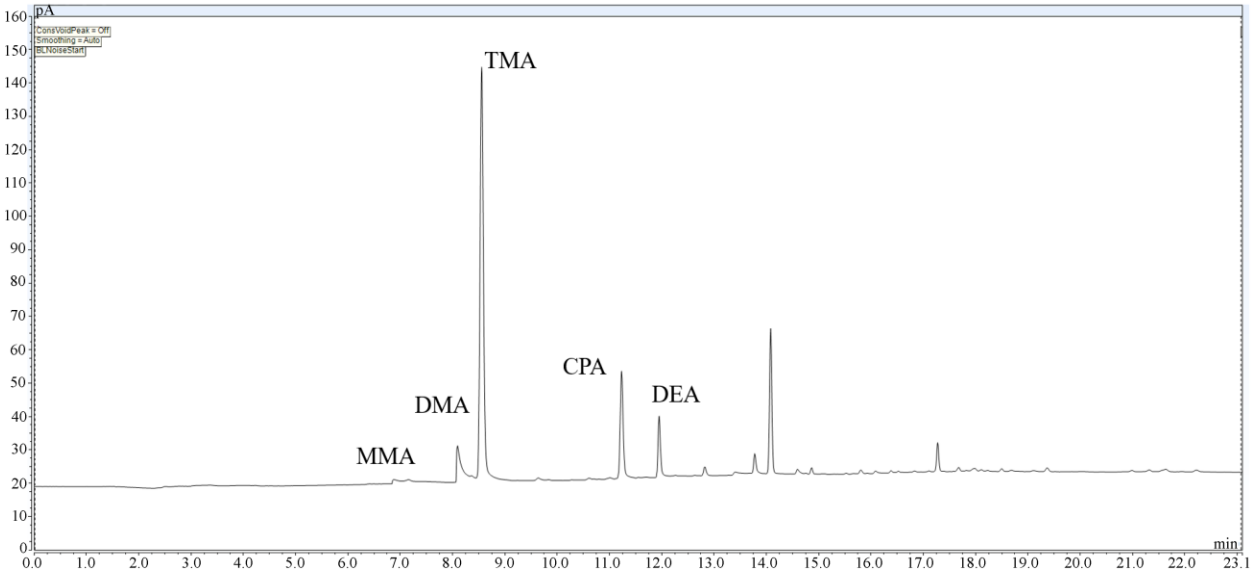

Figure S1. Chromatogram showing the retention times of MMA, DMA, TMA, CPA and DEA of a seawater sample.

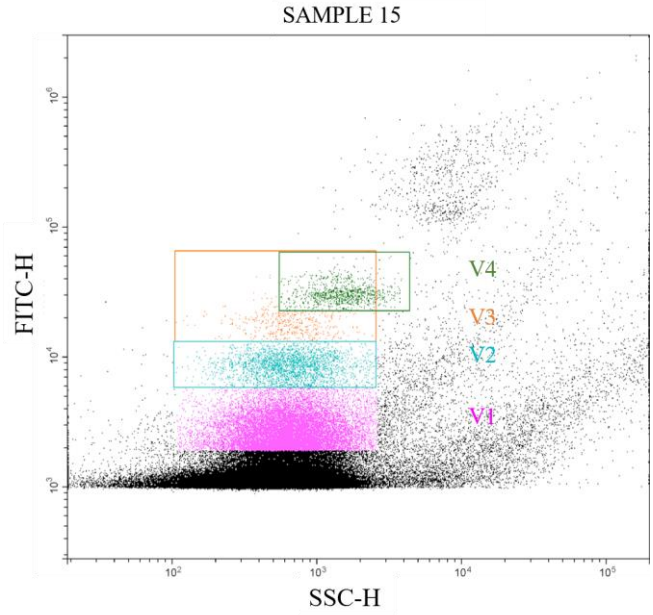

Figure S2. Example of the cytogram of virus populations: V1 (pink) and V2 (light blue) corresponding to bacteriophages, V3 (orange) to eukaryotic algal virus and V4 (green) mainly to Haptophyceae virus of sample #15 (SSC-H: Side scatter, type of light dispersion and FITC-H: fluorescence captured with 536/40nm filter).

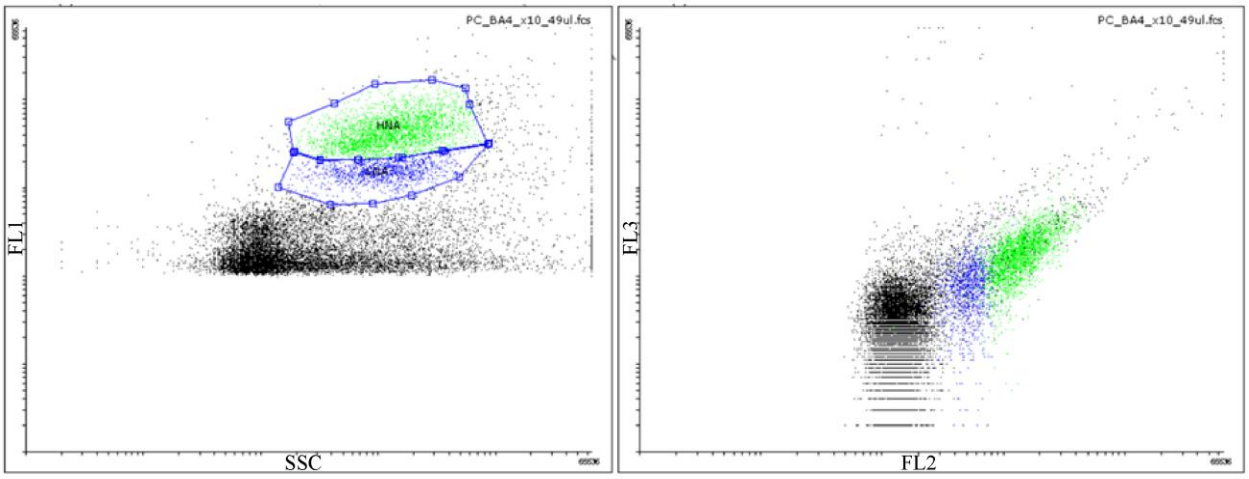

Figure S3. Example of the cytogram of bacteria, high (HNA) and low nucleic acid cells (LNA) of sample #1 (SSC: Side scatter, type of light dispersion; FL1: SYBRGreenI fluorochrome, FITC/1, fluorescence captured with 536/40nm filter; FL2: Phycoerythrin natural fluorochrome, PE/1, fluorescence captured with 590/50nm filter, and FL3: Chlorophyll a natural fluorochrome, PE-Cy5/1, fluorescence captured with 675/20nm filter).

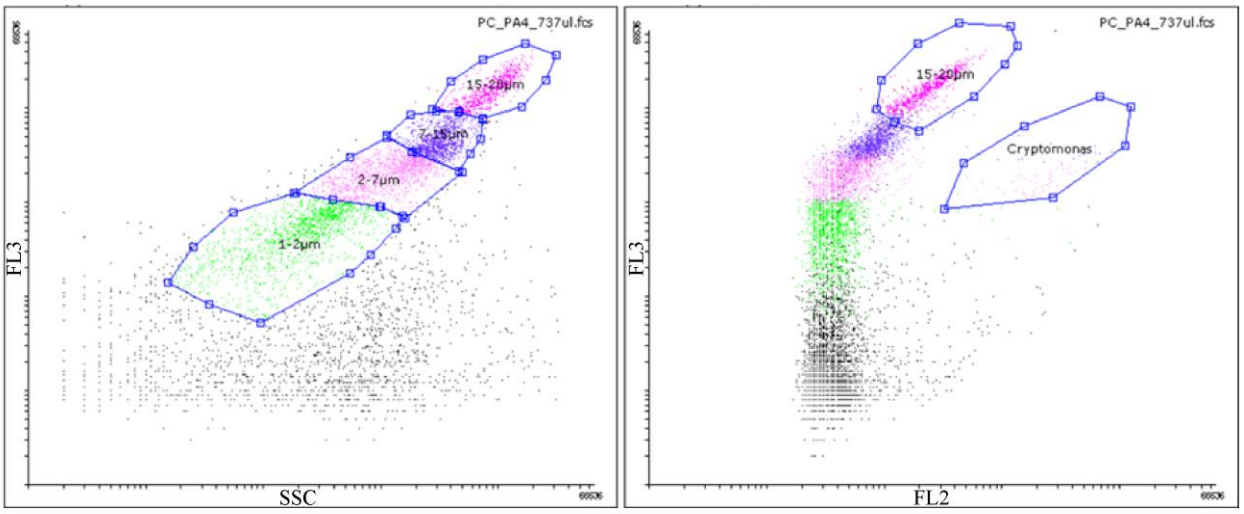

Figure S4. Example of the cytogram of nanophytoplankton populations (1–2 µm, 2–7 µm, 7–15 µm, 15–20 µm and *Cryptomonas*) of sample #1 (SSC: Side scatter, type of light dispersion; FL2: Phycoerythrin natural fluorochrome, PE/1, fluorescence captured with 590/50 nm filter, and FL3: Chlorophyll a natural fluorochrome, PE-Cy5/1, fluorescence captured with 675/20 nm filter).

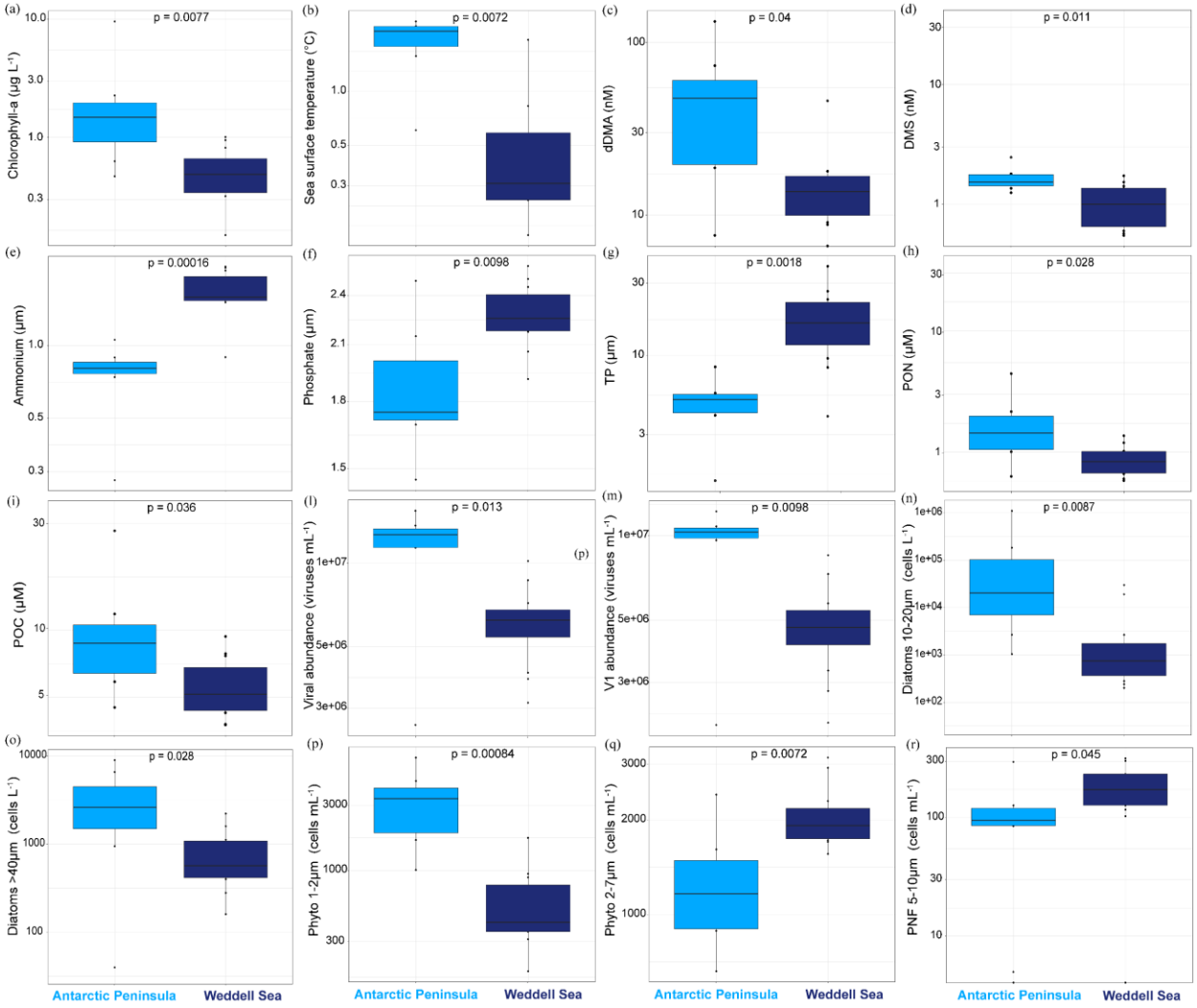

Figure S5. Boxplots depicting variables with statistically significant differences in mean values between the Western Antarctic Peninsula (n=7) and the northern Weddell Sea (n=12). Box-plots of (a) Chlorophyll-a concentration, (b) Sea Surface Temperature, concentrations of (c) dDMA, (d) DMS, (e) Ammonium, (f) Phosphate, (g) Total Phosphorus (TP), (h) PON and (i) POC; abundances of (l) Total Virus, (m) virus V1 population, (n) Diatoms (10–20µm), (o) Diatoms (>40µm), (p) Phytoplankton 1–2 µm, (q) Phytoplankton 2–7 µm and (r) PNF 5–10 µm (sample size is limited to n = 15 for this parameter due to missing values). Y-axes are in logarithmic scale. The error bars represent the standard deviation according to the number of samples; horizontal lines within boxes indicate the median of the distribution and dots represent the outliers. The Wilcoxon statistic, indicating significant differences between the two groups of samples is indicated in each box.

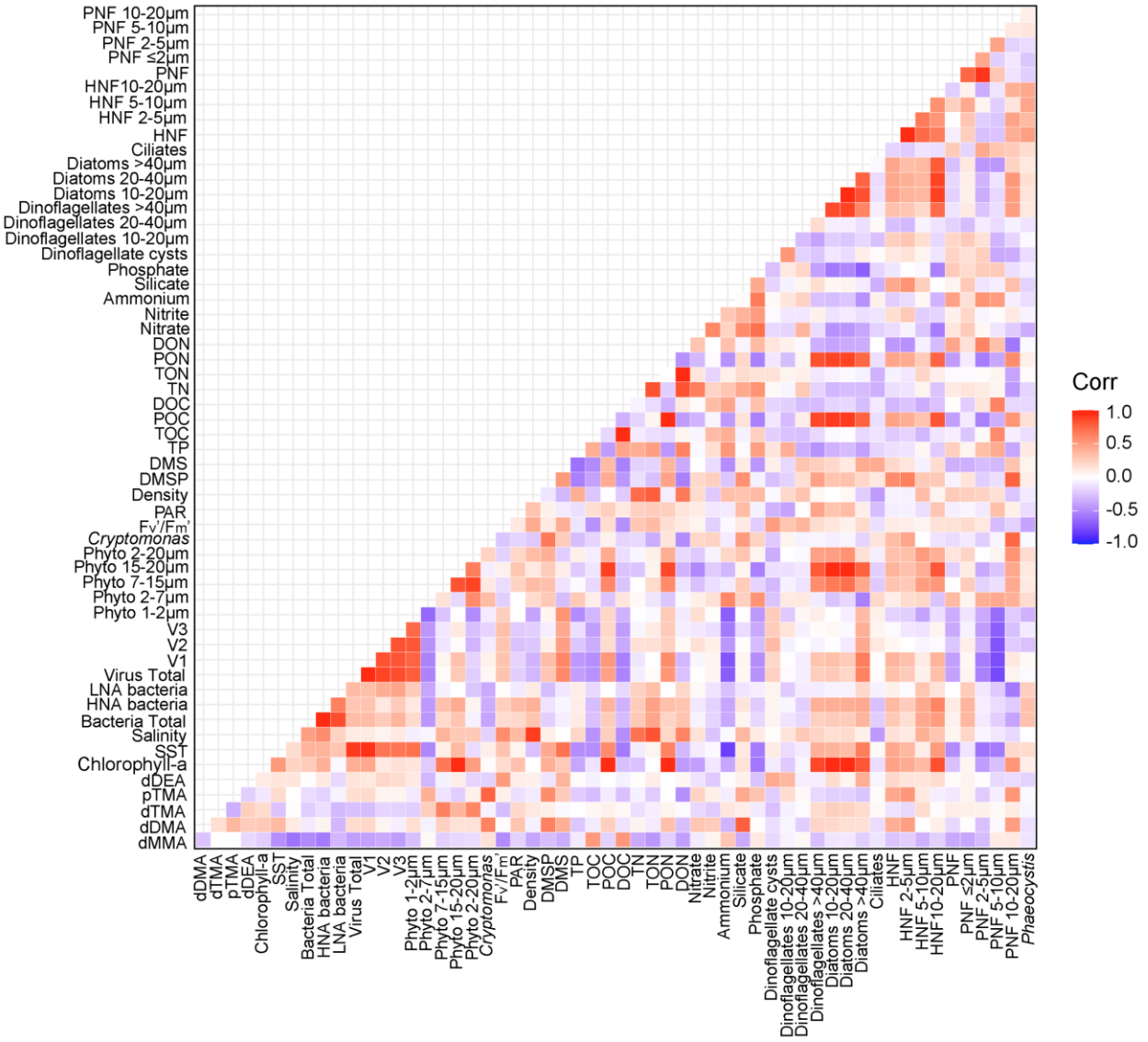

Figure S6. Heatmap showing Pearson's correlations between all the marine biogeochemical variables ("n" varied across parameters; details are provided in the Supplementary tables).