The following supplement accompanies the article

Seasonal development and differential retention of ice algae and other organic fractions in first-year Arctic sea ice

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Marine Ecology Progress Series 436:1–16

Supplement. Detailed numeric data for ice core segment and water samples collected near Barrow, Alaska, 2002 to 2006

Table S1. Summary data for ice core segments and underlying water sampled in winter/spring 2002/2003. See also Figs. 1 & 2. For ice samples, temperature, particulate organic carbon (POC), and dissolved organic carbon (DOC) were measured in single 10 cm ice segments from each depth in 1 of the 5 ice cores collected on each date (n = 1 for each row). Chlorophyll *a*, particulate carbo-hydrates (pCHO), and dissolved carbohydrates (dCHO) were measured in ice segments from 5 ice cores on each date and the means (±SD) for each depth are shown (n = 5 for each row). For water samples, n = 3 for chlorophyll *a*, pCHO, and dCHO, n = 1 for POC and DOC

Date	Depth (cm)	Temp-erature (°C)	Bulk salinity (mean ± 1 SD)	Chlorophyll *a* (mean ± 1 SD) (μg l^{-1})	POC (μmol l^{-1})	DOC (μmol l^{-1})	pCHO (mean ± 1 SD) (μmol l^{-1})	dCHO (mean ± 1 SD) (μmol l^{-1})
Dec 3	0–10	–7.3	9.9 1.8	0.1 0.0	51.7	109.7	18.5 8.5	65.7 38.6
2002	10–20	–5.7	6.2 ± 0.9	0.1 ± 0.0	36.2	130.9	12.2 ± 2.4	69.1 ± 22.3
	20–30	–4.2	6.0 ± 0.9	0.1 ± 0.0	47.2	215.7	12.3 ± 4.3	58.4 ± 33.8
	Water			0.0 ± 0.0	21.4	290.8	15.8 ± 0.8	187.4 ± 25.0
27 Jan	0–10	–16.8	9.0 ± 0.2	0.3 ± 0.1	21.4	371.7	15.9 ± 6.1	61.0 ± 30.7
2003	10–20	–13.7	7.6 ± 0.3	0.2 ± 0.1	19.3	145.2	12.5 ± 3.8	41.5 ± 18.5
	20–30	–10.7	5.3 ± 0.3	0.3 ± 0.1	12.8	83.8	15.3 ± 10.5	40.4 ± 18.0
	30–40	–7.9	4.7 ± 0.2	0.6 ± 0.1	44.0	237.1	9.6 ± 3.4	30.0 ± 15.1
	40–50	–5.7	4.6 ± 0.2	2.8 ± 0.8	11.0	64.7	16.8 ± 12.3	49.8 ± 31.5
	50–60	–4.7	5.2 ± 0.2	6.8 ± 0.8	16.6	91.7	12.2 ± 6.2	62.1 ± 31.5
	Water			0.2 ± 0.1	31.0	187.9	14.3 ± 5.8	188.1 ± 52.5
3 Mar	0–10	–10.5	9.7 ± 0.9	0.2 ± 0.2	32.0	184.4	9.8 ± 3.3	64.2 ± 27.3
2003	10–20	–9.7	8.5 ± 0.3	0.2 ± 0.0	25.0	101.1	11.7 ± 5.8	49.3 ± 17.3
	20–30	–7.3	7.3 ± 0.7	0.2 ± 0.1	27.3	148.3	7.3 ± 2.0	29.0 ± 11.3
	30–40	–7.5	5.4 ± 0.2	0.2 ± 0.1	24.8	83.4	5.5 ± 1.1	30.8 ± 13.9
	40–50	–7.5	5.2 ± 0.3	0.3 ± 0.0	31.6	93.3	5.2 ± 2.1	41.3 ± 21.3
	50–60	–7.0	5.1 ± 0.1	0.5 ± 0.2	31.1	180.0	6.0 ± 0.3	36.8 ± 23.8
	60–70	–6.3	6.1 ± 0.2	0.9 ± 0.2	24.1	125.6	5.3 ± 1.8	33.9 ± 13.6
	70–80	–5.6	5.3 ± 0.3	1.1 ± 0.6	35.2	126.7	11.6 ± 9.7	32.3 ± 14.3
	80–90	–4.9	5.6 ± 0.3	7.4 ± 2.0	29.5	216.5	7.8 ± 3.0	44.3 ± 23.8
	90–100	–3.5	6.5 ± 1.1	11.9 ± 1.6	20.8	121.3	7.2 ± 2.8	45.4 ± 24.5
	Water			0.2 ± 0.1	12.1	163.4	6.7 ± 5.8	253.4 ± 238.3

6 Apr	0–10	–13.8	7.1	± 2.0	1.1	± 1.2	63.9	75.6	7.6	± 3.3	100.6	± 64.3
2003	10–20	–12.8	7.9	± 0.2	0.3	± 0.2	21.6	79.0	5.8	± 2.6	40.0	± 10.5
	20–30	–11.8	7.0	± 0.8	0.3	± 0.1	24.6	78.2	6.0	± 0.4	29.9	± 11.6
	30–40	–10.8	5.6	± 0.6	0.8	± 1.1	31.5	60.6	4.0	± 1.8	36.1	± 23.3
	40–50	–9.8	5.5	± 0.5	0.4	± 0.2	36.3	47.9	4.3	± 2.8	47.5	± 17.3
	50–60	–8.8	5.5	± 0.8	1.3	± 1.4	1.0	33.3	9.0	± 5.2	53.8	± 24.4
	60–70	–7.9	5.4	± 0.8	0.8	± 0.2	31.4	96.5	6.1	± 1.3	53.7	± 29.8
	70–80	–6.9	5.4	± 1.1	0.9	± 0.6	25.6	35.3	6.0	± 3.5	113.8	± 119.8
	80–90	–5.9	5.7	± 0.5	0.8	± 0.4	37.6	67.7	5.3	± 2.2	41.9	± 8.9
	90–100	–4.9	6.4	± 0.4	0.8	± 0.3	31.0	88.5	6.0	± 1.8	74.5	± 66.5
	100–110	–3.9	6.8	± 0.8	7.6	± 13.6	27.1	82.6	8.8	± 4.8	34.2	± 16.8
	110–120	–2.9	7.0	± 0.8	34.4	± 12.3	148.2	150.0	9.6	± 0.2	57.5	± 7.7
	Water				0.2	± 0.1	10.8	220.2	3.7	± 2.5	155.5	± 75.0
30 Apr	0–10	–3.1	6.0	± 0.7	1.1	± 1.2	89.0	173.3	18.9	± 7.8	51.2	± 45.3
2003	10–20	–3.3	6.9	± 0.2	0.4	± 0.2	59.9	157.9	7.9	± 1.4	24.6	± 12.3
	20–30	–3.4	5.8	± 0.6	0.5	± 0.3	45.1	102.3	5.3	± 2.2	28.8	± 24.1
	30–40	–2.8	5.2	± 0.3	0.5	± 0.2	67.7	123.4	5.3	± 1.2	29.0	± 28.3
	40–50	–3.3	5.2	± 0.1	0.3	± 0.0	34.3	102.0	4.7	± 1.8	11.0	± 6.9
	50–60	–2.8	5.0	± 0.4	0.7	± 0.5	32.7	50.3	5.4	± 2.0	20.4	± 13.7
	60–70	–2.8	5.1	± 0.5	0.9	± 0.4	53.5	84.1	5.6	± 2.1	13.7	± 3.8
	70–80	–2.8	5.2	± 0.6	0.9	± 0.3	45.4	115.6	5.3	± 2.2	12.6	± 5.5
	80–90	–2.6	4.8	± 0.6	0.8	± 0.3	43.4	64.0	5.8	± 1.7	30.8	± 16.8
	90–100	–2.3	4.8	± 0.4	0.9	± 0.3	30.7	82.6	5.8	± 1.1	36.5	± 26.3
	100–110	–2.2	5.1	± 0.5	1.0	± 0.4	55.6	194.2	5.6	± 1.6	38.3	± 40.4
	110–120	–1.9	5.1	± 0.4	1.7	± 0.4	100.9	115.7	9.3	± 4.3	38.1	± 36.8
	120–130	–1.9	6.6	± 0.4	45.2	± 8.5	276.5	175.3	18.4	± 7.5	54.0	± 46.9
	Water				1.6	± 0.3	20.6	113.8	8.3	± 1.7	126.9	± 67.5
6 Jun	0–10	–0.1	1.4	± 0.5	1.6	± 0.4	50.6	141.9	5.4	± 0.8	85.8	± 39.3
2003	10–20	–0.6	4.1	± 0.9	2.2	± 1.0	120.8	97.8	8.4	± 2.9	64.7	± 46.1
	20–30	–1.0	4.8	± 0.5	1.6	± 0.6	51.2	67.6	6.5	± 1.8	59.2	± 28.3
	30–40	–1.3	4.4	± 0.2	1.5	± 1.0	47.5	85.7	4.3	± 1.4	37.3	± 16.7
	40–50	–1.3	4.6	± 0.4	1.4	± 0.6	43.0	96.4	5.3	± 1.7	55.0	± 29.5
	50–60	–1.5	4.5	± 0.2	1.1	± 0.3	55.9	55.2	4.6	± 1.2	44.6	± 13.6
	60–70	–1.5	4.3	± 0.3	1.3	± 0.8	104.0	102.4	6.3	± 3.7	21.7	± 17.8
	70–80	–1.4	4.3	± 0.2	1.2	± 0.4	53.2	67.6	6.2	± 2.7	60.5	± 27.4
	80–90	–0.9	4.1	± 0.1	1.1	± 0.3	34.0	59.0	5.7	± 1.8	44.6	± 19.5
	90–100	–1.1	4.2	± 0.2	1.0	± 0.2	40.9	129.6	6.5	± 2.8	36.8	± 20.6
	100–110	–1.2	4.3	± 0.4	1.2	± 0.2	44.5	112.9	5.3	± 2.3	46.7	± 17.3
	110–120	–1.4	4.7	± 0.7	6.1	± 4.0	75.1	163.5	16.4	± 7.7	59.5	± 14.7
	120–130	–1.1	4.9	± 0.4	10.1	± 7.2	308.0	132.7	84.2	± 40.8	120.3	± 44.2
	Water				4.0	± 1.0	73.5	131.6	20.9	± 10.8	146.4	± 62.5

Table S2. Dissolved inorganic phosphorus (DIP), dissolved inorganic nitrogen (DIN), and ammonium concentrations in ice core segments and underlying water sampled in winter/spring 2002/2003. See Table S1 and Figs. 1 & 2 for other data from the same ice and water samples. For each date, nutrients were measured on single samples from each depth. DIN = NO_2^- + NO_3^- + NH_4^+. Ammonium concentrations are also shown separately. To better approximate nutrient concentrations in the brine channels, the nutrient concentrations shown are the estimated *in situ* brine concentrations (rather than bulk concentrations). Nutrient concentrations were normalized to the brine volume in each sample, which was derived from bulk salinity and *in situ* temperature according to Cox & Weeks (1983)*

Date	Depth (cm)	DIP (μmol l^{-1})	DIN (μmol l^{-1})	Ammonium (μmol l^{-1})
3 Dec 2002	0–10	0.05	5.8	3.99
	10–20	0.02	2.7	1.22
	20–30	0.15	1.8	0.46
	Water			
27 Jan 2003	0–10	1.04	3.5	1.52
	10–20	0.47	2.5	1.65
	20–30	0.39	2.6	1.59
	30–40	0.24	1.8	1.26
	40–50	0.28	1.8	1.14
	50–60	0.40	2.5	1.63
	Water			
3 Mar 2003	0–10	1.70	34.6	2.62
	10–20	0.44	5.0	2.42
	20–30	0.36	3.8	2.09
	30–40	0.32	3.2	1.79
	40–50	0.23	2.4	1.56
	50–60	0.23	2.1	1.42
	60–70	0.27	2.8	1.91
	70–80	0.21	2.4	1.90
	80–90	0.28	2.3	1.92
	90–100	0.34	2.7	1.45
	Water			
6 Apr 2003	0–10	0.59	6.7	0.16
	10–20	0.27	3.0	0.90
	20–30	0.15	2.7	0.89
	30–40	0.16	3.6	1.85
	40–50	0.12	3.0	1.26
	50–60	0.09	3.0	1.25
	60–70	0.07	2.3	1.02
	70–80	0.13	2.0	1.17
	80–90	0.09	3.7	1.67
	90–100	0.01	2.9	1.75
	100–110	0.02	2.6	1.55
	110–120	0.59	7.0	2.35
	Water	1.75	11.8	2.17
30 Apr 2003	0–10	0.42	8.8	4.92
	10–20	0.31	5.8	3.29
	20–30	0.27	4.7	3.32
	30–40	0.19	3.6	2.72
	40–50	0.20	4.1	3.49
	50–60	0.14	2.8	2.36
	60–70	0.01	12.6	11.81
	70–80	0.01	3.0	2.32
	80–90	0.06	3.7	2.92

	90–100	0.05	2.7	2.22
	100–110	0.03	3.0	2.79
	110–120	0.05	3.6	3.35
	120–130	0.90	7.4	3.77
	Water	1.41	7.9	1.52
6 Jun 2003	0–10	0.03	4.7	3.31
	10–20	0.01	4.5	0.76
	20–30	0.01	1.4	0.55
	30–40	0.01	1.6	1.47
	40–50	0.01	1.8	1.63
	50–60	0.01	0.3	0.24
	60–70	0.01	2.1	2.09
	70–80	0.01	2.0	1.96
	80–90	0.01	1.0	0.85
	90–100	0.01	3.4	3.34
	100–110	0.01	4.2	4.09
	110–120	0.01	5.2	5.07
	120–130	0.01	1.9	1.65
	Water	1.05	3.5	0.59

*Cox GFN, Weeks WF (1983) Equations for determining the gas and brine volumes in sea-ice samples. J Glaciol 29:306–316

Table S3. Summary data for ice and underlying water sampled in December 2003. See also Fig. 1. For ice samples, temperature and POC were measured in single 10 cm ice segments from each depth in 1 of the 5 ice cores collected (n = 1 for each row). Chlorophyll *a*, particulate carbohydrates (pCHO), and dissolved carbohydrates (dCHO) were measured in ice segments from 5 ice cores, and the means (±1 SD) for each depth are shown (n = 5 for each row). For water samples, n = 3 for chlorophyll *a*, pCHO, and dCHO, n = 1 for salinity and particulate organic carbon (POC)

Date	Depth (cm)	Temper-ature (°C)	Bulk salinity (mean ± 1 SD)	Chlorophyll *a* (mean ± 1 SD) (µg l^{-1})	POC (µmol l^{-1})	pCHO (mean ± 1 SD) (µmol l^{-1})	dCHO (mean ± 1 SD) (µmol l^{-1})
8 Dec 2003	0–10	–15.5	11.0 ± 0.8	0.2 ± 0.1	137.5	22.3 ± 10.3	94.7 ± 16.1
	10–20	–14.2	9.0 ± 0.6	0.1 ± 0.1	133.9	18.7 ± 7.9	70.6 ± 8.5
	20–30	–12.1	7.1 ± 0.6	0.2 ± 0.0	145.3	22.3 ± 14.6	74.8 ± 23.3
	30–40	–9.6	6.5 ± 0.4	0.1 ± 0.0	182.3	19.9 ± 20.8	74.0 ± 5.0
	40–50	–6.8	6.5 ± 1.1	0.2 ± 0.0	139.4	24.3 ± 17.3	83.0 ± 13.3
	50–60	–4.3	6.2 ± 0.6	0.3 ± 0.1	161.0	27.8 ± 16.2	83.8 ± 18.1
	60–70	–2.1	6.5 ± 0.6	0.5 ± 0.1	130.3	44.3 ± 21.7	79.5 ± 19.4
	Water		33.1	0.1 ± 0.0	132.3	15.0 ± 1.5	135.9 ± 43.9

Table S4. Summary data for ice and underlying water sampled from February through May 2004. The ice at this location contained sediment inclusions, see also Fig. 4. For ice samples, temperature and POC were measured in single 10 cm ice segments from each depth in 1 of the 5 ice cores collected on each date (n = 1 for each row). Chlorophyll *a*, particulate carbohydrates (pCHO), and dissolved carbohydrates (dCHO) were measured in ice segments from 5 ice cores on each date, and the means (±SD) for each depth are shown (n = 5 for each row). For water samples, n = 3 for chlorophyll *a*, pCHO, and dCHO, n = 1 for POC

Date	Depth (cm)	Temper-ature (°C)	Bulk salinity (mean ± 1 SD)	Chlorophyll *a* (mean ± 1 SD) (μg l^{-1})	POC (μmol l^{-1})	pCHO (mean ± 1 SD) (μmol l^{-1})	dCHO (mean ± 1 SD) (μmol l^{-1})
14 Feb 2004	0–10	–21.4	10.1 ± 1.7	0.1 ± 0.0	292.8	41.0 ± 32.7	67.8 ± 16.2
	10–20	–20.2	8.1 ± 1.5	0.1 ± 0.0	219.4	46.8 ± 27.8	106.7 ± 56.9
	20–30	–19.2	7.8 ± 1.5	0.2 ± 0.1	245.8	32.5 ± 14.0	89.5 ± 45.7
	30–40	–18.3	7.2 ± 1.8	0.2 ± 0.0	421.6	50.7 ± 17.3	74.5 ± 20.6
	40–50	–17.3	6.3 ± 1.0	0.2 ± 0.0	389.9	46.3 ± 15.2	119.8 ± 80.5
	50–60	–16.2	6.1 ± 0.6	0.3 ± 0.1	445.8	55.8 ± 16.7	86.1 ± 26.7
	60–70	–14.7	5.4 ± 0.2	0.6 ± 0.1	333.3	72.4 ± 23.3	79.3 ± 25.8
	70–80	–13.0	5.2 ± 0.5	0.4 ± 0.2	590.6	65.3 ± 31.0	103.0 ± 37.4
	80–90	–11.0	5.5 ± 0.8	0.2 ± 0.1	92.6	49.8 ± 25.8	87.7 ± 52.6
	90–100	–8.9	6.0 ± 0.9	0.5 ± 0.3	148.8	34.6 ± 18.6	69.3 ± 14.6
	100–110	–6.8	5.8 ± 0.3	0.9 ± 0.3	200.0	44.3 ± 30.7	83.3 ± 18.8
	110–120	–4.8	5.8 ± 0.9	1.3 ± 0.4	224.4	43.2 ± 16.5	84.8 ± 18.3
	120–130	–3.3	6.9 ± 0.5	1.0 ± 0.4	217.9	74.6 ± 19.7	75.9 ± 19.5
	Water		33.6	0.0 ± 0.0	402.5	14.2 ± 1.8	127.8 ± 0.0
14 Apr 2004	0–10	–11.4	9.1 ± 0.6	0.0 ± 0.0	92.9	23.7 ± 11.9	72.1 ± 14.6
	10–20	–10.6	7.7 ± 0.3	0.0 ± 0.0	93.9	17.7 ± 7.2	86.3 ± 21.4
	20–30	–9.9	6.4 ± 0.1	0.0 ± 0.0	94.9	21.3 ± 5.7	74.3 ± 11.7
	30–40	–9.3	5.5 ± 0.4	0.0 ± 0.0	69.3	22.0 ± 8.2	78.5 ± 18.1
	40–50	–8.7	5.4 ± 0.2	0.0 ± 0.0	46.5	26.5 ± 14.1	90.8 ± 7.6
	50–60	–8.1	5.4 ± 0.4	0.0 ± 0.0	163.0	35.8 ± 21.9	131.9 ± 156.5
	60–70	–7.6	4.7 ± 0.6	0.1 ± 0.1	277.0	56.3 ± 16.5	74.0 ± 16.8
	70–80	–7.0	3.9 ± 0.4	0.0 ± 0.1	211.1	45.3 ± 34.2	68.0 ± 12.2
	80–90	–6.5	4.6 ± 0.4	0.0 ± 0.0	27.8	13.0 ± 5.5	68.1 ± 12.7
	90–100	–6.0	4.8 ± 0.2	0.0 ± 0.0	24.5	9.3 ± 5.9	71.3 ± 24.1
	100–110	–5.5	4.5 ± 0.0	0.0 ± 0.0	24.1	28.2 ± 44.6	72.9 ± 10.9
	110–120	–5.0	4.4 ± 0.1	0.0 ± 0.0	28.0	25.1 ± 43.2	67.8 ± 9.2
	120–130	–4.5	4.2 ± 0.2	0.0 ± 0.0	19.0	8.1 ± 3.5	68.7 ± 11.8
	130–140	–4.0	4.2 ± 0.3	0.0 ± 0.0	23.5	6.5 ± 3.1	71.3 ± 8.8
	140–150	–3.4	3.6 ± 0.2	0.0 ± 0.0	34.7	16.6 ± 21.3	128.4 ± 47.7
	150–160	–2.9	3.6 ± 0.1	0.1 ± 0.1	37.1	6.3 ± 2.0	66.5 ± 25.0
	160–170	–2.3	5.5 ± 0.6	0.0 ± 0.0	64.8	9.9 ± 2.8	75.8 ± 14.2
	Water		33.7	0.1 ± 0.0	91.8	20.5 ± 2.1	96.6 ± 84.2
6 May 2004	0–10	–7.5	8.3 ± 1.4	0.0 ± 0.0	98.3	23.0 ± 8.0	67.7 ± 19.8
	10–20	–7.3	8.5 ± 0.6	0.0 ± 0.0	87.6	21.3 ± 5.6	77.8 ± 15.9
	20–30	–7.0	7.7 ± 0.7	0.0 ± 0.0	103.2	35.3 ± 12.7	83.4 ± 10.7
	30–40	–6.8	6.4 ± 1.2	0.0 ± 0.0	92.1	28.0 ± 8.2	76.2 ± 10.8
	40–50	–6.6	5.8 ± 0.8	0.0 ± 0.0	55.2	22.7 ± 6.8	92.0 ± 15.8
	50–60	–6.3	5.4 ± 0.4	0.0 ± 0.0	93.5	30.1 ± 9.1	76.5 ± 11.5
	60–70	–6.1	5.3 ± 0.3	0.1 ± 0.0	345.6	47.1 ± 9.0	67.4 ± 8.5
	70–80	–5.8	4.4 ± 0.1	0.1 ± 0.0	207.6	38.0 ± 25.3	67.7 ± 6.3
	80–90	–5.5	4.4 ± 0.3	0.0 ± 0.0	33.5	11.3 ± 2.2	78.8 ± 26.0
	90–100	–5.3	4.7 ± 0.3	0.0 ± 0.0	32.1	8.1 ± 2.1	75.9 ± 13.6
	100–110	–5.0	4.7 ± 0.3	0.0 ± 0.0	31.5	9.8 ± 4.8	69.4 ± 12.3
	110–120	–4.6	4.8 ± 0.4	0.0 ± 0.0	31.0	6.7 ± 2.0	67.0 ± 7.3
	120–130	–4.3	4.5 ± 0.2	0.0 ± 0.0	18.5	8.2 ± 2.7	80.9 ± 25.4
	130–140	–4.0	4.3 ± 0.3	0.0 ± 0.0	33.4	7.7 ± 2.8	73.8 ± 16.6

	140–150	–3.7	3.7	± 0.0	0.2	± 0.2	30.3	5.8	± 3.2	95.0	± 15.2
	150–160	–3.3	3.9	± 0.1	0.0	± 0.0	16.3	6.9	± 3.4	62.3	± 6.2
	160–170	–3.0	6.2	± 1.4	0.2	± 0.2	153.8	18.9	± 6.6	79.8	± 22.1
	Water				0.2	± 0.1	54.6	26.3	± 1.8	156.9	± 63.8
16	0–10	–3.6	7.0	± 0.4	0.0	± 0.0	463.2	38.3	± 19.7	68.7	± 26.2
May	10–20	–4.3	8.7	± 0.6	0.1	± 0.0	449.3	17.3	± 6.2	89.5	± 67.5
2004	20–30	–4.5	7.5	± 1.0	0.2	± 0.1	536.2	17.5	± 8.9	99.5	± 88.3
	30–40	–4.7	6.4	± 0.7	0.2	± 0.1	407.3	27.8	± 7.8	63.1	± 22.5
	40–50	–4.6	5.9	± 0.4	0.2	± 0.1	694.3	30.8	± 8.0	79.9	± 34.7
	50–60	–4.6	5.9	± 0.8	0.3	± 0.3	497.9	31.9	± 6.3	67.2	± 11.6
	60–70	–4.7	5.4	± 0.7	0.6	± 0.3	637.0	44.7	± 14.8	68.0	± 17.3
	70–80	–4.7	4.8	± 0.8	1.1	± 0.4	467.3	68.3	± 10.4	84.4	± 59.0
	80–90	–4.6	4.3	± 0.6	0.7	± 0.1	374.1	25.6	± 13.6	62.5	± 24.2
	90–100	–4.6	5.0	± 0.8	0.7	± 0.2	405.8	21.6	± 6.6	60.3	± 20.0
	100–110	–4.4	4.8	± 0.8	0.3	± 0.2	632.9	15.7	± 6.7	77.0	± 13.1
	110–120	–4.3	4.9	± 0.8	0.3	± 0.1	448.5	21.8	± 16.2	77.3	± 13.5
	120–130	–4.1	5.1	± 0.9	0.3	± 0.1	713.6	21.8	± 12.4	78.2	± 21.3
	130–140	–3.8	4.5	± 0.9	0.3	± 0.2	503.0	23.7	± 22.5	69.5	± 13.3
	140–150	–3.5	4.3	± 0.8	0.1	± 0.0	615.0	19.8	± 13.6	85.2	± 22.5
	150–160	–3.2	3.9	± 0.8	0.1	± 0.1	376.7	19.8	± 14.1	94.3	± 29.3
	160–170	–2.8	4.1	± 0.6	0.2	± 0.0	609.2	20.9	± 10.2	58.2	± 28.5
	170–180	–2.5	5.7	± 0.4	7.7	± 3.5	594.7	35.7	± 13.8	68.1	± 51.3
	Water		33.2		1.4	± 0.4	74.4	11.8	± 2.3	61.3	± 4.7

Table S5. Summary data for ice sampled in December 2004. See also Fig. 1. For ice samples, temperature was measured in single 10 cm ice segments from each depth in 1 of the 5 ice cores collected (n = 1 for each row). Chlorophyll *a*, particulate carbohydrates (pCHO), and dissolved carbohydrates (dCHO) were measured in ice segments from 5 ice cores, and the means (±SD) for each depth are shown (n = 5 for each row). For water samples, n = 3 for chlorophyll *a*, pCHO, and dCHO, n = 1 for salinity

Date	Depth (cm)	Temperature (°C)	Bulk salinity (mean ± 1 SD)		Chlorophyll *a* (mean ± 1 SD) ($\mu g\ l^{-1}$)		pCHO (mean ± 1 SD) ($\mu mol\ l^{-1}$)		dCHO (mean ± 1 SD) ($\mu mol\ l^{-1}$)	
8 Dec 2004	0–10	–10.30	8.1	± 1.4	0.1	± 0.1	30.9	± 7.8	87.0	± 40.1
	10–20	–8.50	5.1	± 0.3	0.3	± 0.2	13.1	± 4.2	80.5	± 18.0
	20–30	–6.80	4.8	± 0.1	0.2	± 0.1	10.4	± 4.2	64.8	± 26.1
	30–40	–5.20	5.9	± 0.7	0.5	± 0.4	26.5	± 2.9	81.7	± 26.6
	40–50	–3.50	7.0.	± 0.7	0.4	± 0.2	25.7	± 7.2	73.3	± 7.3
	Water		32.5				7.6	± 1.8	108.5	± 31.0