

Table 1.

Daily fluxes of total mass ($\text{mg m}^{-2}\text{d}^{-1}$) and POC ($\text{mg m}^{-2}\text{d}^{-1}$), percent of POC (%), PON (%) and C/N ratios from August 2008 to September 2009 measured at the DM mooring site (Chukchi Sea).

Date/Time	Total mass ($\text{mg m}^{-2}\text{d}^{-1}$)	POC ($\text{mg m}^{-2}\text{d}^{-1}$)	POC%	PON%	C/N	Satellite Sea Ice concentration ^a (%)
August.07/2008	288.60	16.80	5.82	0.71	8.2	7
August.16/2008	175.38	7.33	4.18	0.49	8.5	0
Sept.01/2008	57.92	2.40	4.15	0.54	7.7	0
Sept.16/2008	75.17	3.50	4.66	0.65	7.1	0
Oct.01/2008	108.99	4.83	4.43	0.58	7.7	0
Oct.16/2008	53.34	2.17	4.07	0.54	7.6	68
Nov.01/2008	110.56	3.89	3.52	0.49	7.2	99
Nov.16/2008	93.16	3.33	3.57	0.49	7.2	99
Dec.01/2008	41.17	1.69	4.1	0.48	8.2	99
Jan.01/2009	34.59	1.45	4.18	0.56	7.5	99
Feb.01/2009	26.31	1.17	4.45	0.61	7.3	100
March.01/2009	19.90	0.91	4.56	0.66	6.9	99
April.01/2009	28.59	3.51	12.29	2.17	5.7	96
May.01/2009	20.92	n.d.	n.d.	n.d.	n.d.	96
June.01/2009	6.57	0.26	4.02	0.56	7.2	94
July.01/2009	24.13	1.21	5.01	0.67	8.2	75
July.16/2009	200.40	12.04	6.01	0.77	7.9	62
August.01/2009	190.15	8.39	4.41	0.57	7.8	29
August.16/2009	279.73	10.43	3.73	0.52	7.2	0
Sept.01/2009	167.17	8.53	5.1	0.71	7.2	0
Sept.16/2009	836.32	30.53	3.65	0.51	7.1	0

^a Data from Cavalieri et al (1996). n.d.: not detected.

Table 2.

Daily fluxes of the C₂₇ - C₃₁ odd *n*-alkanes (Σ ALK₂₇₋₃₁), brassicasterol, dinosterol, IP₂₅, HBI-II, HBI-III and the PIP₂₅ index from August 2008 to September 2009. See text for calculations of P_BIP₂₅ and P_{III}IP₂₅.

Date/Time	Satellite Sea ice Concentration ^a (%)	Σ ALK ₂₇₋₃₁ fluxes ($\mu\text{g m}^{-2}\text{d}^{-1}$)	Brassicasterol fluxes ($\mu\text{g m}^{-2}\text{d}^{-1}$)	Dinosterol fluxes ($\mu\text{g m}^{-2}\text{d}^{-1}$)	IP ₂₅ Relative abundance ($\text{ng m}^{-2}\text{d}^{-1}$)	HBI-II Relative abundance ($\text{ng m}^{-2}\text{d}^{-1}$)	HBI-III Relative abundance ($\text{ng m}^{-2}\text{d}^{-1}$)	P _B IP ₂₅ (<i>c</i> =0.0039)	P _{III} IP ₂₅ (<i>c</i> =10.943)	P _{III} IP ₂₅ (<i>c</i> =1)
August.07/2008	7	1.89	1.67	0.43	45.85	25.32	7.73	0.875	0.351	0.856
August.16/2008	0	0.72	1.12	0.24	3.10	2.97	0.40	0.412	0.414	0.885
Sept.01/2008	0	0.25	1.11	0.19	0.90	0.62	0.00	0.171	1.000	1.000
Sept.16/2008	0	0.28	1.75	0.20	1.63	1.00	0.00	0.191	1.000	1.000
Oct.01/2008	0	0.36	1.26	0.20	0.74	0.72	0.00	0.130	1.000	1.000
Oct.16/2008	68	0.20	0.42	0.09	0.55	0.43	0.00	0.250	1.000	1.000
Nov.01/2008	99	0.39	0.99	0.19	2.07	1.50	0.11	0.346	0.641	0.951
Nov.16/2008	99	0.24	0.76	0.16	0.55	0.59	0.00	0.156	1.000	1.000
Dec.01/2008	99	0.10	0.29	0.05	0.14	0.18	0.00	0.106	1.000	1.000
Jan.01/2009	99	0.12	0.10	0.05	0.64	0.32	0.00	0.617	1.000	1.000
Feb.01/2009	100	0.11	0.03	0.02	0.79	0.40	0.00	0.852	1.000	1.000
March.01/2009	99	0.08	0.11	0.04	0.15	0.12	0.00	0.264	1.000	1.000
April.01/2009	96	0.10	0.05	0.10	0.33	0.22	0.00	0.616	1.000	1.000
May.01/2009	96	0.04	0.27	0.05	0.00	0.00	0.00	0.000	-	-
June.01/2009	94	0.07	0.03	0.01	0.00	0.00	0.00	0.000	-	-
July.01/2009	75	0.37	0.64	0.17	1.92	2.83	0.19	0.433	0.477	0.909
July.16/2009	62	1.11	3.60	1.51	3.55	3.51	0.22	0.201	0.594	0.941
August.01/2009	29	0.91	1.91	0.61	32.80	36.45	1.13	0.814	0.727	0.967
August.16/2009	0	1.49	3.09	0.86	7.31	3.79	0.54	0.375	0.553	0.931
Sept.01/2009	0	0.64	1.97	0.49	13.60	15.58	0.48	0.638	0.722	0.966
Sept.16/2009	0	1.80	9.74	1.22	4.94	2.87	0.31	0.114	0.592	0.941

^a Data from Cavalieri et al (1996).

Table 3.

Station list with biomarker and satellite derived sea ice concentration. The $P_{BIP_{25}}$ and $P_{IIIIP_{25}}$ index were calculated following Müller et al. (2011). Spring (April-June) and summer (July-September) sea ice concentration data are averaged over the 1988-2007 period.

Station	Lat. (°N)	Long. (°E)	Water depth (m)	IP ₂₅	HBI-II	HBI-III	Brassicasterol (µg/g OC)	Dinosterol (µg/g OC)	$P_{BIP_{25}}$	$P_{BIP_{25}}$	$P_{IIIIP_{25}}$	$P_{IIIIP_{25}}$	Spring	Summer
				Relative abundance (µg/g OC)	Relative abundance (µg/g OC)	Relative abundance (µg/g OC)			(<i>c</i> =0.1063)	(<i>c</i> =0.023)	(<i>c</i> =3.7111)	(<i>c</i> =1)	sea ice concentration ^a (%)	sea ice concentration ^a (%)
14SIC06	79.98	207.37	3763	0.14	0.24	n.d.	0.87	0.99	0.60	0.88	1.00	1.00	98	88
14R14	78.63	199.57	761	0.14	0.27	n.d.	2.71	2.45	0.33	0.70	1.00	1.00	98	81
14R12	77.00	196.11	439	0.09	0.12	n.d.	3.10	1.37	0.21	0.55	1.00	1.00	96	72
14R11	76.15	193.80	352	0.09	0.17	n.d.	1.07	1.14	0.43	0.78	1.00	1.00	96	63
14R10	75.43	192.10	164	0.14	0.20	n.d.	1.36	3.10	0.50	0.82	1.00	1.00	96	59
14C13-5	75.20	200.82	942	0.12	0.30	n.d.	1.12	0.90	0.51	0.83	1.00	1.00	96	57
08M07	75.01	188.01	394	0.17	0.22	n.d.	1.36	1.79	0.54	0.85	1.00	1.00	96	58
08B11	75.00	194.97	552	0.09	0.12	n.d.	0.67	1.30	0.57	0.86	1.00	1.00	96	53
14R09	74.61	190.97	190	0.22	0.32	0.04	0.74	2.30	0.74	0.93	0.62	0.86	96	53
14R08	74.00	191.00	83	0.39	0.46	0.04	0.40	2.09	0.90	0.98	0.71	0.90	96	49
12SR12	74.00	190.98	175	0.44	1.26	0.10	2.24	6.09	0.65	0.89	0.54	0.81	97	51
08R15	73.99	190.99	173	0.18	0.63	n.d.	0.94	2.60	0.64	0.89	1.00	1.00	96	49
08S14	73.17	202.08	2517	0.09	0.13	n.d.	0.92	2.36	0.48	0.81	1.00	1.00	95	43
14R07	73.00	191.03	73	1.08	1.01	0.05	12.53	9.38	0.45	0.79	0.87	0.96	96	42
08S13	72.94	201.68	1430	0.14	0.25	n.d.	2.87	6.91	0.31	0.68	1.00	1.00	95	43
14S03	72.24	202.92	169	1.61	2.21	0.91	1.97	7.08	0.89	0.97	0.32	0.64	94	35
08R11	72.00	191.02	47	0.57	0.69	n.d.	1.77	22.54	0.75	0.93	1.00	1.00	95	19
14S02	71.92	202.54	73	0.28	0.37	0.12	0.28	1.11	0.91	0.98	0.38	0.70	93	28
08C13	71.80	193.25	38	2.10	2.85	0.31	3.48	19.17	0.85	0.96	0.64	0.87	91	12
14S01	71.62	202.07	63	4.39	4.46	0.15	24.17	40.13	0.63	0.89	0.89	0.97	85	27
08C17	71.49	198.02	41	1.01	1.26	0.06	2.79	12.04	0.77	0.94	0.82	0.95	86	23
08C19	71.45	200.02	42	0.91	0.96	0.04	3.22	13.02	0.73	0.92	0.85	0.95	86	21

Table 3 (continued)

Station	Lat. (°N)	Long. (°E)	Water depth (m)	IP ₂₅	HBI-II	HBI-III	Brassicasterol (µg/g OC)	Dinosterol (µg/g OC)	P _B IP ₂₅	P _B IP ₂₅	P _{III} IP ₂₅	P _{III} IP ₂₅	Spring sea ice concentration ^a (%)	Summer sea ice concentration ^a (%)
				Relative abundance (µg/g OC)	Relative abundance (µg/g OC)	Relative abundance (µg/g OC)			(<i>c</i> =0.1063)	(<i>c</i> =0.023)	(<i>c</i> =3.7111)	(<i>c</i> =1)		
14C04	71.01	193.01	45	0.42	0.35	0.04	16.71	18.08	0.19	0.52	0.76	0.92	89	6
08R09	70.99	191.03	37	0.38	0.43	0.06	1.91	26.39	0.65	0.90	0.63	0.86	92	8
14C01	69.22	191.86	50	0.20	0.36	0.07	3.21	16.93	0.37	0.73	0.44	0.74	71	0
14C03	69.03	193.52	33	0.25	0.42	0.02	4.25	14.32	0.36	0.72	0.79	0.93	62	4
08C35	68.92	193.49	28	0.71	1.41	0.08	2.88	18.20	0.70	0.91	0.71	0.90	63	0
08C33	68.92	192.49	41	0.09	0.15	0.01	2.21	7.92	0.27	0.63	0.64	0.87	69	0
14R03	68.62	191.00	54	0.11	0.15	0.04	3.37	20.90	0.24	0.60	0.45	0.75	71	0
14CC6	68.24	192.87	42	0.83	1.58	0.54	15.17	48.00	0.34	0.70	0.29	0.61	66	4
12CC6	68.19	192.69	36	0.26	0.51	0.03	5.26	24.96	0.32	0.68	0.67	0.88	65	0
14CC4	68.13	192.49	49	0.46	0.92	0.33	13.31	42.68	0.25	0.60	0.27	0.58	65	0
14CC3	68.10	192.10	53	0.23	0.40	0.09	10.01	29.58	0.18	0.50	0.41	0.72	66	0
08R03	68.00	190.98	51	0.17	0.28	0.10	6.53	18.70	0.19	0.53	0.32	0.63	66	0
14CC2	67.90	191.76	58	0.14	0.24	0.07	14.46	14.16	0.08	0.29	0.35	0.66	59	0
08R01	67.00	191.00	42	0.10	0.23	0.07	6.49	17.87	0.13	0.41	0.27	0.58	57	0

^a Data from Cavalieri et al (1996). n.d.: not detected.