

Supplementary Material for

**Seasonal patterns in Arctic planktonic metabolism**

**(Fram Strait - Svalbard region)**

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Supplementary Table S1

Supplementary Table S2

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Table S1. Planktonic metabolic rates ( $\text{mmol O}_2 \text{ m}^{-3} \text{ d}^{-1}$ ) for all stations and cruises conducted in the present study. Rates are given as gross primary production (GPP), net community production (NCP) and community respiration (CR) and their associated standard error (SE). Values for the ratio between GPP and CR and between NCP and GPP are also reported.

Cruise	Station	date	depth (m)	Mixed layer depth (m)	NCP (mmol/m <sup>3</sup> /d)	SE	CR (mmol/m <sup>3</sup> /d)	SE	GPP (mmol/m <sup>3</sup> /d)	SE	GPP/CR	SE	NCP/GPP	SE
ATOS	1b	01/07/07	1	7.0	0.16	0.62	0.43	0.59	0.59	0.26	1.37	1.96	0.27	1.05
ATOS	1b	01/07/07	15	7.0	0.68	0.59	0.54	0.38	1.23	0.54	2.27	1.87	0.56	0.54
ATOS	1b	01/07/07	30	7.0	-3.70	1.64	3.74	1.07	0.05	1.48	0.01	0.40	-78.95	2493.60
ATOS	2b	02/07/07	1		1.40	0.31	0.24	0.25	1.64	0.33	6.87	7.23	0.85	0.25
ATOS	2b	02/07/07	10		-4.20	0.88								
ATOS	2b	02/07/07	30		-1.28	0.32	2.95	0.64	1.67	0.68	0.57	0.26	-0.77	0.37
ATOS	3b	03/07/07	1	23.0	0.69	0.36	1.61	0.33	2.30	0.32	1.43	0.35	0.30	0.16
ATOS	3b	03/07/07	10	23.0	0.09	0.28	1.98	0.59	2.08	0.58	1.05	0.42	0.05	0.14
ATOS	3b	03/07/07	26	23.0	-1.16	0.75	2.71	0.65	1.55	0.81	0.57	0.33	-0.75	0.62
ATOS	4b	04/07/07	1	9.0	0.39	0.26	1.94	0.32	2.34	0.29	1.20	0.25	0.17	0.11
ATOS	4b	04/07/07	10	9.0	1.16	0.27	1.00	0.57	2.15	0.59	2.17	1.38	0.54	0.19
ATOS	4b	04/07/07	32	9.0	-0.77	0.81	3.11	0.36	2.34	0.84	0.75	0.28	-0.33	0.37
ATOS	5b	05/07/07	1	6.0	6.04	0.32	2.11	0.22	8.15	0.32	3.87	0.44	0.74	0.05
ATOS	5b	05/07/07	5	6.0	10.55	0.60	3.35	0.28	13.89	0.59	4.15	0.39	0.76	0.05
ATOS	5b	05/07/07	15	6.0	7.23	2.55	2.78	0.46	10.01	2.54	3.60	1.09	0.72	0.31
ATOS	6a	06/07/07	1	13.0	4.87	0.57	3.03	0.52	7.89	0.64	2.61	0.50	0.62	0.09
ATOS	6a	06/07/07	20	13.0	-4.86	0.33	11.68	0.28	6.82	0.35	0.58	0.03	-0.71	0.06
ATOS	6a	06/07/07	36	13.0	2.15	0.74	1.57	0.31	3.72	0.68	2.37	0.64	0.58	0.22
ATOS	9a	07/07/07	1	5.0	12.68	0.59	1.60	1.16	14.28	1.27	8.93	6.50	0.89	0.09
ATOS	9a	07/07/07	5	5.0	1.93	1.48	4.58	1.21	6.51	0.90	1.42	0.43	0.30	0.23
ATOS	9a	07/07/07	15	5.0	0.61	1.14	2.56	0.24	3.17	1.13	1.24	0.46	0.19	0.37
ATOS	12a	08/07/07	1	8.0	7.06	0.34	3.42	0.33	10.48	0.25	3.06	0.30	0.67	0.04
ATOS	12a	08/07/07	5	8.0	8.99	1.02	3.59	0.43	12.58	1.09	3.50	0.51	0.71	0.10
ATOS	12a	08/07/07	10	8.0	3.06	2.02	4.75	0.60	7.81	2.06	1.65	0.48	0.39	0.28
ATOS	15a	09/07/07	1	16.0	22.71	0.66	2.53	0.23	25.24	0.66	9.99	0.93	0.90	0.04
ATOS	15a	09/07/07	5	16.0	20.37	0.25	4.07	0.31	24.44	0.29	6.01	0.47	0.83	0.01
ATOS	15a	09/07/07	20	16.0	10.88	2.65	2.43	0.32	13.31	2.66	5.47	1.31	0.82	0.26
ATOS	18a	10/07/07	1	15.0	1.97	0.52	1.86	0.53	3.82	0.29	2.06	0.61	0.51	0.14
ATOS	18a	10/07/07	5	15.0	3.16	0.29	1.74	0.38	4.90	0.33	2.82	0.64	0.64	0.07
ATOS	18a	10/07/07	27	15.0	1.08	0.44	2.73	1.16	3.81	1.13	1.39	0.73	0.28	0.14

Cruise	Station	date	depth (m)	Mixed layer depth (m)	NCP (mmol/m3/d)	SE	CR (mmol/m3/d)	SE	GPP (mmol/m3/d)	SE	GPP/CR	SE	NCP/GPP	SE
ATOS	19a	11/07/07	2	12.0	2.82	3.72	3.18	0.69	6.00	3.77	1.89	1.25	0.47	0.69
ATOS	19a	11/07/07	12	12.0	5.94	0.26	2.80	0.33	8.74	0.35	3.12	0.39	0.68	0.04
ATOS	19a	11/07/07	25	12.0	0.89	0.54	1.01	0.31	1.90	0.47	1.88	0.75	0.47	0.31
ATOS	20a	12/07/07	1	17.0	-0.18	0.25	3.39	0.25	3.21	0.31	0.95	0.11	-0.06	0.08
ATOS	20a	12/07/07	10	17.0	1.00	0.70	14.26	0.78	15.26	0.85	1.07	0.08	0.07	0.05
ATOS	20a	12/07/07	25	17.0	-5.64	0.66	11.65	1.68	6.02	1.80	0.52	0.17	-0.94	0.30
ATOS	23a	13/07/07	1	10.0	-10.23	2.50	13.00	2.71	2.78	0.24	0.21	0.05	-3.68	0.95
ATOS	23a	13/07/07	10	10.0	-7.54	1.79	12.92	1.94	5.38	1.05	0.42	0.10	-1.40	0.43
ATOS	23a	13/07/07	24	10.0	3.39	0.52	3.51	1.53	6.90	1.60	1.97	0.97	0.49	0.14
ATOS	26a	14/07/07	1	10.0	-0.82	0.32	2.14	0.18	1.32	0.33	0.62	0.16	-0.62	0.29
ATOS	26a	14/07/07	15	10.0	-12.94	4.14	18.52	4.15	5.58	0.60	0.30	0.07	-2.32	0.78
ATOS	26a	14/07/07	27	10.0	4.61	1.50	3.48	0.36	8.09	1.51	2.32	0.50	0.57	0.21
ATOS	27a	15/07/07	1		-4.77	8.05	20.88	1.06	16.11	7.98	0.77	0.38	-0.30	0.52
ATOS	27a	15/07/07	15		-21.72	1.88	29.20	1.81	7.49	0.64	0.26	0.03	-2.90	0.35
ATOS	27a	15/07/07	30		6.04	0.72	1.16	0.72	7.21	0.48	6.19	3.85	0.84	0.11
ATOS	33a	17/07/07	1	5.0	-0.75	0.43	2.41	0.31	1.66	0.47	0.69	0.22	-0.45	0.29
ATOS	33a	17/07/07	10	5.0	4.26	0.41	3.42	0.39	7.68	0.39	2.24	0.28	0.55	0.06
ATOS	33a	17/07/07	22	5.0	-0.27	0.63	1.21	0.56	0.93	0.49	0.77	0.54	-0.29	0.70
ATOS	36b	18/07/07	1	14.0	12.67	0.36								
ATOS	36b	18/07/07	14	14.0	14.33	0.49								
ATOS	36b	18/07/07	30	14.0	12.37	0.44								
ATOS	39a	19/07/07	1	8.0	-1.16	1.06	1.20	0.68	0.05	0.94	0.04	0.78	-25.38	520.88
ATOS	39a	19/07/07	5	8.0	0.46	0.46	1.31	0.57	1.78	0.56	1.35	0.73	0.26	0.27
ATOS	39a	19/07/07	32	8.0	1.68	0.56	2.65	2.25	4.33	2.26	1.63	1.62	0.39	0.24
ATOS	42a	20/07/07	1		0.43	0.56	1.05	0.52	1.48	0.55	1.41	0.87	0.29	0.39
ATOS	42a	20/07/07	10		8.94	0.83	3.16	1.60	12.11	1.77	3.83	2.01	0.74	0.13
ATOS	42a	20/07/07	20		3.60	1.57	1.79	0.59	5.39	1.60	3.02	1.34	0.67	0.35
ATOS	43a	22/07/07	1	13	-7.23	0.58	12.72	0.66	5.50	0.60	0.43	0.05	-1.31	0.18
ATOS	43a	22/07/07	10	13.0	-3.84	1.39	9.40	1.23	5.56	1.51	0.59	0.18	-0.69	0.31
ATOS	43a	22/07/07	20	13.0	-1.62	1.23	12.81	1.55	11.19	1.96	0.87	0.19	-0.14	0.11
ATOS	46a	23/07/07	1	16.0	-9.56	0.51	10.10	0.53	0.54	0.21	0.05	0.02	-17.79	6.89
ATOS	46a	23/07/07	14	16.0	-3.45	0.47	10.22	0.37	6.76	0.39	0.66	0.05	-0.51	0.08
ATOS	46a	23/07/07	32	16.0	-8.05	0.42	8.85	0.38	0.80	0.31	0.09	0.04	-10.08	4.01
ATOS	49a	24/07/07	1		-5.61	0.58	8.36	0.86	2.76	0.78	0.33	0.10	-2.03	0.61

Cruise	Station	date	depth (m)	Mixed layer depth (m)	NCP (mmol/m3/d)	SE	CR (mmol/m3/d)	SE	GPP (mmol/m3/d)	SE	GPP/CR	SE	NCP/GPP	SE
ATOS	49a	24/07/07	10		-6.37	0.41	7.42	0.47	1.05	0.54	0.14	0.07	-6.05	3.13
ATOS	49a	24/07/07	30		-4.67	0.79	7.52	1.31	2.85	1.45	0.38	0.20	-1.64	0.88
IAOOS 2007	FS002Bb	16/4/07	1	15.2	3.34	0.33								
IAOOS 2007	FS002Bb	16/4/07	5	15.2	2.06	0.38								
IAOOS 2007	FS002Bb	16/4/07	10	15.2	10.96	2.49								
IAOOS 2007	FS002Bb	16/4/07	20	15.2	-0.58	0.48	1.06	0.48	0.48	0.41	0.45	0.44	-1.21	1.43
IAOOS 2007	FS003Bb	18/4/07	1		0.48	8.51								
IAOOS 2007	FS003Bb	18/4/07	10		-0.02	26.71								
IAOOS 2007	FS003Bb	18/4/07	20		0.04	19.18	1.73	19.47	1.88	0.38	1.09	12.28	0.02	10.18
IAOOS 2007	FS004Cb	22/4/07	5	14	0.01	0.33	0.33	0.32	0.33	0.42	1.02	1.62	0.02	0.99
IAOOS 2007	FS004Cb	22/4/07	10	14	0.29	0.34	0.01	0.42	0.30	0.27	28.50	1136.72	0.96	1.43
IAOOS 2007	FS004Cb	22/4/07	20	14	0.09	0.42								
IAOOS 2007	FS005Cb	25/4/07	5	16	1.82	0.49								
IAOOS 2007	FS005Cb	25/4/07	10	16	1.52	0.19								
IAOOS 2007	FS005Cb	25/4/07	20	16	1.88	0.22								
IAOOS 2008	FS080013	24/04/08	1	22	1.98	0.16								
IAOOS 2008	FS080013	24/04/08	5	22	4.25	0.20								
IAOOS 2008	FS080013	24/04/08	10	22	2.34	0.53								
IAOOS 2008	FS080013	24/04/08	20	22	-1.11	0.53								
IAOOS 2008	FS080032	29/04/08	1	>20	2.72	0.93								
IAOOS 2008	FS080032	29/04/08	5	>20	3.70	0.51								
IAOOS 2008	FS080032	29/04/08	10	>20	3.25	0.38								
IAOOS 2008	FS080032	29/04/08	20	>20	8.46	0.30								
IAOOS 2008	FS080049	05/05/08	1	>19	-0.44	0.49	1.72	0.47	1.28	0.32	0.75	0.28	-0.34	0.39
IAOOS 2008	FS080049	05/05/08	5	>19	-0.70	0.16	0.82	0.16	0.12	0.12	0.14	0.14	-6.03	6.12
IAOOS 2008	FS080049	05/05/08	10	>19	-0.54	0.18								
IAOOS 2008	FS080049	05/05/08	20	>19	0.92	1.42	1.00	0.23	1.93	1.42	1.92	1.48	0.48	0.82
JM-2008	321	31/7/08	1	30.3	0.16	0.52	1.72	0.52	1.88	0.23	1.09	0.36	0.09	0.28
JM-2008	321	31/7/08	10	30.3	0.06	0.23	2.84	0.16	2.90	0.19	1.02	0.09	0.02	0.08
JM-2008	321	31/7/08	20	30.3	0.57	0.69	0.61	0.70	1.17	0.35	1.94	2.31	0.48	0.60
JM-2008	321	31/7/08	30	30.3	0.40	0.41	2.28	0.54	2.68	0.39	1.17	0.33	0.15	0.15
JM-2008	324	1/8/08	1		0.54	0.32	0.80	0.31	1.35	0.20	1.67	0.69	0.40	0.24
JM-2008	324	1/8/08	5		0.02	0.25	1.83	0.30	1.84	0.22	1.01	0.21	0.01	0.13
JM-2008	324	1/8/08	10		0.67	0.26	2.40	0.25	3.07	0.15	1.28	0.15	0.22	0.09

Cruise	Station	date	depth (m)	Mixed layer depth (m)	NCP (mmol/m3/d)	SE	CR (mmol/m3/d)	SE	GPP (mmol/m3/d)	SE	GPP/CR	SE	NCP/GPP	SE
JM-2008	324	1/8/08	20		1.30	0.36	3.22	0.87	4.52	0.83	1.40	0.46	0.29	0.10
JM-2008	326	2/8/08	1		0.16	0.52	1.72	0.52	1.88	0.23	1.09	0.36	0.09	0.28
JM-2008	326	2/8/08	10		0.06	0.23	2.84	0.16	2.90	0.19	1.02	0.09	0.02	0.08
JM-2008	326	2/8/08	20		0.40	0.41	2.28	0.54	2.68	0.39	1.17	0.33	0.15	0.15
JM-2008	326	2/8/08	25		0.57	0.69	0.61	0.70	1.17	0.35	1.94	2.31	0.48	0.60
JM-2008	327	3/8/08	1		0.26	0.43	0.43	0.41	0.69	0.15	1.62	1.60	0.38	0.64
JM-2008	327	3/8/08	5		-0.04	0.19	1.01	1.01	0.97	1.00	0.96	1.38	-0.04	0.20
JM-2008	327	3/8/08	10		-1.55	0.59	2.92	0.54	1.36	0.43	0.47	0.17	-1.14	0.56
JM-2008	327	3/8/08	20		1.75	0.13	0.17	0.20	1.91	0.24	11.42	13.98	0.91	0.13
JM-2008	329	4/8/08	1		-0.62	0.32	0.59	0.38						
JM-2008	329	4/8/08	10		1.15	0.59	2.22	0.71	3.36	0.88	1.52	0.63	0.34	0.20
JM-2008	329	4/8/08	20		0.71	0.38	2.72	0.34	3.43	0.19	1.26	0.17	0.21	0.11
JM-2008	329	4/8/08	25		0.12	0.17	1.00	0.12	1.12	0.14	1.12	0.19	0.11	0.15
JM-2008	330	5/8/08	1		-0.43	0.29	0.67	0.23	0.24	0.22	0.36	0.34	-1.81	2.05
JM-2008	330	5/8/08	5		0.13	0.31								
JM-2008	330	5/8/08	10		-0.69	0.39	1.99	0.49	1.31	0.30	0.66	0.22	-0.53	0.32
JM-2008	330	5/8/08	20		-1.27	0.97	1.75	1.03	0.48	0.45	0.28	0.30	-2.63	3.16
ARCTOS	419	29/11/06	1	67.7	-0.02	1.25	0.02	0.88	0.00	0.88	0.00			
ARCTOS	426	30/11/06	1		-0.37	1.03	0.37	0.73	0.00	0.73	0.00			
ARCTOS	P1	1/12/06	1		-0.19	1.16	0.19	0.82	0.00	0.82	0.00			
ARCTOS	Kb3	2/12/06	1		-0.69	1.78	0.69	1.26	0.00	1.26	0.00			
ARCTOS	Kb5	2/12/06	1		-1.49	0.82	1.49	0.58	0.00	0.58	0.00			
ARCTOS	Kb1	2/12/06	1		-2.56	0.70	2.56	0.50	0.00	0.50	0.00			
ARCTOS	Kb4	3/12/06	1		-0.57	0.64	0.57	0.45	0.00	0.45	0.00			
ATP 09	1	17/6/2009	2	>51.5	4.30	2.47	3.57	1.60	7.87	1.59	2.20	1.08	0.55	0.33
ATP 09	1	17/6/2009	25	>51.5	13.07	1.09	4.66	0.58	17.73	0.55	3.80	0.48	0.74	0.07
ATP 09	1	17/6/2009	50	>51.5	4.73	0.94	9.89	2.13	14.63	1.60	1.48	0.36	0.32	0.07
ATP 09	2	18/6/2009	1	16.8	1.38	0.37								
ATP 09	2	18/6/2009	17	16.8	-1.53	2.48	4.63	0.86	3.11	0.95	0.67	0.24	-0.49	0.81
ATP 09	2	18/6/2009	35	16.8	62.49	1.49	1.91	0.53	64.40	1.55	33.64	9.33	0.97	0.03
ATP 09	3	19/6/2009	1	26.7	5.20	1.01	1.68	0.47	6.87	1.06	4.10	1.32	0.76	0.19
ATP 09	3	19/6/2009	10	26.7	15.88	0.68	0.91	1.03	16.79	1.03	18.44	20.99	0.95	0.07
ATP 09	3	19/6/2009	25	26.7	15.41	1.08	3.11	0.74	18.52	1.00	5.95	1.46	0.83	0.07
ATP 09	4	20/6/2009	1	11.9	-0.05	0.40	0.82	0.75	0.77	0.69	0.94	1.21	-0.06	0.52

Cruise	Station	date	depth (m)	Mixed layer depth (m)	NCP (mmol/m3/d)	SE	CR (mmol/m3/d)	SE	GPP (mmol/m3/d)	SE	GPP/CR	SE	NCP/GPP	SE
ATP 09	4	20/6/2009	15	11.9	-1.91	0.88	0.11	1.11						
ATP 09	4	20/6/2009	35	11.9	2.07	0.62	1.85	0.38	3.92	0.70	2.12	0.57	0.53	0.18
ATP 09	5	22/6/2009	1		1.01	0.54	1.97	0.40	2.98	0.52	1.51	0.41	0.34	0.19
ATP 09	5	22/6/2009	15		15.08	0.69	5.06	1.11	20.14	1.11	3.98	0.90	0.75	0.05
ATP 09	5	22/6/2009	30		12.29	1.07	2.47	0.72	14.76	1.27	5.98	1.82	0.83	0.10
ATP 09	6	23/6/2009	1		4.14	1.03	5.96	0.97	10.09	0.92	1.69	0.32	0.41	0.11
ATP 09	6	23/6/2009	10		8.08	0.63	2.29	0.72	10.37	0.72	4.52	1.45	0.78	0.08
ATP 09	6	23/6/2009	25		16.88	1.12	0.99	0.69	17.87	0.96	18.00	12.47	0.94	0.08
ATP 09	K4	24/6/2009	1	6.9	1.96	0.75	4.73	2.07	6.69	1.86	1.41	0.73	0.29	0.14
ATP 09	K4	24/6/2009	25	6.9	-0.21	0.68	0.80	0.72	0.59	0.72	0.74	1.12	-0.35	1.24
ATP 09	K4	24/6/2009	55	6.9	0.53	0.89	5.04	0.97	5.57	1.17	1.11	0.32	0.10	0.16
ATP 09	T16	25/6/09	1	12.9	6.50	1.17								
ATP 09	T16	25/6/09	10	12.9	12.35	0.57	1.87	0.68	14.22	0.68	7.60	2.76	0.87	0.06
ATP 09	T16	25/6/09	25	12.9	7.59	1.18								
ATP 2010	1	4/5/10	1	25.7	16.09	1.62	23.02	7.95	39.11	8.07	1.70	0.68	0.41	0.09
ATP 2010	1	4/5/10	8	25.7	18.66	1.12								
ATP 2010	1	4/5/10	15	25.7	16.26	0.85	3.00	1.28	19.26	1.19	6.41	2.76	0.84	0.07
ATP 2010	2	5/5/10	1	21.8	16.29	0.65								
ATP 2010	2	5/5/10	5	21.8	14.44	0.70	0.83	0.86	15.28	0.78	18.34	18.96	0.95	0.07
ATP 2010	2	5/5/10	10	21.8	15.22	0.59	0.64	0.26	15.86	0.64	24.69	9.92	0.96	0.05
ATP 2010	3	06/05/10	1	>26	2.85	1.01	0.76	0.99	3.62	0.34	4.73	6.12	0.79	0.29
ATP 2010	3	06/05/10	8	>26	3.86	0.53	0.81	0.60	4.67	0.60	5.80	4.35	0.83	0.15
ATP 2010	3	06/05/10	12	>26	2.38	0.65	1.53	0.73	3.90	0.49	2.56	1.27	0.61	0.18
ATP 2010	3	06/05/10	15	>26	1.37	0.38	0.16	0.18	1.52	0.41	9.80	11.49	0.90	0.35
ATP 2010	4	07/05/10	1	>15	38.76	1.63	0.41	0.73	39.17	1.85	96.67	173.96	0.99	0.06
ATP 2010	4	07/05/10	8	>15	37.09	1.11	0.87	1.14	37.96	1.14	43.53	56.99	0.98	0.04
ATP 2010	4	07/05/10	12	>15	34.63	0.88	2.21	0.98	36.84	1.31	16.69	7.44	0.94	0.04
ATP 2010	4	07/05/10	15	>15	15.16	0.90	0.74	0.36	15.90	0.90	21.48	10.55	0.95	0.08
ATP 2010	5	08/05/10	1	>15	17.30	0.53	5.87	3.02	23.18	2.91	3.95	2.09	0.75	0.10
ATP 2010	5	08/05/10	8	>15	14.86	1.02	1.82	1.09	16.68	1.09	9.17	5.52	0.89	0.08
ATP 2010	5	08/05/10	15	>15	15.16	0.90	0.74	0.36	15.90	0.90	21.48	10.55	0.95	0.08
ATP 2010	6	09/05/10	1	13.9	46.88	2.10	2.01	0.23	48.89	2.30	24.32	3.04	0.96	0.06
ATP 2010	6	09/05/10	8	13.9	34.68	1.36	1.57	1.40	36.25	1.40	23.16	20.70	0.96	0.05
ATP 2010	6	09/05/10	12	13.9	39.14	0.65	0.71	0.42	39.84	0.64	56.31	33.32	0.98	0.02

Cruise	Station	date	depth (m)	Mixed layer depth (m)	NCP (mmol/m3/d)	SE	CR (mmol/m3/d)	SE	GPP (mmol/m3/d)	SE	GPP/CR	SE	NCP/GPP	SE
ATP 2010	6	09/05/10	15	13.9	37.92	1.44	0.07	0.96	37.99	1.16	549.75	7659.07	1.00	0.05
ATP 2010	7	10/05/10	1		39.81	0.35	3.15	0.79	42.96	0.91	13.64	3.45	0.93	0.02
ATP 2010	7	10/05/10	10		45.95	1.04	0.54	1.01	46.49	1.06	85.87	160.95	0.99	0.03
ATP 2010	7	10/05/10	15		47.61	0.96								
ATP 2011	215	23/5/11	3		4.35	0.50								
ATP 2011	215	23/5/11	16		11.02	0.99								
ATP 2011	215	23/5/11	22			0.35			8.56	0.39				
ATP 2011	217	24/5/11	4	13.9	32.86	0.88								
ATP 2011	217	24/5/11	9	13.9	26.59	0.87	2.45	0.42	29.04	0.91	11.85		0.92	0.04
ATP 2011	217	24/5/11	16	13.9	34.93	2.55	18.96	4.34	53.89	4.96	2.84	2.07	0.65	0.08
ATP 2011	219	25/5/11	1		22.63	1.61						0.70		
ATP 2011	219	25/5/11	9			1.56			18.77	0.84				
ATP 2011	219	25/5/11	15		21.46	2.08	12.51	1.77	33.97	1.26	2.72		0.63	0.07
ATP 2011	223	26/5/11	3		27.04	0.83	2.91	0.28	29.95	0.78	10.31	0.40	0.90	0.04
ATP 2011	223	26/5/11	10			1.31			39.43	0.48		1.02		
ATP 2011	223	26/5/11	18		62.13	1.37	6.36	0.71	68.49	1.23	10.77		0.91	0.03
ATP 2011	226	27/5/11	3	41.6	2.87	0.92	3.61	0.91	6.48	0.37	1.79	1.21	0.44	0.14
ATP 2011	226	27/5/11	10	41.6	6.67	0.45	1.17	0.62	7.84	0.62	6.70	0.46	0.85	0.09
ATP 2011	226	27/5/11	21	41.6	-4.47	1.64	10.60	1.40	6.13	0.68	0.58	3.58	-0.73	0.28
ATP 2011	229	28/5/11	3		13.34	0.48	3.11	0.51	16.45	0.43	5.29	0.10	0.81	0.04
ATP 2011	229	28/5/11	10		-8.67	0.56	15.28	0.48	6.61	0.32	0.43	0.88	-1.31	0.11
ATP 2011	229	28/5/11	16		2.77	1.10	4.28	0.93	7.06	1.00	1.65	0.03	0.39	0.17
ATP 2011	232	29/5/11	3						13.79	0.65		0.43		
ATP 2011	232	29/5/11	9		-13.28	0.94	40.91	0.61	27.63	0.95	0.68		-0.48	0.04
ATP 2011	232	29/5/11	20		81.64	0.66						0.03		
ATP 2011	234	30/5/11	3	22.8	38.48	1.35	4.61	0.61	43.08	1.39	9.36		0.89	0.04
ATP 2011	234	30/5/11	8	22.8					54.85	0.88		1.27		
ATP 2011	234	30/5/11	15	22.8	71.97	1.94	8.06	0.71	80.02	1.70	9.93		0.90	0.03
ATP 2011	240	31/5/11	4	10.9	1.97	0.45	1.30	0.47	3.27	0.18	2.51	0.90	0.60	0.14
ATP 2011	240	31/5/11	15	10.9	6.90	0.43	0.41	0.30	7.31	0.41	17.80	0.91	0.94	0.08
ATP 2011	240	31/5/11	33	10.9	9.44	0.81	4.93	0.86	14.37	0.56	2.92	12.91	0.66	0.06
ATP 2011	243	1/6/11	3	30.7	8.39	0.29	3.33	0.20	11.72	0.23	3.52	0.52	0.72	0.03
ATP 2011	243	1/6/11	12	30.7	9.09	0.49	2.88	0.31	11.97	0.55	4.15	0.23	0.76	0.05
ATP 2011	243	1/6/11	27	30.7	8.75	0.44	11.88	0.64	20.63	0.45	1.74	0.48	0.42	0.02

Cruise	Station	date	depth (m)	Mixed layer depth (m)	NCP (mmol/m3/d)	SE	CR (mmol/m3/d)	SE	GPP (mmol/m3/d)	SE	GPP/CR	SE	NCP/GPP	SE
ATP 2011	246	2/6/11	3		21.46	0.47	2.24	0.37	23.70	0.40	10.57	1.75	0.91	0.02
ATP 2011	246	2/6/11	7		24.04	0.91	2.46	0.89	26.51	0.24	10.76	3.90	0.91	0.04
ATP 2011	246	2/6/11	13		51.12	0.58	5.94	0.44	57.06	0.62	9.61	0.72	0.90	0.01
ATP 2011	249	3/6/11	3		2.02	0.25	4.64	0.67	6.67	0.63	1.44	0.25	0.30	0.05
ATP 2011	249	3/6/11	10		4.60	0.57	2.80	0.78	7.40	0.83	2.64	0.79	0.62	0.10
ATP 2011	249	3/6/11	17		8.42	0.56	10.60	0.47	19.02	0.37	1.79	0.09	0.44	0.03



Table S2. Planktonic integrated metabolic rates down to 30m ( $\text{mmol O}_2 \text{ m}^{-2} \text{ d}^{-1}$ ) for stations and cruises where available data allowed this calculation. Rates are given as gross primary production (GPP), net community production (NCP) and community respiration (CR) and their associated standard error (SE).

Cruise	Station	date	NCP ( $\text{mmol/m}^2/\text{d}$ )	SE	CR ( $\text{mmol/m}^2/\text{d}$ )	SE	GPP ( $\text{mmol/m}^2/\text{d}$ )	SE
ATOS	1b	01/07/07	-16.70	25.10	38.96	17.64	22.26	20.73
ATOS	2b	02/07/07	-67.48	17.42	73.50	14.14	24.07	20.88
ATOS	3b	03/07/07	-7.12	13.22	63.10	16.54	55.99	17.84
ATOS	4b	04/07/07	10.83	13.19	54.33	13.33	65.16	18.35
ATOS	6a	06/07/07	-13.51	13.89	205.94	10.51	192.43	14.55
ATOS	18a	10/07/07	63.23	10.76	63.07	21.12	126.30	19.58
ATOS	20a	12/07/07	-42.64	17.86	338.54	29.24	295.90	31.75
ATOS	26a	14/07/07	-158.74	73.49	309.61	64.17	150.88	22.37
ATOS	27a	15/07/07	-302.95	88.96	578.34	39.09	275.40	68.79
ATOS	36b	18/07/07	388.98	13.03		12.40	0.00	12.05
ATOS	39a	19/07/07	25.36	15.79	54.62	37.75	79.98	38.15
ATOS	46a	23/07/07	-176.57	13.43	284.54	11.81	107.96	9.56
ATOS	49a	24/07/07	-164.27	16.41	220.45	23.78	56.17	25.80
JM-July-august 2008	321	31/07/2008	8.99	13.41	52.14	13.51	61.14	8.29
JM-July-august 2008	326	02/08/2008	8.14	12.01	60.54	12.71	68.68	8.49
JM-July-august 2008	329	04/08/2008	15.81	11.73	55.92	12.47	86.99	12.57
ARCTOS	419	29/11/2006	-0.54	36.22	0.54	25.61	0.00	25.61
ARCTOS	426	30/11/2006	-10.66	29.75	10.66	21.03	0.00	21.03
ARCTOS	P1	01/12/2006	-5.54	33.75	5.54	23.86	0.00	23.86
ARCTOS	Kb3	02/12/2006	-20.04	51.62	20.04	36.50	0.00	36.50
ARCTOS	Kb5	02/12/2006	-43.27	23.78	43.27	16.82	0.00	16.82
ARCTOS	Kb1	02/12/2006	-74.37	20.35	74.37	14.39	0.00	14.39

Cruise	Station	date	NCP (mmol/m2/d)	SE	CR (mmol/m2/d)	SE	GPP (mmol/m2/d)	SE
ATP 09	1	17/6/2009	243.13	49.90	115.30	30.45	358.43	29.97
ATP 09	2	18/6/2009	395.10	48.57	133.01	26.74	488.49	31.01
ATP 09	3	19/6/2009	407.67	25.20	133.01	26.74	459.53	29.82
ATP 09	4	20/6/2009	-12.50	20.23	133.01	26.74	69.64	25.47
ATP 09	5	22/6/2009	317.98	21.78	133.01	26.74	423.61	29.35
ATP 09	6	23/6/2009	304.58	24.92	133.01	26.74	374.60	24.18
ATP 09	K4	24/6/2009	25.36	20.75	80.14	40.35	105.51	37.41
ATP 09	T16	25/06/2009	284.20	25.25	133.01	26.74	412.50	23.51
ATP 2011	240	31/05/2011	196.32	16.08	57.54	14.66	253.86	12.05
ATP 2011	243	01/06/2011	208.86	10.23	134.47	9.15	343.33	10.78

Table S3. Parameters and their standard errors and statistics for the fitted quantile regression equations between volumetric ( $\text{mmol O}_2 \text{ m}^{-3} \text{ d}^{-1}$ ) and integrated ( $\text{mmol O}_2 \text{ m}^{-3} \text{ d}^{-1}$ ) metabolic rates and water temperature ( $^{\circ}\text{C}$ ) represented in figure 5.

Volumetric	Quartile	Intercept $\pm$ SE	Slope $\pm$ SE	p	N
NCP	50 (Median)	$2.28 \pm 1.04$	$-0.31 \pm 0.25$	0.21	201
NCP	10	$-2.27 \pm 1.07$	$-0.72 \pm 0.54$	0.18	201
NCP	90	$30.98 \pm 4.99$	$-4.63 \pm 1.23$	$< 0.0005$	201
GPP	50 (Median)	$6.57 \pm 1.43$	$-0.22 \pm 0.26$	0.40	167
GPP	10	$0.66 \pm 0.28$	$-0.03 \pm 0.09$	0.74	167
GPP	90	$35.41 \pm 5.66$	$-4.06 \pm 1.50$	$< 0.01$	167
CR	50 (Median)	$2.10 \pm 0.24$	$0.13 \pm 0.08$	0.07	167
CR	10	$0.56 \pm 0.13$	$0.01 \pm 0.05$	0.84	167
CR	90	$9.18 \pm 1.16$	$0.72 \pm 0.48$	0.14	167
<b>Integrated</b>					167
NCP	50 (Median)	$63.75 \pm 40.75$	$-13.87 \pm 8.69$	0.12	58
NCP	10	$-21.85 \pm 31.56$	$-13.00 \pm 14.58$	0.38	58
NCP	90	$534.87 \pm 164.28$	$-79.88 \pm 39.13$	$< 0.05$	58
GPP	50 (Median)	$228.23 \pm 45.54$	$-33.76 \pm 9.46$	$< 0.001$	48
GPP	10	$3.32 \pm 6.46$	$-0.69 \pm 0.96$	0.48	48
GPP	90	$665.95 \pm 173.15$	$-63.19 \pm 42.28$	0.14	48
CR	50 (Median)	$36.68 \pm 11.34$	$5.01 \pm 5.52$	0.37	47
CR	10	$14.02 \pm 4.17$	$-1.70 \pm 0.92$	0.07	47
CR	90	$197.62 \pm 30.36$	$4.85 \pm 14.91$	0.74	47