

Supplementary Information

<i>Cruise</i>	<i>Cruise Number</i>	<i>Date</i>	<i>Transect</i>
AMT10	JR049	12 th April-8 th May, 2000	40 °N – 40 °S
D279	D279	4 th April-10 th May, 2004	24 °N
AMT14	JR101	28 th April-1 st June, 2004	40 °N – 40 °S
AMT15	D284	17 th Sep-29 th Oct, 2004	40 °N – 40 °S
CD171	CD171	1 st May-15 th June, 2005	36 °N
AMT16	D294	20 th May-29 th June, 2005	40 °N – 40 °S
AMT17	D299	15 th Oct-28 th Nov, 2005	40 °N – 40 °S

Supplemental Table 1. Cruise dates and transects.

<i>Cruise</i>	<i>Station</i>	<i>Lat (N)</i>	<i>Long (E)</i>	<i>Date</i>	<i>Experiments Conducted</i>
AMT16	1	-31.5823	16.5842	21/05/2005	APA activities
AMT16	6	-29.5797	0.42	26/05/2005	APA activities
AMT16	13	-26.31595	-17.1359	30/05/2005	APA activities
AMT16	15	-25.3626	-21.5597	31/05/2005	APA activities
AMT16	21	-16.16745	-24.5996	03/06/2005	APA activities, MM kinetics
AMT16	25	-9.04825	-24.5981	05/06/2005	APA activities
AMT16	28	-1.3762	-24.5966	07/06/2005	APA activities
AMT16	31	4.1618	-27.0168	09/06/2005	APA activities, MM kinetics
AMT16	35	10.0004	-29.476	11/06/2005	APA activities
AMT16	38	15.4575	-32.361	13/06/2005	APA activities, MM kinetics
AMT16	40	18.5789	-34.124	14/06/2005	APA activities
AMT16	48	31.2299	-42.0865	18/06/2005	APA activities
AMT16	50	33.3468	-45.324	19/06/2005	APA activities, MM kinetics
AMT16	52	34.5417	-42.3357	20/06/2005	APA activities

AMT16	54	36.0413	-38.2054	21/06/2005	APA activities, MM kinetics
AMT16	56	37.2093	-33.3963	22/06/2005	APA activities
AMT16	58	38.1832	-30.0383	23/06/2005	APA activities
AMT16	60	41.0832	-26.2261	24/06/2005	APA activities, MM kinetics
AMT16	62	43.4411	-22.524	25/06/2005	APA activities
AMT17	4	44.21107	-19.19465	20/10/2005	APA activities, MM kinetics
AMT17	9	31.18044	-32.02516	30/10/2005	APA activities
AMT17	11	29.31558	-36.16381	31/10/2005	APA activities
AMT17	13	27.46839	-38.48518	01/11/2005	APA activities
AMT17	15	28.57702	-36.46745	02/11/2005	APA activities, MM kinetics
AMT17	20	18.22954	-33.54865	04/11/2005	APA activities
AMT17	26	9.26356	-29.30828	07/11/2005	APA activities
AMT17	32	3.28751	-26.39559	09/11/2005	APA activities
AMT17	38	-10.59805	-24.59777	13/11/2005	APA activities, MM kinetics
AMT17	40	-14.22814	-24.59814	14/11/2005	APA activities
AMT17	42	-18.33323	-24.59571	15/11/2005	APA activities, MM kinetics
AMT17	47	-22.09298	-20.09298	17/11/2005	APA activities, MM kinetics
AMT17	49	-23.45372	-16.31447	18/11/2005	APA activities, MM kinetics
AMT17	51	-27.23481	-8.06555	20/11/2005	APA activities, MM kinetics
AMT17	53	-28.51141	-4.40583	21/11/2005	APA activities, MM kinetics
AMT17	55	-30.40154	-0.18044	22/11/2005	APA activities, MM kinetics
AMT17	57	-32.31529	4.14304	23/11/2005	APA activities
AMT17	59	-33.38738	8.55072	24/11/2005	APA activities, MM kinetics

Supplemental Table 2. Station locations and experiments conducted.

	<i>NASG June APA</i>	<i>NASG November APA</i>
Mean	2.435956003	0.835433553
Variance	2.61546819	0.070897095
Observations	7	5
Hypothesized Mean Difference	0	
df	6	
t Stat	2.570087676	
P(T<=t) one-tail	0.021165006	

t Critical one-tail

1.943180274

Supplemental Table 3. One-tailed T-test for NASG June (Spring) and NASG November (Autumn) APA activities ($\text{nM P h}^{-1} \mu\text{g C}^{-1}$). $P < 0.05$.

	<i>NASG June APA</i>	<i>SASG November APA</i>
Mean	2.435956003	0.837833319
Variance	2.61546819	0.077716777
Observations	7	4
Hypothesized Mean Difference	0	
df	7	
t Stat	2.549039374	
P(T<=t) one-tail	0.019078538	
t Critical one-tail	1.894578604	

Supplemental Table 4. One-tailed T-test for NASG June (Spring) and SASG November (Spring) APA activities ($\text{nM P h}^{-1} \mu\text{g C}^{-1}$). $P < 0.05$.

	<i>NASG November APA</i>	<i>SASG November APA</i>
Mean	0.911853222	0.203772919
Variance	0.055596354	0.01303397
Observations	4	10
Hypothesized Mean Difference	0	
df	4	
t Stat	5.742820116	
P(T<=t) one-tail	0.00227804	
t Critical one-tail	2.131846782	

Supplemental Table 5. One-tailed T-test for NASG June (Autumn) and SASG November (Spring) APA activities ($\text{nM P h}^{-1} \mu\text{g C}^{-1}$). $P < 0.05$.

	<i>SASG DOP</i>	<i>NASG DOP</i>
Mean	148.5283	77.50564
Variance	5344.552	18555.78
Observations	40	98
Hypothesized Mean Difference	0	
df	126	
t Stat	3.95206	
P(T<=t) one-tail	6.42E-05	
t Critical one-tail	2.356307	

Supplemental Table 6. One-tailed T-test for NASG DOP concentrations and SASG DOP concentrations (nM) from cruises AMT10, D279, AMT14, AMT15, CD171, AMT16 and AMT17. $P < 0.01$.

	<i>NASG June DOP</i>	<i>NASG November DOP</i>
--	----------------------	--------------------------

Mean	0.080023	0.21424428
Variance	0.001516	0.00117931
Observations	8	8
Hypothesized Mean Difference	0	
df	14	
t Stat	7.31255909	
P(T<=t) one-tail	1.9173E-06	
t Critical one-tail	1.76131012	

Supplemental Table 7. One-tailed T-test for NASG June (Spring) and NASG November (Autumn) DOP concentrations (nM) from cruises AMT16 and AMT17. $P < 0.05$.