

1 Supplement 1. Temperature, salinity, total ^{234}Th and ^{238}U activities on the expedition

2 BGH.

Depth m	Cast	T °C	Salinity	$^{234}\text{Th}_{\text{total}}$ dpm L ⁻¹	^{238}U dpm L ⁻¹	$^{234}\text{Th}/^{238}\text{U}$
Station BGH/Super1 36.5°S, 13.10°E						
3	22	21.2	35.55	1.84 ± 0.15	2.50 ± 0.04	0.74 ± 0.06
19	22	20.8	35.54	2.03 ± 0.10	2.50 ± 0.04	0.81 ± 0.04
29	22	20.3	35.57	1.90 ± 0.08	2.50 ± 0.04	0.76 ± 0.03
60	22	18.6	35.51	2.57 ± 0.09	2.50 ± 0.04	1.03 ± 0.04
80	22	15.6	34.95	2.19 ± 0.12	2.46 ± 0.04	0.89 ± 0.05
100	22	14.2	34.88	2.18 ± 0.12	2.46 ± 0.04	0.89 ± 0.05
124	22	15.3	35.33	2.69 ± 0.14	2.49 ± 0.04	1.08 ± 0.06
150	22	14.7	35.34	2.53 ± 0.12	2.49 ± 0.04	1.01 ± 0.05
175	22	13.9	35.22	2.51 ± 0.12	2.48 ± 0.04	1.01 ± 0.05
199	22	13.2	35.12	2.41 ± 0.12	2.47 ± 0.04	0.98 ± 0.05
249	22	12.6	35.09	2.59 ± 0.17	2.47 ± 0.04	1.05 ± 0.07
300	22	11.9	35.01	2.45 ± 0.11	2.47 ± 0.04	1.00 ± 0.05
349	22	11.4	34.94	2.56 ± 0.09	2.46 ± 0.04	1.04 ± 0.04
400	22	10.6	34.85	2.46 ± 0.19	2.45 ± 0.04	1.00 ± 0.08
450	22	10.0	34.80	2.48 ± 0.12	2.45 ± 0.04	1.01 ± 0.05
500	22	9.1	34.69	2.45 ± 0.15	2.44 ± 0.04	1.00 ± 0.06
600	22	7.7	34.55	2.48 ± 0.10	2.43 ± 0.04	1.02 ± 0.04
700	22	5.9	34.37	2.48 ± 0.08	2.42 ± 0.04	1.02 ± 0.04
850	22	5.0	34.40	2.38 ± 0.18	2.45 ± 0.04	0.97 ± 0.08
1000	22	3.9	34.42	2.48 ± 0.10	2.45 ± 0.04	1.01 ± 0.04
Station BGH/Large2 41.18°S, 9.92°E						
8	38	15.3	34.73	1.94 ± 0.08	2.48 ± 0.04	0.78 ± 0.04
50	38	12.8	34.89	2.46 ± 0.13	2.49 ± 0.04	0.99 ± 0.05
100	38	10.7	34.67	2.35 ± 0.11	2.47 ± 0.04	0.95 ± 0.05
150	38	10.0	34.64	2.50 ± 0.10	2.47 ± 0.04	1.01 ± 0.04
300	38	7.7	34.42	2.42 ± 0.10	2.45 ± 0.04	0.99 ± 0.04
2600	37	2.4	34.82	2.49 ± 0.08	2.48 ± 0.04	1.00 ± 0.04
4401	37	1.1	34.72	2.37 ± 0.09	2.48 ± 0.04	0.96 ± 0.04
4570	37	1.1	34.72	2.25 ± 0.08	2.48 ± 0.04	0.91 ± 0.04
Station BGH Super2 42.28°S, 8.56°E						
10	43	12.0	34.21	1.89 ± 0.08	2.44 ± 0.04	0.78 ± 0.03
40	43	13.3	34.65	1.90 ± 0.08	2.47 ± 0.04	0.77 ± 0.04
75	43	12.3	34.86	2.44 ± 0.08	2.49 ± 0.04	0.98 ± 0.04
100	43	10.6	34.68	2.43 ± 0.11	2.47 ± 0.04	0.98 ± 0.05
125	43	10.0	34.59	2.71 ± 0.11	2.47 ± 0.04	1.10 ± 0.05
175	43	9.3	34.56	2.65 ± 0.09	2.46 ± 0.04	1.08 ± 0.04
200	43	8.6	34.48	2.55 ± 0.08	2.46 ± 0.04	1.04 ± 0.04
225	43	8.1	34.44	2.61 ± 0.08	2.46 ± 0.04	1.06 ± 0.04
250	43	7.6	34.38	2.58 ± 0.10	2.45 ± 0.04	1.05 ± 0.04
275	43	7.0	34.28	2.54 ± 0.09	2.44 ± 0.04	1.04 ± 0.04
300	43	6.7	34.26	2.68 ± 0.11	2.44 ± 0.04	1.10 ± 0.05
330	43	6.6	34.27	2.55 ± 0.12	2.44 ± 0.04	1.04 ± 0.05
360	43	6.4	34.29	2.54 ± 0.08	2.44 ± 0.04	1.04 ± 0.04
400	43	6.0	34.28	2.73 ± 0.09	2.44 ± 0.04	1.12 ± 0.04
450	43	5.4	34.23	2.43 ± 0.12	2.44 ± 0.04	0.99 ± 0.05
500	43	4.9	34.20	2.36 ± 0.07	2.44 ± 0.04	0.97 ± 0.03
600	43	4.3	34.17	2.47 ± 0.12	2.44 ± 0.04	1.02 ± 0.05
700	43	3.8	34.18	2.31 ± 0.07	2.44 ± 0.04	0.95 ± 0.03
850	43	3.3	34.24	2.43 ± 0.10	2.44 ± 0.04	1.00 ± 0.04
1000	43	3.1	34.33	2.48 ± 0.08	2.45 ± 0.04	1.01 ± 0.04
1500	44	2.7	34.60	2.40 ± 0.09	2.47 ± 0.04	0.97 ± 0.04
1500	44	2.7	34.60	2.40 ± 0.13	2.47 ± 0.04	0.97 ± 0.05

1 Supplement 1. continued

Depth m	Cast	T °C	Salinity	$^{234}\text{Th}_{\text{total}}$ dpm L ⁻¹	^{238}U dpm L ⁻¹	$^{234}\text{Th}/^{238}\text{U}$
Station BGH/Large3 44.90°S, 6.88°E						
0	53	9.2	33.89	1.90 ± 0.06	2.42 ± 0.04	0.79 ± 0.03
20	52	9.4	33.91	1.84 ± 0.08	2.42 ± 0.04	0.76 ± 0.04
40	52	9.4	33.91	1.83 ± 0.09	2.42 ± 0.04	0.76 ± 0.04
41	53	9.2	33.90	1.89 ± 0.07	2.42 ± 0.04	0.78 ± 0.03
60	52	9.4	33.91	1.86 ± 0.08	2.42 ± 0.04	0.77 ± 0.04
80	52	7.8	34.30	2.53 ± 0.08	2.45 ± 0.04	1.03 ± 0.04
99	53	7.3	34.27	2.72 ± 0.11	2.44 ± 0.04	1.11 ± 0.05
140	52	6.9	34.29	2.80 ± 0.09	2.44 ± 0.04	1.15 ± 0.04
148	53	6.9	34.32	2.85 ± 0.09	2.45 ± 0.04	1.16 ± 0.04
180	52	6.1	34.21	2.64 ± 0.09	2.44 ± 0.04	1.08 ± 0.04
200	53	5.8	34.23	2.61 ± 0.14	2.44 ± 0.04	1.07 ± 0.06
300	52	4.9	34.17	2.64 ± 0.11	2.44 ± 0.04	1.08 ± 0.05
400	53	4.2	34.14	2.40 ± 0.08	2.43 ± 0.04	0.99 ± 0.04
500	53	3.8	34.17	2.54 ± 0.11	2.44 ± 0.04	1.04 ± 0.05
1000	53	2.8	34.41	2.34 ± 0.11	2.45 ± 0.04	0.95 ± 0.05
2000	53	2.5	34.76	2.42 ± 0.07	2.48 ± 0.04	0.97 ± 0.03
4100	53	0.9	34.70	2.52 ± 0.12	2.47 ± 0.04	1.02 ± 0.05
Station BGH/Large4 46.02°S, 5.87°E						
10	58	7.8	33.74	1.96 ± 0.09	2.41 ± 0.04	0.82 ± 0.04
20	58	7.8	33.74	2.00 ± 0.08	2.41 ± 0.04	0.83 ± 0.03
50	58	7.8	33.74	2.09 ± 0.08	2.41 ± 0.04	0.87 ± 0.04
70	58	7.7	33.75	2.05 ± 0.08	2.41 ± 0.04	0.85 ± 0.04
80	58	6.9	33.85	2.16 ± 0.10	2.41 ± 0.04	0.90 ± 0.04
100	58	5.5	33.97	2.56 ± 0.11	2.42 ± 0.04	1.06 ± 0.05
130	58	5.2	34.01	2.69 ± 0.11	2.43 ± 0.04	1.11 ± 0.05
160	58	5.0	34.06	2.57 ± 0.11	2.43 ± 0.04	1.06 ± 0.05
200	58	4.5	34.06	2.51 ± 0.10	2.43 ± 0.04	1.03 ± 0.05
Station BGH/Super3 47.55°S, 4.37°E						
4	65	6.6	33.70	1.94 ± 0.10	2.40 ± 0.04	0.81 ± 0.04
10	65	6.6	33.70	2.01 ± 0.08	2.40 ± 0.04	0.84 ± 0.04
20	65	6.6	33.70	2.03 ± 0.09	2.40 ± 0.04	0.84 ± 0.04
30	65	6.6	33.71	1.95 ± 0.07	2.40 ± 0.04	0.81 ± 0.03
40	65	6.6	33.71	2.05 ± 0.10	2.40 ± 0.04	0.85 ± 0.04
60	65	6.5	33.71	1.97 ± 0.11	2.40 ± 0.04	0.82 ± 0.05
80	65	6.5	33.71	2.12 ± 0.09	2.40 ± 0.04	0.88 ± 0.04
100	65	6.2	33.73	2.04 ± 0.07	2.40 ± 0.04	0.85 ± 0.03
120	65	4.2	33.83	2.41 ± 0.08	2.41 ± 0.04	1.00 ± 0.04
140	65	4.0	33.87	2.70 ± 0.10	2.42 ± 0.04	1.12 ± 0.04
160	65	4.0	33.93	2.63 ± 0.09	2.42 ± 0.04	1.09 ± 0.04
180	65	3.8	33.94	2.92 ± 0.11	2.42 ± 0.04	1.21 ± 0.05
200	65	3.7	33.98	2.72 ± 0.12	2.42 ± 0.04	1.12 ± 0.05
240	65	3.7	34.06	2.91 ± 0.10	2.43 ± 0.04	1.20 ± 0.04
280	65	3.6	34.10	2.76 ± 0.09	2.43 ± 0.04	1.13 ± 0.04
320	65	3.4	34.12	2.89 ± 0.12	2.43 ± 0.04	1.19 ± 0.05
400	65	3.0	34.14	2.53 ± 0.19	2.43 ± 0.04	1.04 ± 0.08
600	65	2.8	34.26	2.77 ± 0.10	2.44 ± 0.04	1.13 ± 0.05
800	65	2.7	34.39	2.75 ± 0.09	2.45 ± 0.04	1.12 ± 0.04
1000	65	2.6	34.52	2.63 ± 0.09	2.46 ± 0.04	1.07 ± 0.04

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1 Supplement 1. continued

Depth m	Cast	T °C	Salinity	$^{234}\text{Th}_{\text{total}}$ dpm L ⁻¹	^{238}U dpm L ⁻¹	$^{234}\text{Th}/^{238}\text{U}$
Station BGH/Large5 49.03°S, 2.83°E						
5	70	6.0	33.73	1.98 ± 0.06	2.41 ± 0.04	0.82 ± 0.03
5	71	5.9	33.73	1.92 ± 0.06	2.41 ± 0.04	0.80 ± 0.03
10	71	6.0	33.73	1.98 ± 0.13	2.41 ± 0.04	0.82 ± 0.06
35	71	5.9	33.73	2.01 ± 0.09	2.41 ± 0.04	0.84 ± 0.04
50	70	5.9	33.73	2.00 ± 0.07	2.41 ± 0.04	0.83 ± 0.03
60	71	5.9	33.73	2.04 ± 0.08	2.41 ± 0.04	0.85 ± 0.04
80	71	5.9	33.73	2.02 ± 0.07	2.41 ± 0.04	0.84 ± 0.03
90	70	5.8	33.74	1.94 ± 0.06	2.41 ± 0.04	0.81 ± 0.03
100	71	5.8	33.74	2.05 ± 0.09	2.41 ± 0.04	0.85 ± 0.04
120	70	3.9	33.80	2.05 ± 0.07	2.41 ± 0.04	0.85 ± 0.03
150	71	3.7	33.82	2.52 ± 0.07	2.41 ± 0.04	1.05 ± 0.03
250	70	3.3	34.07	2.60 ± 0.08	2.43 ± 0.04	1.07 ± 0.04
600	70	2.7	34.34	2.50 ± 0.08	2.45 ± 0.04	1.02 ± 0.04
800	70	2.6	34.46	2.59 ± 0.07	2.46 ± 0.04	1.05 ± 0.03
1000	70	2.5	34.56	2.47 ± 0.10	2.46 ± 0.04	1.00 ± 0.05
Station BGH/Large6 50.38°S, 1.32°E						
6	78	4.5	33.77	1.93 ± 0.20	2.41 ± 0.04	0.80 ± 0.08
10	78	4.5	33.77	1.92 ± 0.10	2.41 ± 0.04	0.80 ± 0.04
29	78	4.5	33.77	1.88 ± 0.09	2.41 ± 0.04	0.78 ± 0.04
60	78	4.5	33.77	1.98 ± 0.10	2.41 ± 0.04	0.82 ± 0.05
100	78	2.2	33.85	2.24 ± 0.10	2.41 ± 0.04	0.93 ± 0.04
120	78	1.8	33.91	2.63 ± 0.11	2.42 ± 0.04	1.09 ± 0.05
160	78	1.8	34.04	2.56 ± 0.08	2.43 ± 0.04	1.05 ± 0.04
252	78	2.2	34.22	2.61 ± 0.11	2.44 ± 0.04	1.07 ± 0.05
Station BGH/Super4 51.87°S, 0.00°E						
5	86	2.5	33.69	1.85 ± 0.10	2.40 ± 0.04	0.77 ± 0.05
10	86	2.5	33.69	1.96 ± 0.11	2.40 ± 0.04	0.81 ± 0.05
20	86	2.5	33.69	1.96 ± 0.10	2.40 ± 0.04	0.82 ± 0.04
40	86	2.5	33.69	1.95 ± 0.10	2.40 ± 0.04	0.81 ± 0.04
40	86	2.5	33.69	2.00 ± 0.11	2.40 ± 0.04	0.83 ± 0.05
60	86	2.5	33.69	2.18 ± 0.11	2.40 ± 0.04	0.91 ± 0.05
80	86	2.5	33.69	2.11 ± 0.12	2.40 ± 0.04	0.88 ± 0.05
100	86	2.5	33.70	1.97 ± 0.09	2.40 ± 0.04	0.82 ± 0.04
120	86	1.8	33.76	2.06 ± 0.10	2.41 ± 0.04	0.85 ± 0.04
120	86	1.9	33.75	1.97 ± 0.08	2.41 ± 0.04	0.82 ± 0.04
140	86	0.9	33.91	2.56 ± 0.10	2.42 ± 0.04	1.06 ± 0.05
160	86	0.8	34.05	2.40 ± 0.16	2.43 ± 0.04	0.99 ± 0.07
180	86	0.9	34.14	2.50 ± 0.10	2.43 ± 0.04	1.03 ± 0.04
200	86	1.2	34.27	2.55 ± 0.10	2.44 ± 0.04	1.04 ± 0.04
250	86	1.6	34.44	2.41 ± 0.10	2.46 ± 0.04	0.98 ± 0.04
300	86	1.8	34.50	2.58 ± 0.13	2.46 ± 0.04	1.05 ± 0.05
350	86	1.8	34.55	2.55 ± 0.12	2.46 ± 0.04	1.04 ± 0.05
400	86	1.9	34.59	2.59 ± 0.12	2.47 ± 0.04	1.05 ± 0.05
600	86	1.8	34.67	2.48 ± 0.13	2.47 ± 0.04	1.00 ± 0.06
800	86	1.7	34.70	2.39 ± 0.11	2.47 ± 0.04	0.96 ± 0.05
1000	86	1.6	34.72	2.56 ± 0.11	2.48 ± 0.04	1.03 ± 0.05

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1 Supplement 1. continued

Depth m	Cast	T °C	Salinity	$^{234}\text{Th}_{\text{total}}$ dpm L ⁻¹	^{238}U dpm L ⁻¹	$^{234}\text{Th}/^{238}\text{U}$
Station BGH/Large7 55.57°S, 0.00°E						
5	100	0.5	33.86	1.97 ± 0.12	2.41 ± 0.04	0.82 ± 0.05
5	101	0.5	33.84	1.95 ± 0.10	2.41 ± 0.04	0.81 ± 0.04
8	100	0.5	33.86	1.99 ± 0.12	2.41 ± 0.04	0.82 ± 0.05
15	100	0.5	33.86	1.93 ± 0.11	2.41 ± 0.04	0.80 ± 0.05
50	101	0.5	33.85	1.94 ± 0.13	2.41 ± 0.04	0.80 ± 0.05
74	100	0.4	33.88	2.15 ± 0.11	2.42 ± 0.04	0.89 ± 0.05
110	100	0.3	33.99	2.40 ± 0.13	2.42 ± 0.04	0.99 ± 0.06
119	100	0.2	34.00	2.34 ± 0.13	2.42 ± 0.04	0.97 ± 0.06
150	100	0.9	34.41	2.56 ± 0.10	2.45 ± 0.04	1.04 ± 0.04
150	101	1.2	34.33	2.52 ± 0.12	2.45 ± 0.04	1.03 ± 0.05
169	100	1.2	34.42	2.56 ± 0.13	2.45 ± 0.04	1.04 ± 0.06
250	100	1.6	34.57	2.58 ± 0.14	2.46 ± 0.04	1.05 ± 0.06
400	101	1.6	34.64	2.59 ± 0.11	2.47 ± 0.04	1.05 ± 0.05
600	101	1.5	34.68	2.38 ± 0.11	2.47 ± 0.04	0.96 ± 0.05
796	101	1.2	34.69	2.39 ± 0.15	2.47 ± 0.04	0.97 ± 0.06
1000	101	1.0	34.69	2.50 ± 0.13	2.47 ± 0.04	1.01 ± 0.06
Station BGH/Super5 57.55°S, 0.04°E						
3	109	0.4	34.05	2.08 ± 0.10	2.43 ± 0.04	0.86 ± 0.04
10	109	0.4	34.06	2.09 ± 0.10	2.43 ± 0.04	0.86 ± 0.04
20	109	0.4	34.06	2.02 ± 0.09	2.43 ± 0.04	0.83 ± 0.04
29	109	0.4	34.06	1.99 ± 0.10	2.43 ± 0.04	0.82 ± 0.04
40	109	0.4	34.08	1.95 ± 0.10	2.43 ± 0.04	0.80 ± 0.04
60	109	0.4	34.12	2.19 ± 0.12	2.43 ± 0.04	0.90 ± 0.05
80	109	0.3	34.13	2.17 ± 0.10	2.43 ± 0.04	0.89 ± 0.04
99	109	-0.3	34.23	2.73 ± 0.16	2.44 ± 0.04	1.12 ± 0.07
120	109	-0.7	34.33	2.73 ± 0.14	2.45 ± 0.04	1.11 ± 0.06
139	109	-0.6	34.40	2.50 ± 0.12	2.45 ± 0.04	1.02 ± 0.05
159	109	-0.4	34.46	2.43 ± 0.13	2.46 ± 0.04	0.99 ± 0.05
180	109	0.0	34.54	2.57 ± 0.14	2.46 ± 0.04	1.04 ± 0.06
200	109	0.1	34.57	2.42 ± 0.12	2.46 ± 0.04	0.98 ± 0.05
250	109	0.4	34.63	2.80 ± 0.17	2.47 ± 0.04	1.13 ± 0.07
300	109	0.5	34.65	2.44 ± 0.13	2.47 ± 0.04	0.99 ± 0.05
350	109	0.5	34.66	2.44 ± 0.15	2.47 ± 0.04	0.99 ± 0.06
400	109	0.6	34.66	2.44 ± 0.12	2.47 ± 0.04	0.99 ± 0.05
600	109	0.5	34.67	2.60 ± 0.14	2.47 ± 0.04	1.05 ± 0.06
1003	109	0.3	34.67	2.47 ± 0.12	2.47 ± 0.04	1.00 ± 0.05

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1 Supplement 2. Activity of particulate ^{234}Th ($^{234}\text{Th}_p$, in dpm L^{-1}), POC concentrations (in
 2 $\mu\text{mol L}^{-1}$) and estimated $\text{C}/^{234}\text{Th}_p$ ratios ($\mu\text{mol dpm}^{-1}$) in total Suspended Particulate
 3 Matter (SPM), 1-53 μm and >53 μm size fractions measured at Super stations during
 4 BGH expedition.

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Depth (m)	Total SPM			1-53 μm			>53 μm		
	$^{234}\text{Th}_p$ (dpm L^{-1})	POC ($\mu\text{mol L}^{-1}$)	$\text{C}/^{234}\text{Th}_p$	$^{234}\text{Th}_p$ (dpm L^{-1})	POC ($\mu\text{mol L}^{-1}$)	$\text{C}/^{234}\text{Th}_p$	$^{234}\text{Th}_p$ (dpm L^{-1})	POC ($\mu\text{mol L}^{-1}$)	$\text{C}/^{234}\text{Th}_p$
Station BGH/Super1 36.5°S, 13.10°E									
50	0.25	1.11	4.5	0.21 ± 0.01	0.98	4.7	0.036 ± 0.001	0.131	3.7
75	0.29	0.46	1.6	0.28 ± 0.01	0.43	1.6	0.016 ± 0.000	0.029	1.9
125	0.39	0.96	2.5	0.38 ± 0.01	0.94	2.5	0.008 ± 0.000	0.017	2.2
250	0.25	0.25	1.0	0.25 ± 0.01	0.24	1.0	0.006 ± 0.000	0.010	1.8
500	0.21	0.18	0.8	0.20 ± 0.01	0.17	0.9	0.009 ± 0.000	0.007	0.8
750	0.18	0.18	1.0	0.18 ± 0.01	0.17	1.0	0.007 ± 0.000	0.010	1.4
1250	0.13			0.12 ± 0.00	0.08	0.7	0.003 ± 0.000		
2700				0.08 ± 0.00	0.22	2.9			
2750	0.09	0.22	2.4	0.09 ± 0.00	0.22	2.4	0.001 ± 0.000	0.002	1.4
4700	0.18	0.30	1.6	0.18 ± 0.00	0.29	1.6	0.002 ± 0.000	0.008	3.7
Station BGH/Super2 42.28°S, 8.56°E									
30	0.99	3.60	3.6	0.84 ± 0.01	3.22	3.8	0.154 ± 0.001	0.381	2.5
75	0.89	1.82	2.0	0.86 ± 0.01	1.77	2.1	0.035 ± 0.001	0.056	1.6
75	0.50	0.77	1.5	0.43 ± 0.01	0.64	1.5	0.067 ± 0.001	0.132	2.0
130	0.36	0.47	1.3	0.35 ± 0.00	0.44	1.3	0.015 ± 0.000	0.022	1.5
250	0.26	0.39	1.5	0.24 ± 0.00	0.36	1.5	0.017 ± 0.000	0.030	1.8
590	0.07	0.11	1.4	0.07 ± 0.00	0.10	1.4	0.001 ± 0.000	0.004	2.8
608	0.15	0.25	1.6	0.14 ± 0.00	0.23	1.6	0.009 ± 0.000	0.019	2.3
1450	0.11	0.10	0.9	0.11 ± 0.00	0.10	0.9	0.003 ± 0.000	0.003	0.9
1460	0.07	0.07	1.0	0.07 ± 0.00	0.06	0.9	0.002 ± 0.000	0.009	5.6
2900	0.06	0.05	0.8	0.06 ± 0.00	0.05	0.8	0.001 ± 0.000	0.002	1.7
3940	0.11	0.08	0.7	0.11 ± 0.00	0.07	0.6	0.002 ± 0.000	0.010	6.0
Station BGH/Super3 47.55°S, 4.37°E									
20	0.76	3.57	4.7	0.66 ± 0.02	3.33	5.0	0.103 ± 0.002	0.244	2.4
50	0.78	3.39	4.4	0.74 ± 0.02	3.30	4.5	0.040 ± 0.001	0.090	2.3
150	0.21	0.48	2.3	0.19 ± 0.00	0.42	2.2	0.020 ± 0.000	0.062	3.2
230	0.17	0.33	2.0	0.17 ± 0.00	0.32	2.0	0.003 ± 0.000	0.009	2.9
450	0.13	0.27	2.2	0.12 ± 0.00	0.20	1.7	0.005 ± 0.000	0.074	14.1
550	0.19	0.31	1.6	0.18 ± 0.00	0.23	1.3	0.005 ± 0.000	0.075	16.3
1048	0.12	0.19	1.5	0.12 ± 0.00	0.17	1.5	0.005 ± 0.000	0.010	2.0
1088	0.13	0.11	0.9	0.12 ± 0.00	0.09	0.7	0.005 ± 0.000	0.021	4.5
2023	0.07	0.09	1.3	0.07 ± 0.00	0.09	1.3	0.002 ± 0.000	0.004	2.5
2043	0.08	0.10	1.3	0.07 ± 0.00	0.10	1.3	0.002 ± 0.000	0.005	3.0
4320	0.12	0.08	0.7	0.11 ± 0.00	0.07	0.7	0.003 ± 0.000	0.005	1.8

Depth (m)	Total SPM			1-53 μm			>53 μm		
	$^{234}\text{Th}_p$ (dpm L ⁻¹)	POC ($\mu\text{mol L}^{-1}$)	C/ $^{234}\text{Th}_p$	$^{234}\text{Th}_p$ (dpm L ⁻¹)	POC ($\mu\text{mol L}^{-1}$)	C/ $^{234}\text{Th}_p$	$^{234}\text{Th}_p$ (dpm L ⁻¹)	POC ($\mu\text{mol L}^{-1}$)	C/ $^{234}\text{Th}_p$
Station BGH/Super4 51.87°S, 0.00°E									
80	0.45	1.74	3.9	0.41 ± 0.01	1.48	3.6	0.035 ± 0.001	0.257	7.4
100	0.48	1.50	3.1	0.44 ± 0.01	1.31	2.9	0.034 ± 0.002	0.192	5.7
125	0.41	1.28	3.1	0.39 ± 0.01	1.19	3.0	0.013 ± 0.000	0.090	6.9
165	0.18	0.50	2.8	0.17 ± 0.00	0.46	2.7	0.009 ± 0.000	0.037	4.2
400	0.15	0.30	2.0	0.14 ± 0.01	0.29	2.0	0.003 ± 0.000	0.009	3.2
749	0.09			0.09 ± 0.00	0.23	2.5	0.002 ± 0.000		
1108	0.07	0.25	3.7	0.07 ± 0.00	0.24	3.7	0.002 ± 0.000	0.006	3.9
1685	0.07	0.20	2.7	0.07 ± 0.00	0.20	2.7	0.001 ± 0.000	0.005	6.4
2468	0.10	0.24	2.4	0.10 ± 0.00	0.23	2.4	0.001 ± 0.000	0.004	3.3
Station BGH/Super5 57.55°S, 0.04°E									
50	0.37	2.12	5.8	0.23 ± 0.01	1.58	6.8	0.136 ± 0.002	0.547	4.0
90	0.28	1.37	4.9	0.22 ± 0.00	1.16	5.2	0.055 ± 0.001	0.206	3.8
125	0.15	0.84	5.7	0.12 ± 0.00	0.70	5.6	0.024 ± 0.001	0.142	6.0
300	0.10	0.27	2.7	0.10 ± 0.00	0.26	2.7	0.002 ± 0.000	0.004	2.6
500	0.07	0.16	2.4	0.07 ± 0.00	0.15	2.3	0.001 ± 0.000	0.007	8.0
650	0.09	0.40	4.4	0.09 ± 0.01	0.38	4.5	0.004 ± 0.000	0.012	3.3
2300	0.04	0.13	2.8	0.04 ± 0.00	0.12	2.8	0.001 ± 0.000	0.002	2.4
3884	0.05	0.23	4.2	0.05 ± 0.00	0.22	4.2	0.001 ± 0.000	0.002	3.4

1

2

1 Supplement 3. Ba_{xs} concentrations on the expedition BGH.

Cast #	Depth m	Baxs pM
Station BGH/Super1 36.5°S, 13.10°E		
23	4	15
23	25	36
23	50	33
23	75	236
23	101	149
23	150	178
23	180	247
23	220	140
23	260	
23	300	181
23	340	187
23	380	158
23	420	161
23	460	125
23	501	140
23	550	182
23	600	172
23	701	306
23	849	186
23	1002	286
Station BGH Super2 42.28°S, 8.56°E		
44	9.6	12
44	39.7	16
44	80.2	34
44	100.1	270
44	125.1	339
44	149.8	344
44	175.2	409
44	200	382
44	249.4	218
44	300	147
44	350.3	271
44	399.9	325
44	450.4	313
44	500.2	252
44	550	245
44	600.6	363
44	698.6	205
44	794.6	285
44	899.2	231
44	1000.9	215

Cast #	Depth m	Baxs pM
Station BGH/Large3B 44.90°S, 6.88°E		
54	11	9
54	27.6	7
54	60.5	10
54	100.9	140
54	123.7	283
54	149.3	364
54	172.5	435
54	200.2	505
54	249.5	1079
54	298.4	456
54	352.2	489
54	399.5	548
54	449.7	395
54	501.8	364
54	600.3	381
54	697.8	373
54	799.6	269
54	901.2	358
54	1002	197
Station BGH/Super3 47.55°S, 4.37°E		
66	4.8	8
66	40.9	6
66	78.5	5
66	100.1	
66	124.1	194
66	149.4	126
66	173.5	188
66	200.4	224
66	250.8	429
66	274.7	482
66	300	376
66	349.8	430
66	400.8	441
66	449.5	320
66	499.9	208
66	549.9	176
66	600.1	211
66	700.1	238
66	850.2	240
66	1002.4	253
Station BGH/Large5B 49.03°S, 2.83°E		
72	9.3	15
72	40.3	7

Cast #	Depth m	Baxs pM
72	70.2	6
72	99.9	57
72	125.6	176
72	151.9	231
72	176.5	223
72	200.2	237
72	248.5	682
72	300.4	354
72	348.6	456
72	401.5	430
72	449.3	407
72	499.7	343
72	551.2	336
72	600.8	454
72	702.9	455
72	799.4	402
72	899.9	435
72	1000.8	318

Station BGH/Super4 51.87°S, 0.00°E

87	10.7	2
87	41	5
87	78.5	5
87	99.8	35
87	121.6	68
87	148.9	173
87	177.1	171
87	199	248
87	246.3	421
87	274.7	373
87	299.9	198
87	348.7	286
87	397.7	192
87	453.1	195
87	494.7	199
87	553.3	248
87	596.2	182
87	703.9	136
87	848.7	164
87	1003.9	151

Station BGH/Large7 55.57°S, 0.00°E

99	4.1	7
99	39.1	4
99	79.8	9
99	100.3	82

Cast #	Depth m	Baxs pM
99	125.3	277
99	149.2	282
99	174.9	142
99	199	223
99	249.1	333
99	300	273
99	348.8	496
99	399.4	294
99	450.6	275
99	501.6	169
99	550.5	220
99	599.5	242
99	699.4	196
99	801.2	188
99	898.4	184
99	1001.8	192
Station BGH/Super5 57.55°S, 0.04°E		
110	28.8	34
110	48.2	38
110	88	27
110	123.2	177
110	150.6	191
110	174.2	279
110	198.7	282
110	250.9	276
110	274.9	294
110	298.6	231
110	348.9	312
110	400.2	280
110	449.7	269
110	499.1	263
110	549.5	311
110	600.4	347
110	700.3	333
110	800.6	305
110	901.1	297
110	1003.2	246