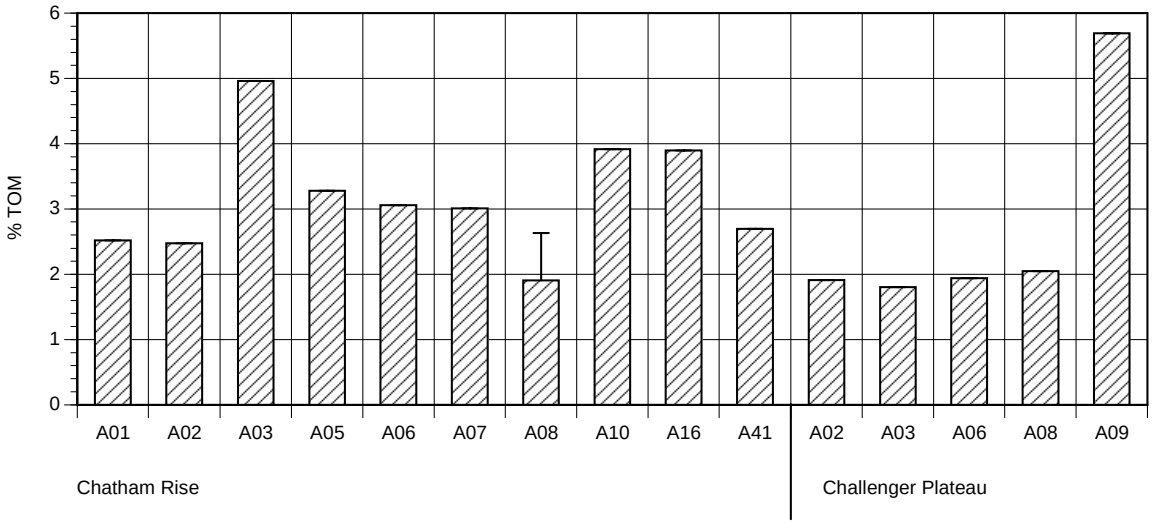

Figure 8: Summary of mean total organic matter (TOM) contents (in percent) for the "A" sites on Chatham Rise (left-hand side of figure, TAN0705) and Challenger Plateau (right-hand side of figure, TAN0707). Error bars are 1 standard deviation, *n* = 1–4.

3.1.4 Sediment pigments

Surficial sediments on the western crest and northwestern and southwestern-central flanks of the Chatham Rise (strata 1–3, 5, and 7) showed elevated levels of chlorophyll *a* (>0.05 µg per gram dry weight sediment), except for the top of Mernoo Bank (Figures 6 and 9). Maximum values were typically 0.08–0.10 µg per gram dry weight sediment, with highest values of about 1.4 observed at B24 (upper flank, southwest Chatham Rise, transect T8c, stratum 7) and an anomalous, isolated measurement at C23 (upper slope, east of the Chatham Islands, transect T7, stratum 2). There was an apparent decrease in chlorophyll content with depth on most transects, although data coverage is sparse, and in some instances upper slope values were lower than those at deeper mid-slope depths (e.g., northern end of T5 - compare B66 – 0.07 µg g^{-1} to B32 – 0.03 µg g^{-1}; Low Impact Fishing transect - D13–D18).

In comparison, chlorophyll *a* concentrations on the Challenger Plateau were, not surprisingly, given the oligotrophic status of the overlying waters, substantially lower than on the Chatham Rise, with values generally below 0.01 µg per gram dry weight sediment. Highest values were found on the inner ends of transect lines, T9 and T10, with values of 0.05–0.06 at A6 (on T9) and about 0.02 at B114 and C110 (on T10) (Figures 7 and 9).

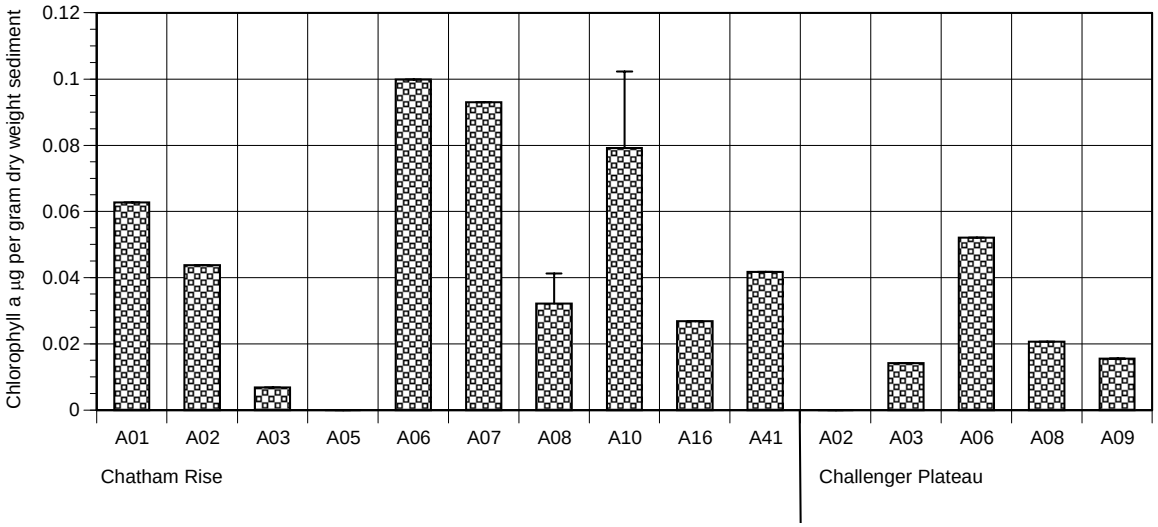

Figure 9: Summary of mean sediment chlorophyll *a* contents (in µg per gram dry weight sediment) for the "A" sites on Chatham Rise (left-hand side of figure, TAN0705) and Challenger Plateau (right-hand side of figure, TAN0707). Error bars are 1 standard deviation, *n* = 1–4.

Similar trends were observed for pigment degradation products (represented by total phaeopigments), with values of over 5 µg per gram dry weight sediment found on the western crest, northwestern, and southwestern-central flanks and on the central crest of the Chatham Rise (Figures 6 and 10). On the Challenger Plateau, phaeopigment concentrations ranged from 0.1 to about 3.0 µg per gram dry weight sediment, with higher values found on the inner ends of transect lines, T9 and T10 (Figures 7 and 10).

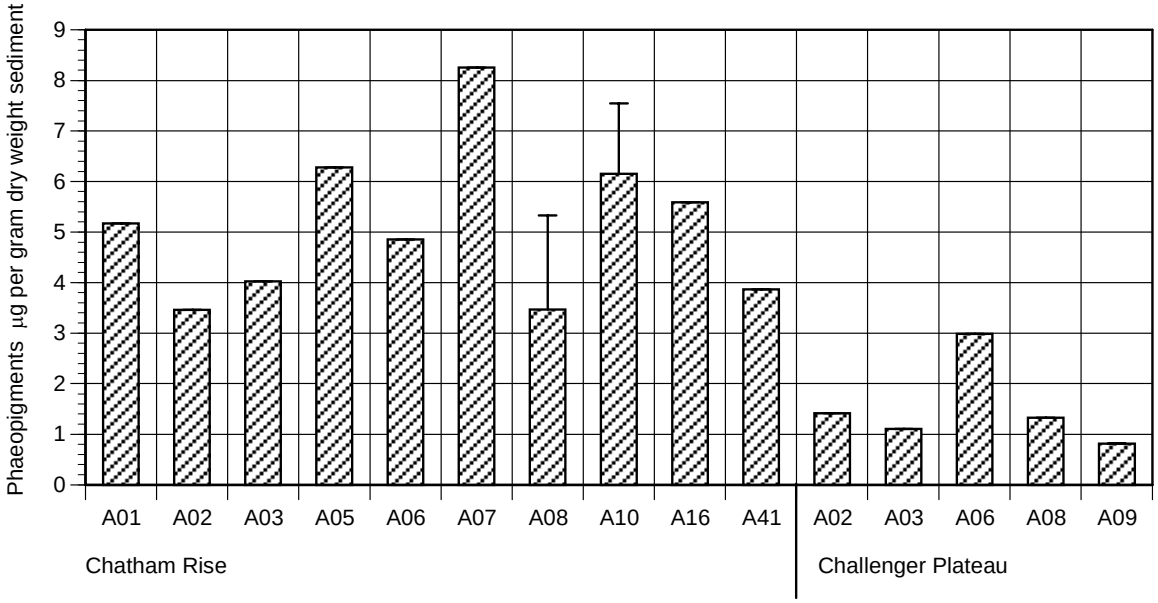

Figure 10: Summary of mean sediment phaeopigment contents (in µg per gram dry weight sediment) for the "A" sites on Chatham Rise (left-hand side of figure, TAN0705) and Challenger Plateau (right-hand side of figure, TAN0707). Error bars are 1 standard deviation, *n* = 1–4.

3.1.5 Sediment Community Oxygen Consumption (SCOC)

SCOC values are presented here as mean values (± 1 standard deviation, in µmol O_2 m^{-2} h^{-1}). Highest values on the Chatham Rise were found on the northwestern and crestal parts of the rise, with the highest average measurements at the shallower sites at about 500 m water depth in strata 6 (A6 – 274±18 µmol O_2 m^{-2} h^{-1}), 2 (A10 – 262±16) and 1 (A1 – 273±73) (Figure 11). The lowest value was found at the shallowest site (A2 – 80±46), but the integrity of these samples may have been compromised by the rough weather encountered during the core incubation period. With the exception of A5, deeper sites tended to have lower SCOC values (i.e., A3, A8 and A41 – 108±12, 141±48 and 194±28, respectively) (Figures 11 and 20).

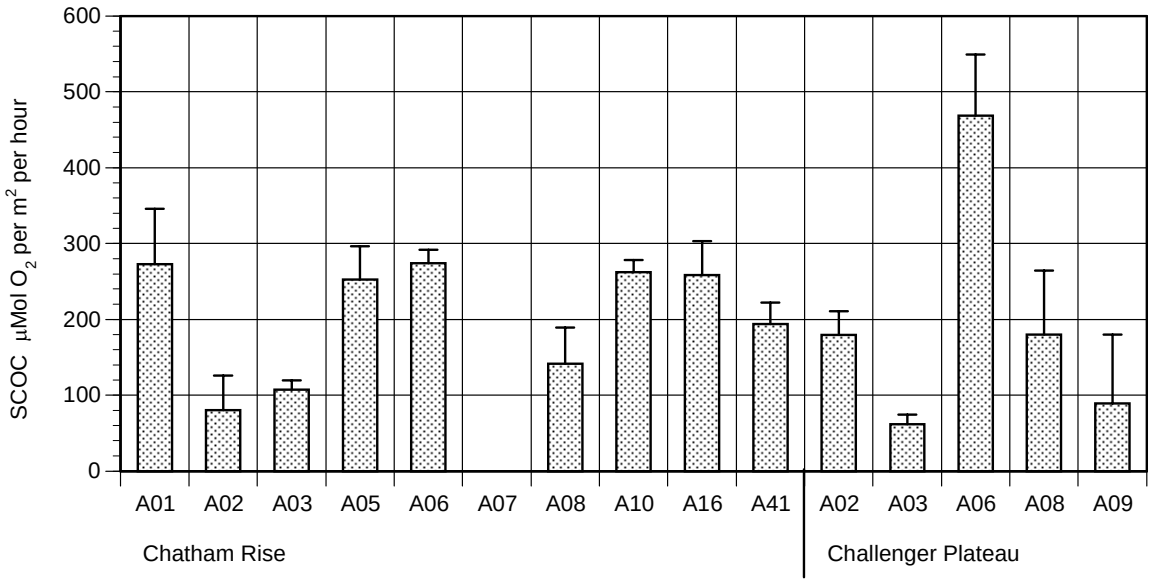

Figure 11: Summary of mean sediment community oxygen consumption (SCOC) (in µmol O_2 m^{-2} h^{-1}) for the 'A' sites on Chatham Rise (left-hand side of figure, TAN0705) and Challenger Plateau (right-hand side of figure, TAN0707). Error bars are 1 standard deviation, *n* = 3–4.

Mean SCOC measurements on the Challenger Plateau were typically lower than those on the Chatham Rise, ranging from 60 µmol O_2 m^{-2} h^{-1} at A3 (northwestern T10) to about 180 µmol O_2 m^{-2} h^{-1} at A2 (crest) and A8 (southeastern T11) (Figure 11). The highest SCOC value from either the rise or the plateau study areas, however, was on the Taranaki slope at A6 where the SCOC was estimated to be 470±80 µmol O_2 m^{-2} h^{-1} (Figure 11).

3.2 Bacterial biomass estimation

The bacterial numbers, estimated across all the sites, ranged from 2.12 x 10^8 cells per gram dry weight sediment at site TAN0705 A16 to 4.32 x 10^9 cells per gram dry weight sediment at site TAN0707 A03 (Figures 12–14, Table 2). There was no difference between the two sampling areas in terms of bacterial numbers. Interestingly, the highest cell numbers from both surveys were recorded on the Challenger Plateau at sites A03 and A06. Site A03 (1217 m water depth) is the most northwestern site in the sampling area and site A06 (266 m) is the furthest east site on the Taranaki continental slope (See Figure 1). The highest cell numbers on the Chatham Rise were obtained from sites A02 (644 m) and A10 (478 m); 1.10 x10^9 and 1.32 x 10^9 cells per gram dry weight sediment, respectively (Figures 12 and 14, Table 2). The highest cell numbers were obtained from site A10 located in the southwestern corner of the sampling area (See Figure 1). A previous study had estimated the bacterial numbers on the southern slope of the Chatham Rise on a transect between 41° S and 47° S along 178º 30' E, to be 2.9 x 10^9 cells per gram dry weight sediment at the northern end of the transect, decreasing to 1.2 x 10^9 cells per gram dry weight sediment at the southern end (Nodder et al. 2007).

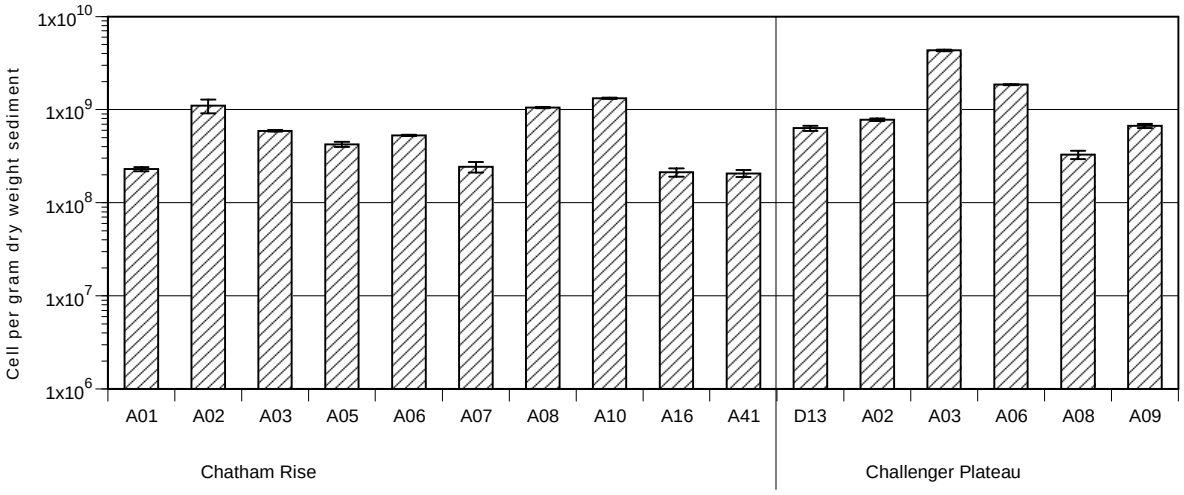

Figure 12: Average bacterial numbers (cells per gram dry weight) at each site across the Chatham Rise (TAN0705) and the Challenger Plateau (TAN0707) (error bars are equal to 1 standard error).

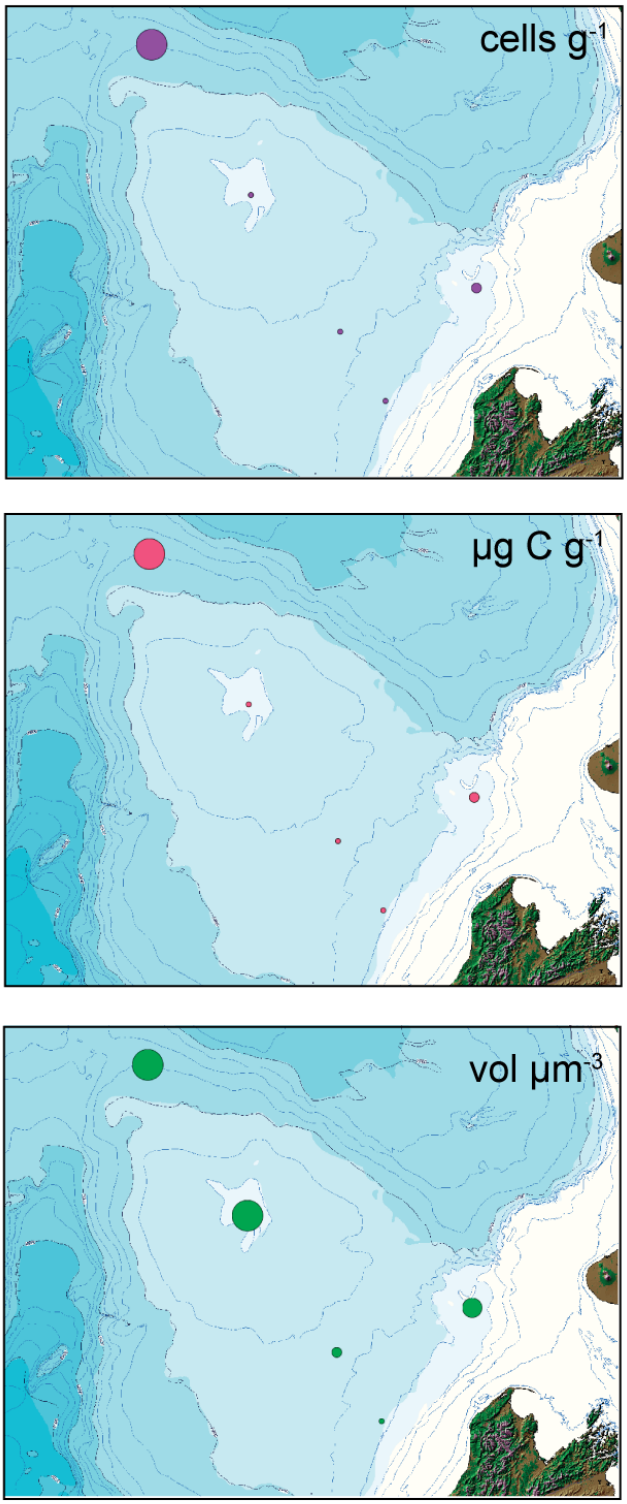

Figure 13: Abundance, biomass, and volume of bacteria: Challenger Plateau. Cells per gram of sediment (top); µg carbon per g of sediment (calculated using cell numbers) (middle); and volume of bacterial cells per µm^3 of sediment (bottom). Symbol scale same as for Figure 3.

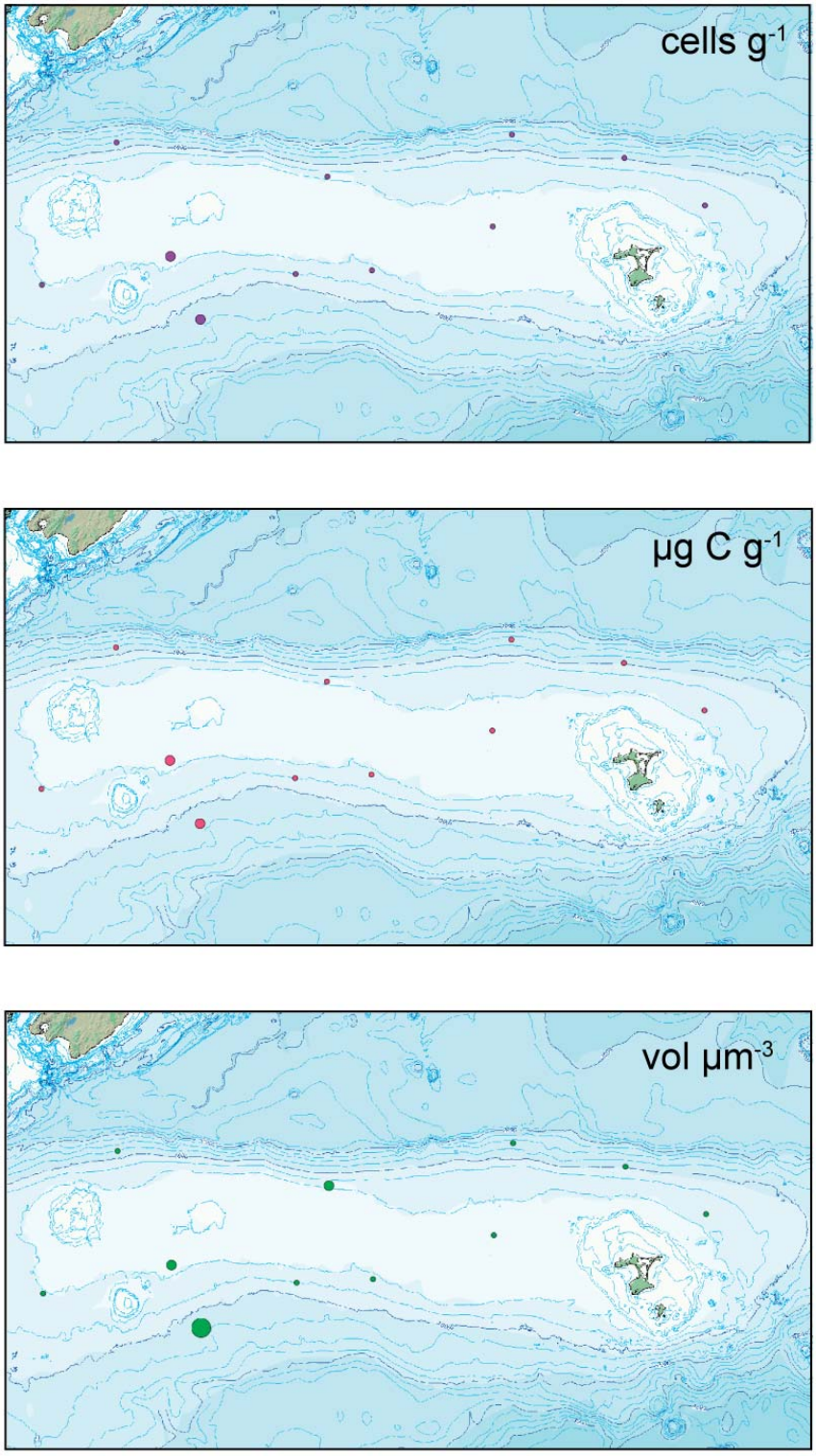

Figure 14: Abundance, biomass, and volume of bacteria: Chatham Rise. Cells per gram of sediment (top); µg carbon per g of sediment (calculated using cell numbers) (middle); and volume of bacterial cells per μm^3 of sediment (bottom). Symbol scale same as for Figure 3.

Table 2: Averages for bacterial cell numbers, µg carbon (C) calculated using cell numbers, average cell size (biovolume) and µg carbon calculated using biovolume for each site across the Chatham Rise (TAN0705) and the Challenger Plateau (TAN0707)

Voyage	Site	Average number of cells per gram dry weight sediment (SE)	µg C per gram dry weight sediment (SE)*	Average biovolume of bacterial cell μm^3 (SE)	µg C per gram dry weight sediment (SE)**
TAN0705	A01	2.30×10^8 ($\pm 1.27 \times 10^7$)	4.56 (±0.25)	0.39 (±0.022)	11.66 (±0.65)
	A02	1.10×10^9 ($\pm 1.83 \times 10^8$)	21.76 (±3.62)	0.52 (±0.015)	74.88 (±2.21)
	A03	5.91×10^8 ($\pm 9.66 \times 10^6$)	11.70 (±0.19)	0.48 (±0.012)	36.58 (±0.94)
	A05	4.24×10^8 ($\pm 2.65 \times 10^7$)	8.40 (±0.52)	0.43 (±0.019)	23.45 (±1.02)
	A06	5.28×10^8 ($\pm 9.23 \times 10^6$)	10.45 (±0.18)	0.73 (±0.018)	50.00 (±1.26)
	A07	2.43×10^8 ($\pm 3.19 \times 10^7$)	4.82 (±0.63)	0.49 (±0.032)	15.43 (±1.01)
	A08	1.05×10^9 ($\pm 1.44 \times 10^7$)	20.75 (±0.29)	1.15 (±0.021)	156.74 (±2.88)
	A10	1.32×10^9 ($\pm 2.31 \times 10^7$)	26.11 (±0.46)	0.75 (±0.021)	128.62 (±3.54)
	A16	2.12×10^8 ($\pm 2.11 \times 10^7$)	4.19 (±0.42)	0.44 (±0.025)	12.14 (±0.70)
	A41	2.06×10^8 ($\pm 1.75 \times 10^7$)	4.07 (±0.35)	0.47 (±0.023)	12.50 (±0.63)
	D13	6.30×10^8 (±4.08 X 107)	12.48 (±0.81)	0.48 (±0.018)	39.18 (±1.46)
TAN0707	A02	7.79×10^8 ($\pm 2.18 \times 10^7$)	15.42 (±0.43)	1.42 (±0.029)	143.42 (±2.93)
	A03	4.32×10^9 ($\pm 8.58 \times 10^7$)	85.57 (±1.70)	1.44 (±0.021)	808.9 (±12.05)
	A06	1.86×10^9 ($\pm 2.30 \times 10^7$)	36.86 (±0.46)	1.06 (±0.020)	256.32 (±4.94)
	A08	3.28×10^8 ($\pm 3.31 \times 10^7$)	6.49 (±0.65)	0.42 (±0.023)	17.99 (±0.97)
	A09	6.69×10^8 ($\pm 3.62 \times 10^7$)	13.24 (±0.72)	0.76 (±0.023)	66.07 (±2.03)

*calculated using cell numbers and 19.8 fg C per cell

**calculated using biovolmes and 1.3×10^{-13} g C per μm^3

The bacterial biomass was estimated at the sites using two conversion factors. The first conversion factor uses only the cell numbers to estimate the amount of carbon, and does not take account of the bacterial cell sizes at each site. Using the first method, the amount of bacterial carbon at the sites ranged between 4.07 and 26.11 µg carbon (C) per dry weight sediment on the Chatham Rise and 6.49 and 85.57 µg C per dry weight sediment on the Challenger Plateau (Table 2, Figures 13 and 14). There was no difference between the two sampling areas, and the maximum amount of carbon estimated was on the Challenger Plateau at site TAN0707 A03 (Table 2). The biovolume of the bacterial cells at each site was calculated to give an estimate of the size of the bacteria at each site. The biovolume of the bacteria ranged between 0.39 and 1.44 μm^3 across all sites (Table 2). The biovolume estimates were converted to µg C per gram dry weight sediment (Table 2). The amount of carbon at the sites using

this conversion factor ranged between 11.66 and 808.90 µg C per gram dry weight sediment, which is 2.5 to 9.5 times more than the value estimate using just cell numbers (Table 2). Using the biovolume is potentially a more accurate method for estimating the amount of carbon at each site as it takes into account the cell size. Previous studies (Nodder et al. 2003, 2007) have not taken the biovolume into account when estimating carbon, so the estimates obtained in this study can not be compared with them.

3.3 Exo-enzyme activity

Exo-enzyme activities measured at each site are indicative of the processes taking place in the sediments. Five different enzymes were measured: proteases (breakdown of protein), lipases (breakdown of lipids), chitinases (breakdown of chitin), cellulases (breakdown of cellulose), and phosphatases (involved in inorganic phosphate recycling). Three cores from each site were analysed in triplicate and averages for the sites were calculated. At two sites on the Chatham Rise, TAN0705 A16 and A41, the variation between the cores was substantial, resulting in large standard errors (Figures 15 and 16). Chitinase and cellulose activity were highest at Chatham Rise sites TAN0705 A01, A16 and A41 (Figures 15, 16, and 20). Phosphatase activity (less than 1.9 µM per minute per microgram C) was also high at these sites and at Chatham Rise TAN0705 A08. Very little or no chitinase, cellulose, or phosphatase activity was detected in the Challenger Plateau samples (Figures 15, 16, 17, and 19). Protease activity was detected at five sites on the Chatham Rise (A01, A05, A07, A16, and A41) and two sites (A08 and A09) on the Challenger Plateau (Figures 15, 16, 17, and 18). Lipase activity was low at all sites, with only one site on the Challenger Plateau, TAN0707 A09, and one site on the Chatham Rise, TAN0705 A01, showing any activity. The enzyme data indicates that, although high cell numbers and therefore carbon were detected on the Challenger Plateau, it does not appear that these bacteria are active as very little exo-enzyme activity was detected compared to the sites on the Chatham Rise, which had relatively few bacteria, but relatively high activity.

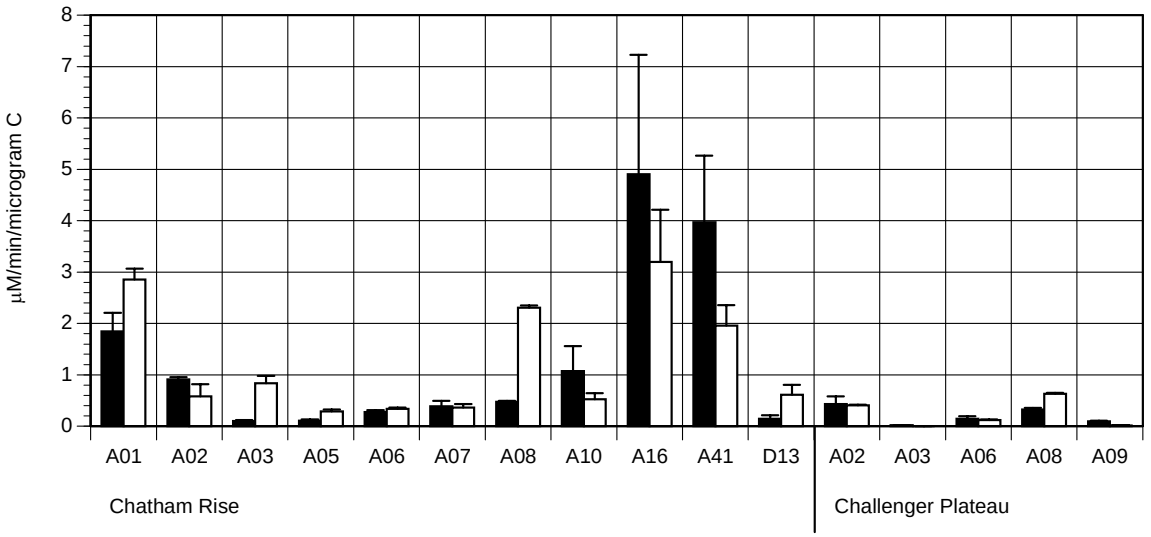

Figure 15: Average exo-enzyme activity at each station across the Chatham Rise (TAN0705) and the Challenger Plateau (TAN0707), chitinase (■) and phosphatase (□) in µM per minute per microgram carbon (error bars are equal to one standard error).

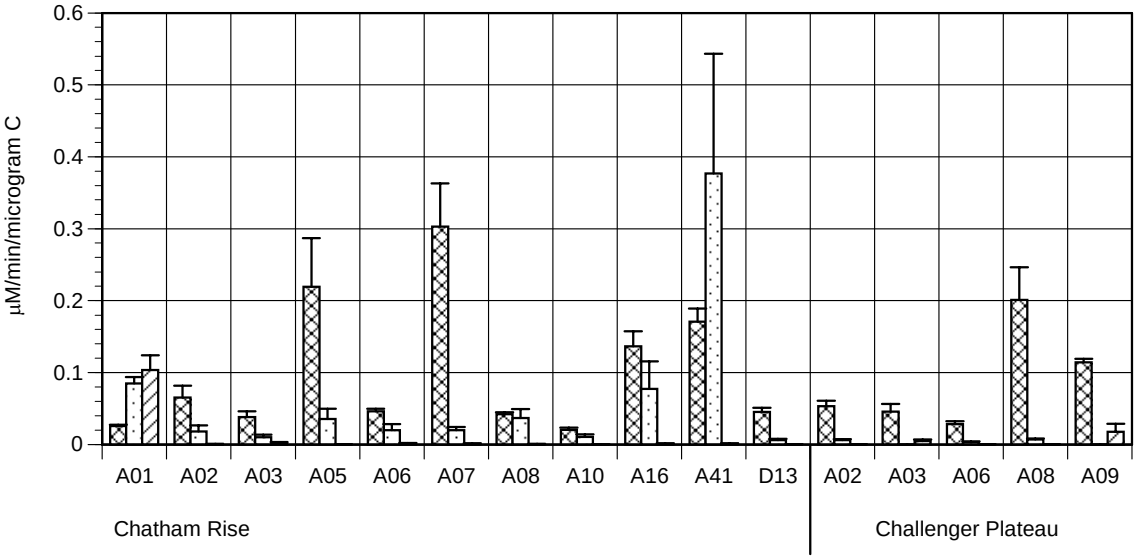

Figure 16: Average exo-enzyme activity at each station across the Chatham Rise (TAN0705) and the Challenger Plateau (TAN0707), protease (⊠), cellulase (⊡) and lipase (▨) in µM per minute per microgram carbon (error bars are equal to one standard error).

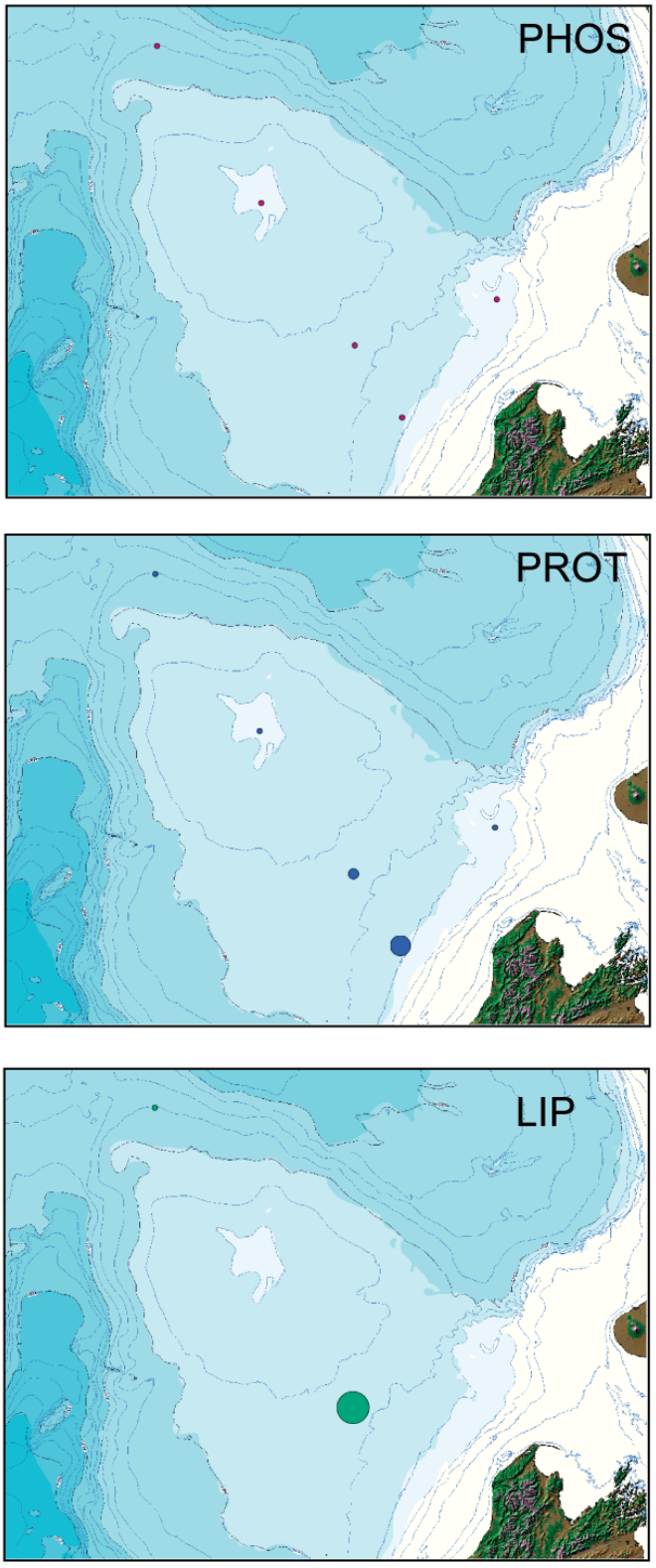

Figure 17: Relative bacterial enzyme activity in µM per minute per microgram carbon: Challenger Plateau. PHOS, phosphatase (top); PROT, protease (middle); LIP, lipase (bottom). Symbol scale same as for Figure 3.

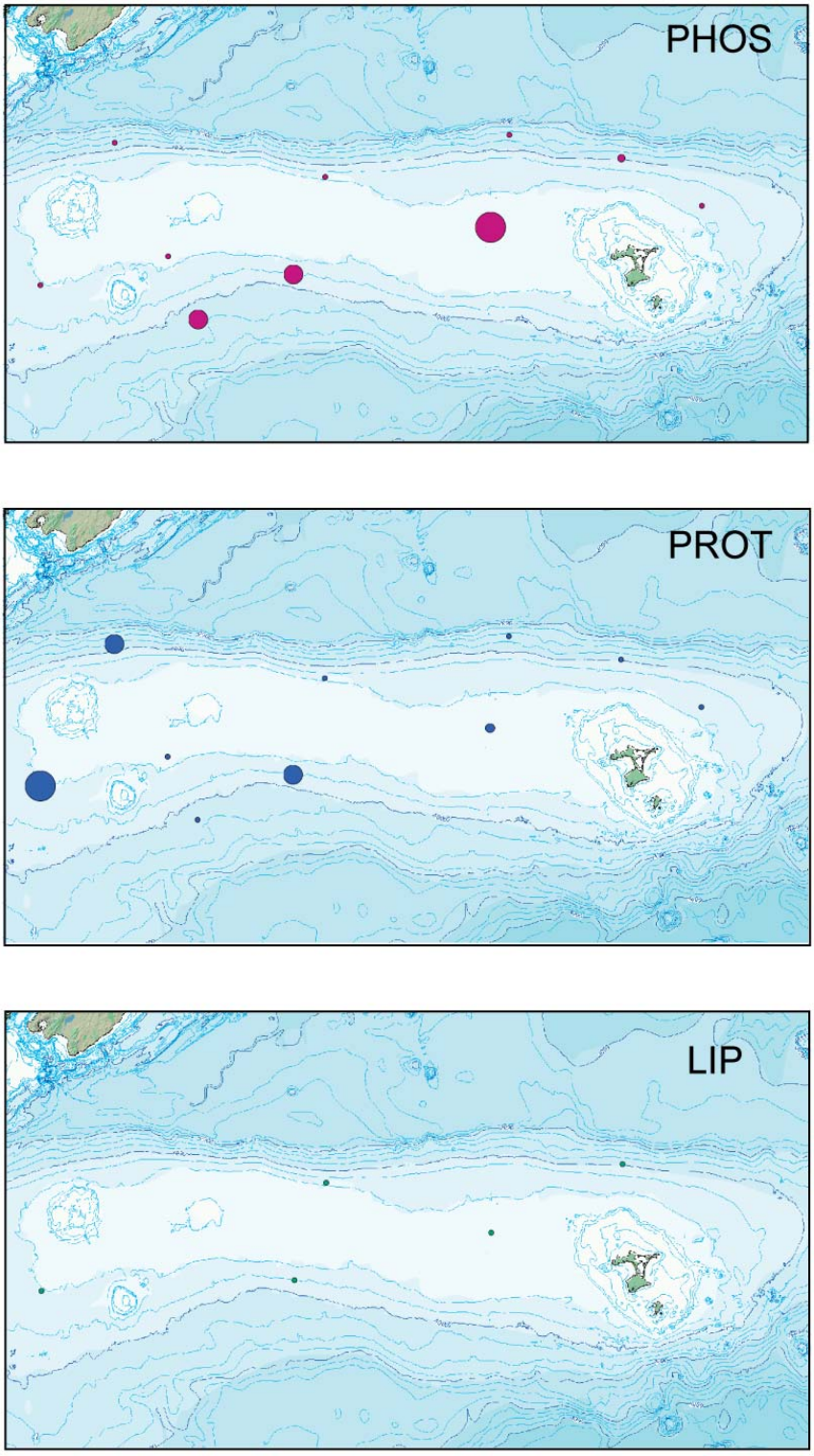

Figure 18: Relative bacterial enzyme activity in µM per minute per microgram carbon: Chatham Rise. PHOS, phosphatase (top); PROT, protease (middle); LIP, lipase (bottom). Symbol scale same as for Figure 3.

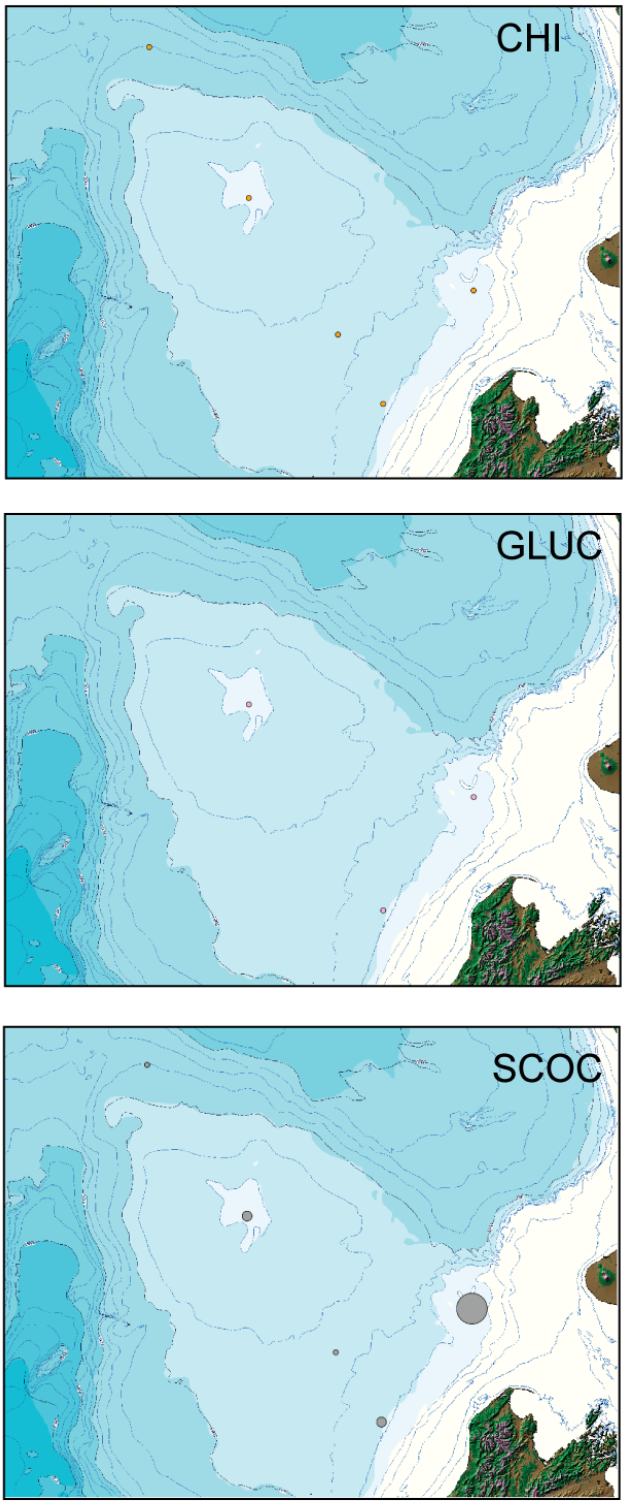

Figure 19: Relative bacterial enzyme activity in µM per minute per microgram carbon and sediment respiration in µmol O_2 m^{-2} h^{-1}: Challenger Plateau. CHI, chitinase (top); GLUC, cellulose (middle); SCOC, total sediment respiration (bottom). Symbol scale same as for Figure 3.

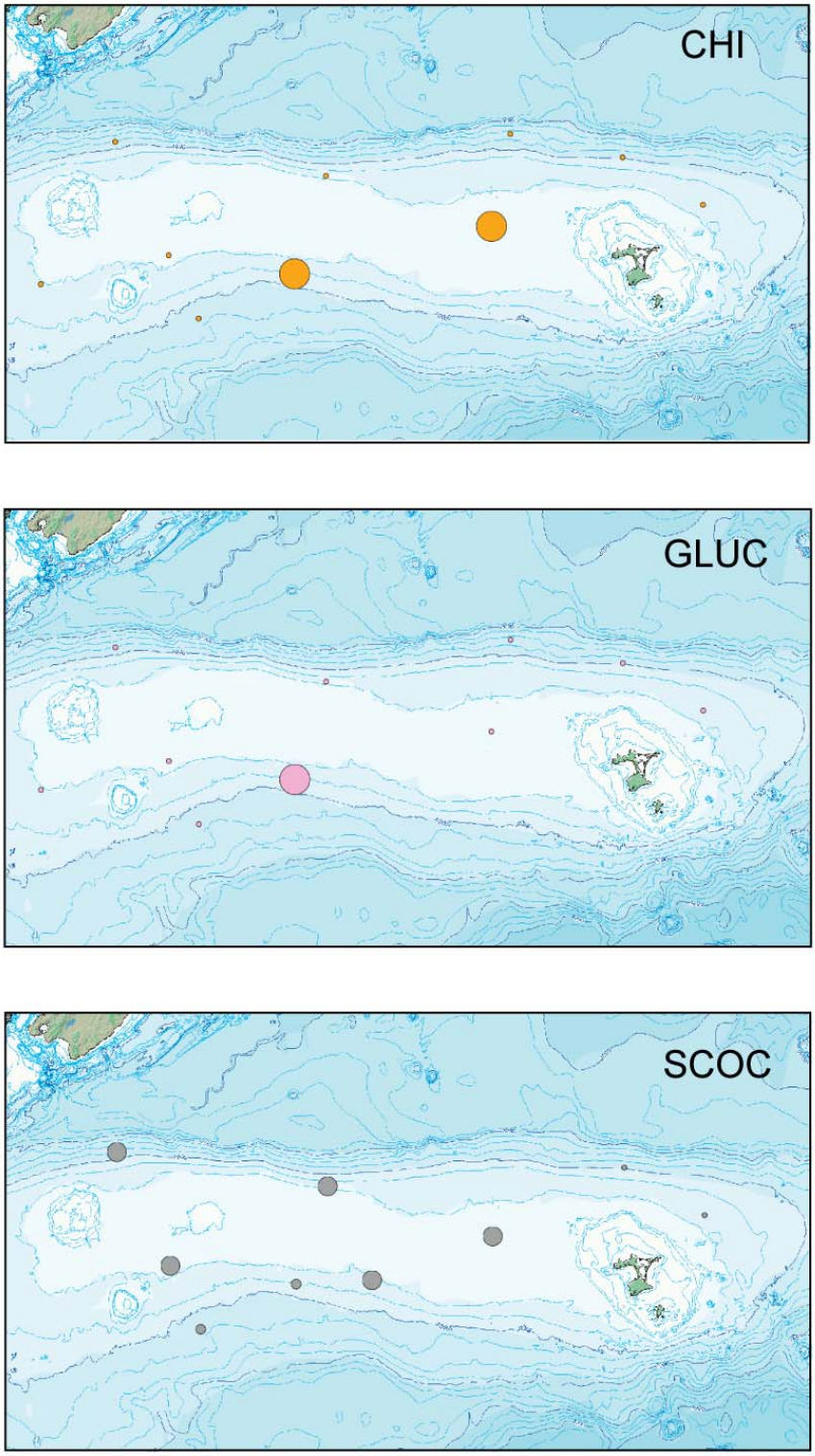

Figure 20: Relative bacterial enzyme activity in µM per minute per microgram carbon and sediment respiration in µmol O_2 m^{-2} h^{-1}: Chatham Rise. CHI, chitinase (top); GLUC, cellulase (middle); SCOC, total sediment respiration (bottom). Symbol scale same as for Figure 3.

4. ACKNOWLEDGMENTS

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6. APPENDIX

Table A1: **Grain-size distributions and organic content of sediments – all sites. Grain-size values are given as percentage of total sample in each size class. TOM (total organic matter) and calcium carbonate ($CaCO_3$) as percentages of total sample weight; chlorphyll a (Chla) and phaeopigments (Phaeo) as µg per g dry weight sediment. CM, multicorer; SEL, epibenthic sled; TB, beam trawl; CB, box corer. All multicorer values are from surficial (0-0.5 or 0-1 cm) samples, except for grain-size values, which are averaged over the top 0-5 cm.**

					Grain size (µm)											
Voyage	Site	Latitude (-ve = °S)	Longitude (+ve = °E, -ve = °W)	Gear	>500	250-500	125-250	63-125	Sand (>63)	Mud (<63)	Silt (4-63)	Clay (<4)	TOM	$CaCO_3$	Chla	Phaeo
tan0705	A1	-43.979	179.633	CM	0.12	0.33	1.50	8.91	12.72	87.30	72.11	17.02	2.521	19.500	0.063	5.170
tan0705	A1	-43.979	179.633	SEL	0.06	0.26	2.37	10.25	13.00	87.06	71.82	15.24	2.787	20.100	0.101	4.267
tan0705	A10	-43.827	176.704	SEL	0.09	0.68	4.48	12.01	15.30	84.75	66.46	16.31	3.235	13.050	0.081	4.036
tan0705	A10	-43.827	176.704	CM	0.28	0.68	3.39	10.80	14.27	85.82	69.78	14.09	3.915	14.650	0.079	6.155
tan0705	A16	-43.516	-178.617	CM	0.24	2.30	23.65	34.94	55.15	44.91	30.61	8.19	3.896	60.900	0.027	5.589
tan0705	A2	-43.293	-175.545	CM	0.19	8.00	15.96	13.65	36.23	63.82	41.17	20.74	2.475	23.000	0.044	3.460
tan0705	A3	-42.786	-176.715	CM	0.59	19.11	23.44	14.13	62.66	37.48			4.959	61.600	0.007	4.026
tan0705	A4	-44.562	-178.483	SEL	43.35	13.46	27.23	12.83	75.10	11.78	33.66	9.38	3.656	25.350	0.016	1.890
tan0705	A41	-44.017	178.519	CM	0.27	1.46	24.74	20.33	54.26	45.79	44.81	8.28	2.697	28.829	0.042	3.861
tan0705	A5	-42.622	175.926	CM	0.21	0.79	1.55	3.71	6.13	93.92	51.24	42.43	3.279	13.050	0.000	6.280
tan0705	A5	-42.622	175.926	SEL	1.93	8.07	12.05	6.69	30.67	71.26	35.13	36.13	3.830	12.600	0.174	7.092
tan0705	A6	-42.990	178.986	CM	0.19	3.63	34.41	31.57	55.88	44.17			3.057	49.800	0.100	4.856
tan0705	A6	-42.990	178.986	SEL	0.07	1.96	20.92	29.80	50.66	49.38	36.20	11.06	2.777	50.000	0.061	3.251
tan0705	A7	-44.130	174.846	SEL	0.27	0.47	2.32	8.95	12.27	88.00	76.82	11.18	2.365	10.400	0.048	4.437
tan0705	A7	-44.130	174.846	CM	0.41	0.34	1.45	12.16	10.29	89.83	71.96	13.50	3.010	9.650	0.093	8.255
tan0705	A7	-44.130	174.846	CB	3.00	0.23	0.93	7.41	14.57	88.43	78.35	10.08	2.622	10.200	0.069	6.952
tan0705	A8	-44.486	177.141	SEL	0.41	1.98	8.80	10.63	22.24	78.17	50.89	27.28	1.892	40.200	0.017	1.737
tan0705	A8	-44.486	177.141	CM	0.83	1.69	8.41	10.20	17.20	82.95	50.13	25.48	1.908	38.525	0.032	3.469
tan0705	B11	-44.212	-178.923	SEL	57.65	42.20	0.15	0.00	157.64	0.01					0.000	0.000
tan0705	B12	-43.131	177.166	SEL	0.53	11.19	48.73	15.45	76.43	24.10	19.74	4.36	1.843	50.600	0.094	5.293
tan0705	B14	-44.081	-177.971	SEL	0.65	1.48	9.03	16.25	28.06	72.59	60.98	11.61	1.911	37.750	0.066	4.716
tan0705	B15	-43.806	178.115	SEL	0.23	0.51	1.91	10.70	13.57	86.66	71.13	15.51	2.267	16.400	0.075	4.300
tan0705	B17	-44.103	-178.549	SEL	38.56	3.44	0.00	0.00	80.56						0.000	0.000
tan0705	B22	-44.000	-175.462	SEL	9.53	23.06	45.99	15.42	103.52	6.01			2.143	78.900	0.024	2.484

					Grain size (μm)											
Voyage	Site	Latitude	Longitude	Gear	>500	250-500	125-250	63-125	Sand (>63)	Mud (<63)	Silt (4-63)	Clay (<4)	TOM	$CaCO_3$	Chla	Phaeo
tan0705	B23	-43.847	-177.308	SEL	0.72	2.43	49.33	40.47	93.68	7.04	3.07	3.97	1.732	76.400	0.017	4.336
tan0705	B24	-43.844	176.553	SEL	0.10	0.27	1.86	14.22	16.56	83.54	66.08	17.46	2.906	15.400	0.141	5.553
tan0705	B25	-43.796	175.314	SEL	0.23	4.44	30.18	28.79	63.87	36.36	27.71	8.65	2.570	8.700	0.061	4.019
tan0705	B25	-43.796	175.314	SEL	0.24	1.52	4.89	9.11	15.99	84.25	53.50	30.75	1.812	16.800	0.110	4.134
tan0705	B31	-42.747	-176.083	SEL	83.08	0.67	0.29	0.19	167.31	15.77				32.900	0.000	0.000
tan0705	B32	-42.693	-178.742	SEL	0.30	4.79	20.55	25.78	51.73	48.58	32.93	15.64	3.819	62.300	0.033	2.564
tan0705	B33	-42.645	177.861	SEL	0.44	1.16	8.67	9.79	20.51	79.94	39.25	40.69	2.667	29.700	0.032	2.591
tan0705	B36	-42.912	-174.467	SEL	0.30	18.66	29.09	18.82	67.17	33.13	15.67	17.46	2.326	71.900	0.028	1.708
tan0705	B37	-43.071	-174.934	SEL	0.33	9.78	27.37	29.82	67.63	32.70	22.76	9.94	2.542	67.900	0.011	1.016
tan0705	B41	-44.373	-178.495	SEL	1.13	5.64	49.23	20.15	77.28	23.85	16.07	7.78	2.147	25.200	0.010	1.538
tan0705	B43	-43.964	178.528	SEL	0.17	1.12	22.54	12.53	36.53	63.64	50.21	13.43	2.374	19.500	0.041	2.307
tan0705	B51	-42.655	175.503	SEL	0.01	0.21	0.34	1.51	2.08	97.93	47.79	50.14	2.347	11.700	0.167	7.443
tan0705	B52	-42.949	174.481	SEL	11.58	10.99	29.68	15.42	79.26	32.32	18.13	14.19	3.891	9.700	0.000	0.000
tan0705	B61	-43.269	175.253	SEL	48.18	16.78	30.13	2.96	146.23	1.95			1.741	83.800	0.026	0.768
tan0705	B62	-43.266	178.516	SEL	1.30	4.44	23.77	22.90	53.70	47.60	38.94	8.66	4.545	29.900	0.064	4.474
tan0705	B63	-43.002	-177.598	SEL	0.36	12.19	48.38	17.91	79.20	21.16	16.74	4.42	1.860	70.200	0.017	2.688
tan0705	B64	-43.105	-179.715	SEL	0.35	5.35	30.66	25.24	61.94	38.40	32.64	5.76		59.500	0.007	2.069
tan0705	B65	-43.035	175.236	SEL	0.80	6.45	46.34	24.76	79.16	21.65	13.76	7.88	2.882	74.900	0.044	4.607
tan0705	B66	-43.165	-179.092	SEL	0.36	2.80	18.07	24.14	45.72	54.64	34.37	20.27	2.404	66.400	0.007	2.244
tan0705	B71	-44.276	175.433	SEL	0.32	0.27	0.71	4.51	6.13	94.19	55.57	38.62	5.405	9.300	0.044	2.199
tan0705	B72	-44.612	175.417	SEL	0.41	4.25	11.29	23.01	39.38	61.03	44.73	16.30	2.256	33.000	0.020	1.339
tan0705	B74	-44.184	175.359	SEL	0.14	0.20	0.71	9.32	10.52	89.62	65.87	23.75	2.273	8.700	0.074	3.139
tan0705	B75	-44.006	177.150	SEL	0.06	0.24	5.40	13.35	19.12	80.95	63.78	17.16	2.073	20.000	0.065	2.793
tan0705	B81	-44.248	177.149	SEL	1.74	4.87	11.90	9.25	29.51	72.24	49.05	23.19	2.446	29.000	0.016	1.991
tan0705	B82	-44.274	178.528	SEL	2.11	38.43	31.66	5.90	80.20	21.90			2.651	25.200	0.014	2.012
tan0705	B83	-45.054	175.476	SEL	0.36	9.42	11.58	13.03	34.90	65.23	42.46	23.37	2.422	37.950	0.016	1.674
tan0705	C21	-43.515	-176.175	SEL	1.36	2.16	31.48	50.68	87.05	14.32	11.70	2.62	3.343	73.700	0.000	6.567
tan0705	C23	-43.788	-175.253	SEL	44.00	37.23	14.08	0.85	140.16	3.84			1.754	85.500	0.137	0.796
tan0705	C31	-42.780	-175.429	SEL	0.35	14.65	37.19	20.18	72.73	27.62	18.04	9.58	1.563	70.600	0.006	1.331

					Grain size (μm)											
Voyage	Site	Latitude	Longitude	Gear	>500	250-500	125-250	63-125	Sand (>63)	Mud (<63)	Silt (4-63)	Clay (<4)	TOM	$CaCO_3$	Chla	Phaeo
tan0705	C52	-42.587	176.376	SEL	0.15	0.94	5.64	8.87	15.75	84.40	48.87	35.53	2.397	21.500	0.108	5.147
tan0705	C61	-43.171	174.462	SEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.094	4.042
tan0705	C62	-42.979	177.168	SEL	0.48	6.07	24.78	31.68	63.48	37.00	30.27	6.73	2.954	52.100	0.075	5.652
tan0705	C63	-43.160	-178.308	SEL	0.16	8.94	42.32	26.05	77.62	22.54	16.25	6.29	2.239	69.900	0.032	2.986
tan0705	D15	-42.612	-178.339	CM	0.19	7.59	28.39	31.61	67.98	32.21	18.78	13.43	2.778	59.900	0.034	2.605
tan0705	D16	-42.707	-178.330	TB	1.28	74.09	14.32	3.23	94.20	7.08			2.290	77.500	0.002	0.252
tan0705	D16	-42.707	-178.330	CM	0.59	64.77	27.43	1.88	95.26	5.33			2.110	71.900	0.004	0.453
tan0705	D17	-42.724	-178.347	TB	0.92	53.66	37.49	2.72	95.71	5.21			1.961	52.000	0.003	0.199
tan0705	D18	-42.762	-178.349	CM	0.16	3.93	53.51	18.92	76.69	23.48	13.36	10.12	3.425	72.400	0.034	3.015
tan0705	D21	-42.713	-177.213	CM	0.75	64.23	26.42	2.20	94.36	6.39			2.020	76.700	0.008	1.424
tan0705	D22	-42.782	-177.210	CM	0.87	45.36	43.93	3.23	94.27	6.60			0.985	76.700	0.004	0.647
tan0705	D23	-42.808	-177.228	CM	0.31	29.30	60.30	4.26	94.48	5.84			2.463	79.600	0.005	0.946
tan0705	D24	-42.847	-177.225	CM	0.15	19.50	67.32	5.80	92.92	7.23			2.151	77.700	0.008	1.195
tan0705	D28	-43.727	174.456	SEL	2.39	0.28	9.88	32.71	47.65	54.74	44.45	10.29	1.799	8.300	0.108	4.235
tan0705	D5	-44.575	-176.079	SEL	28.33	20.91	15.73	11.64	104.95	23.38	17.72	5.66	2.394	65.000	0.044	3.602
tan0705	D7	-43.455	-174.944	SEL	0.12	3.11	5.61	7.43	16.39	83.73	49.23	34.50	3.828	66.600	0.014	0.749
tan0707	A9	-40.126	170.222	CM	0.20	4.76	6.39	6.57	16.71	83.33			5.691	68.750	0.015	0.817
tan0707	A9	-40.126	170.222	SEL	0.33	4.53	6.24	6.70	19.02	81.15	32.67	49.61	2.085	71.150	0.004	0.258
tan0707	A9	-40.126	170.222	TB	0.32	4.53	5.94	6.36	17.45	82.86	30.99	52.95	2.679	68.600	0.006	0.333
tan0707	A2	-38.618	168.943	CM	2.96	20.98	23.62	17.09	65.12	35.48	16.83	18.38	1.911	89.500	0.000	1.418
tan0707	A2	-38.618	168.943	SEL	2.42	17.23	24.70	21.90	69.01	32.20	16.52	16.98	1.916	92.300	0.000	0.990
tan0707	A3	-36.921	167.526	CM	1.02	23.43	23.16	19.20	58.46	41.76	13.71	19.10	1.802	8.000	0.014	1.100
tan0707	A3	-36.921	167.526	SEL	0.67	14.67	18.26	20.82	53.63	46.71	17.51	28.08	3.186	84.650	0.005	0.250
tan0707	A6	-39.646	172.153	CM	0.18				9.85	90.15			1.935	27.400	0.052	2.987
tan0707	A6	-39.646	172.153	SEL	1.76	2.26	3.21	4.62	30.19	71.68	49.61	39.94	2.550	36.850	0.015	0.939
tan0707	A8	-40.881	170.860	CM	0.29	10.97	15.12	11.40	32.47	67.60			2.048	55.950	0.021	1.323
tan0707	A8	-40.881	170.860	SEL	0.30	8.54	15.69	11.14	35.29	64.86	32.38	31.99	2.182	59.850	0.007	0.333
tan0707	B100	-39.091	169.341	SEL									0.935	85.100	0.000	0.000
tan0707	B101	-38.799	168.695	SEL										67.000	0.000	0.000

					Grain size (μm)											
Voyage	Site	Latitude	Longitude	Gear	>500	250-500	125-250	63-125	Sand (>63)	Mud (<63)	Silt (4-63)	Clay (<4)	TOM	$CaCO_3$	Chla	Phaeo
tan0707	B102	-37.176	167.733	SEL	0.54	13.14	16.65	19.91	50.78	49.76	19.11	30.65	2.158	83.600	0.006	0.306
tan0707	B103	-37.480	169.459	SEL	0.23	6.47	7.86	9.32	24.11	76.12	24.05	52.07	2.809	74.400	0.006	0.174
tan0707	B104	-39.641	168.189	SEL	0.00	0.00	0.00	0.00		0.00	0.00	0.00		89.850	0.000	0.000
tan0707	B105	-39.183	168.468	SEL	1.30	13.44	21.46	22.99	60.49	40.81	18.49	22.32	2.479	90.700	0.008	0.507
tan0707	B106	-39.783	168.033	SEL										77.700	0.000	0.000
tan0707	B107	-39.924	167.688	SEL	3.48	31.67	19.57	8.87	67.07	36.41	11.87	24.54	2.679	86.900	0.006	0.398
tan0707	B109	-39.637	171.627	SEL	0.19	2.89	3.27	5.58	12.12	88.07	72.83	15.24	1.379	19.300	0.013	0.718
tan0707	B110	-38.083	169.117	SEL	0.90	37.73	45.88	7.20	92.61	8.29				86.200	0.006	0.550
tan0707	B111	-37.876	168.313	SEL	1.72	51.31	34.53	4.98	94.26	7.46			1.709	87.700	0.010	0.871
tan0707	B113	-40.693	170.695	SEL	0.25	5.71	8.16	8.53	22.91	77.35	39.84	37.51	1.594	62.900	0.006	0.327
tan0707	B114	-41.057	171.040	SEL	1.08	14.61	33.26	29.82	79.86	21.23	14.30	6.92	1.471	47.200	0.022	1.041
tan0707	B115	-40.432	170.465	SEL	0.22	3.88	4.77	5.37	14.47	85.75	29.50	56.25	3.158	63.800	0.004	0.196
tan0707	C100	-39.546	169.715	SEL	1.14	17.30	24.55	19.00	60.15	40.15	18.86	19.08	2.016	90.000	0.006	0.334
tan0707	C101	-38.932	169.207	SEL									1.967	87.300	0.000	0.000
tan0707	C102	-38.387	168.740	SEL										82.400	0.000	0.000
tan0707	C104	-39.333	168.387	SEL	1.26	20.15	32.52	28.32	83.51	17.75	10.28	7.47	1.444	90.400	0.005	0.392
tan0707	C105	-40.065	167.322	SEL	0.75	10.61	11.59	8.95	32.64	68.10	16.55	51.08	1.504	87.600	0.004	0.239
tan0707	C106	-39.809	167.968	SEL										84.900	0.000	0.000
tan0707	C107	-39.646	171.977	SEL									1.639	23.000	0.000	0.000
tan0707	C108	-38.025	168.445	SEL	3.67	24.44	34.30	20.74	86.82	16.85	9.20	7.65	0.926	90.900	0.008	0.677
tan0707	C109	-38.233	169.022	SEL	2.50	19.33	35.95	12.65	72.93	29.56	13.92	15.64	1.869	93.400	0.003	0.495
tan0707	C110	-41.112	171.071	SEL	0.61	9.75	32.54	45.17	88.67	11.93					0.000	0.000
tan0707	C111	-40.971	170.942	SEL	0.34	9.83	12.53	10.99	34.04	66.30	33.22	33.08	3.468	55.000	0.019	0.776
tan0707	C112	-39.877	169.997	SEL	2.04	10.44	15.96	14.87	45.34	56.70	21.49	35.21	2.000	86.150	0.002	0.186
tan0707	C113	-38.378	168.938	SEL	1.80	28.47	38.59	21.19	91.85	9.95	5.34	4.61	2.479	90.400	0.000	0.608
tan0707	C114	-37.423	169.490	SEL	0.30	7.61	9.51	10.74	28.46	71.84	20.26	51.58	2.358	78.300	0.000	0.100
tan0707	C115	-37.351	167.882	SEL	0.93	36.89	34.16	10.59	83.51	17.43	6.64	10.79		85.200	0.005	0.359
tan0707	C116	-39.531	168.258	SEL										84.350	0.000	0.000
tan0707	C117	-39.641	172.372	CM	0.10	1.07	2.37	6.96	9.99	90.03	71.22	18.25	3.279	25.600	0.029	2.546

					Grain size (μm)											
Voyage	Site	Latitude	Longitude	Gear	>500	250-500	125-250	63-125	Sand (>63)	Mud (<63)	Silt (4-63)	Clay (<4)	TOM	$CaCO_3$	Chla	Phaeo
tan0707	C117	-39.641	172.372	SEL	0.39	2.12	4.11	9.68	16.70	83.70	46.70	37.00	4.469	25.700	0.019	1.281
tan0707	C118	-39.984	167.517	SEL	0.20	4.78	8.83	9.76	23.77	76.43	19.18	57.25	1.734	87.900	0.002	0.128
tan0707	C119	-37.754	168.216	SEL	0.39	25.27	35.27	9.43	70.74	29.65	11.00	18.64	1.215	86.700	0.008	0.366
tan0707	C120	-39.646	171.430	SEL	0.07	1.46	2.13	2.51	6.24	93.83	45.23	48.60	2.304	34.600	0.007	0.347
tan0707	D2	-37.581	169.385	SEL	0.28	3.70	3.54	3.40	11.20	89.08	49.88	39.20	2.139	84.700	0.000	0.768
tan0707	D6	-38.209	168.586	SEL										90.000	0.000	0.000