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GEOCHEMICAL DATA FOR THE BAY OF CHALEUR - MITE PROJECT # 1.2 (PHASE 1)

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INTRODUCTION

A multidisciplinary program under the Metals in the Environment (MITE) initiative of the Geological Survey of Canada is focussing on natural and anthropogenic metal budgets in the vicinity of Canadian smelters. A lead smelter at Belledune, N.B. on the shore of the Bay of Chaleur was selected to evaluate metal budgets in the vicinity of a smelter in a marine setting.

Natural and anthropogenic sources contribute sediment, carbon and metals to the sea floor in the Bay of Chaleur. It is necessary to evaluate anthropogenic and natural metal sources (e.g. local runoff, aqueous industrial and urban effluents, and atmospheric emissions) and to estimate sediment and metal depositional fluxes.

This report includes the geochemical data collected during Phase I of the Geological Survey of Canada "Metals in the Environment" initiative (MITE Project # 1.2).

FIELD OPERATIONS

A sediment sampling campaign was carried out from May 20-27, 1998 (cruise 98012) aboard the CCGS Navicula, collecting 37 gravity cores and 15 surface sediment samples from the study area (Figure 1, Table 1). The cores were returned to a temporary field laboratory set up at the Noranda Bulk Handling Facility at Belledune. Cores were subsampled within 24 hours into 7 dram polystyrene vials that had been drilled to produce 4 one mm diameter holes in the base and fitted with 25 mm diameter filter papers (Whatman 540). The vials were inserted into 50 mL centrifuge tubes and spun for 10 minutes in a desk-top centrifuge (1000 rpm; 15 cm radius) to recover a minimum 0.5 mL of pore water. The sediment subsamples were returned to the Geological Survey of Canada Atlantic (GSCA) laboratory in Nova Scotia for metal, carbon, water content, and particle size analyses. Pore water analyses were carried out at the field lab to determine dissolved salinity, ammonium, sulfate and silica concentrations.

FIELD LABORATORY METHODS

Pore water salinity was determined by diluting 0.1 mL of sample with 6.5 mL of Milli-Q deionized water and measuring the conductivity with an Orion model 125 conductivity meter. Analysing various dilutions of standard seawater produced a calibration line. Precision and accuracy of the method were estimated to be ± 0.2 ppt.

Dissolved ammonium was determined using a colourimetric method revised from Solarzano (1969). One mL of deionized water was placed in a 15 mL test tube, along with 100 μL of sample or standard. A 500 μL addition of phenol-ethanol solution (0.8 g phenol dissolved in 100 mL of ethanol) was made along with 500 μL of sodium nitroprusside solution (0.075 g of sodium nitroprusside in 50 mL of deionized water). Finally, 1 mL of oxidizing solution (1 mL of sodium hypochlorite, 0.75 g trisodium citrate and 0.04 g sodium hydroxide in 50 mL of deionized water) was added to each sample. The test tubes were shaken and left to stand at room temperature for 2 hours in order for the blue colour, indicative of ammonium content, to fully develop. The colour absorbance was measured at 640 nm with a Brinkmann PC900 colourimeter. A calibration curve was acquired by measuring the absorbance of various ammonium chloride solutions. Precision and accuracy were determined to be ± 0.2 mM.

Dissolved sulfate was measured in the pore water samples using a turbidimetric method. A 50 μL volume of sample or standard was placed in a sample cuvette. Barium chloride (50 μL of 300 mM solution) was added to precipitate the available sulfate. Four (4) mL of deionized water were added to dilute the sample. The turbidity of the resulting solution was measured using a Milton Roy Spectronic Mini-20 fitted with a turbidity attachment. A calibration curve was acquired by measuring the turbidity of various dilutions of standard IAPSO seawater and magnesium sulfate solutions. Precision and accuracy limits were estimated to be ± 2 mM.

Dissolved silica was measured in pore water by diluting 0.1 mL of sample with 5 mL of deionized water. A 1 mL portion of molybdate solution (stock solution: 4 g ammonium paramolybdate in 300 mL deionized water, 12 mL conc. hydrochloric acid and bulked to 500 mL with deionized water) was added and the mixture was allowed to stand for 15 minutes. A 1 mL portion of reducing solution, (made up of 50 mL of metol-sulfite solution, 30 mL of oxalic acid solution, 30 mL of 50% sulfuric acid and 40 mL deionized water) was added to the diluted sample solution. The metol-sulfite solution was prepared by dissolving 6 g of anhydrous sodium sulfite and 10 g of metol in 500 mL deionized water. Oxalic acid solutions were prepared by shaking 50 g of oxalic acid in 500 mL deionized water.

A silica molybdate colour was allowed to develop for one hour and absorbance was read at 812 nm using a Brinkmann PC900 colourimeter. A calibration curve

was acquired by measuring the absorbance of silica standard solutions. Precision and accuracy were determined to be ± 0.1 mM.

HOME-BASE LABORATORY METHODS

Wet sediment samples were shipped to the headquarters laboratory, where they were analyzed for water content, total/organic/inorganic carbon, particle size and metal concentrations. Total carbon (organic + inorganic) was determined in 0.5 g of dried sediment using a Leco WR-112 carbon analyzer. Organic carbon was determined with the same equipment after the inorganic carbon (carbonate) was released as CO_2 by treating the sample with 1 M hydrochloric acid. Precision and accuracy were estimated to be ± 0.03% based on replicate analyses of calibration standards.

Grain size analyses to determine silt and clay content were conducted on the sediment samples using a Coulter Counter fitted with 30 and 200 μm apertures. Relative precision was estimated to be ± 20% based on replicate analyses.

Metals were extracted from 1 g freeze-dried sediment samples using concentrated nitric acid at 60 °C overnight. Flame atomic absorption analyses were carried out using a Varian 250+ spectrometer for copper, zinc, nickel, chromium, manganese and iron. Flameless atomic absorption analyses were carried out using a Varian 975 spectrometer and a Varian HGA95 furnace for silver, cadmium and lead. Relative precision and accuracy limits, estimated from replicate analyses of standard reference materials, were determined to be ± 5% for copper, zinc, manganese, iron and lead and ± 10% for nickel, chromium, silver and cadmium.

Total mercury analyses were done by adding the following to a 300 mL glass stoppered bottle: 1 g of freeze-dried sediment, 0.1 g of potassium permanganate, 5 mL of conc. nitric acid, 5 mL conc. sulfuric acid, 5 mL of 5% potassium per sulfate solution. The mixture was heated in a water bath at 80 °C for 1.5 hours and cooled to room temperature. Hydroxylamine hydrochloride (10 mL of a 12% solution) was added, followed by 10 mL of 10% stannous chloride solution. A closed bubbler system was immediately attached and the volatilized mercury was passed through a Buck Scientific 400 A cold vapour mercury analyzer. A calibration line was produced by analyzing various dilutions of certified mercury standard solution. Relative precision and accuracy were estimated to be ± 10% based on analyses of standard reference materials. Detection limit for the method was 0.01 ppm.

RESULTS

Station locations are represented in Figure 1 and sampling details are listed in Table 1. Core length is given in centimetres; a value of 0 cm refers to no sample being collected and a value of 1 cm refers to a surface grab sample. Geochemical data for core and grab subsamples are included in Table 2. Column headings for Table 2 are defined as:

Cruise – cruise number
Stn – station number
Lab ID – individual lab identifier for sub-sample
Sed. Depth – downcore depth of the sub-sample (cm; water samples overlying some cores are labelled as –5)
Water Content – water content of wet sediment (% wet weight basis)
Total Carb. – total carbon (% dry weight)
Organic Carb. – organic carbon (% dry weight)
Inorganic Carb. – inorganic carbon (% dry weight)
Clay – clay content (% dry weight)
Sal. – salinity of pore water (ppt)
Silica – silica concentration in pore water (mM)
Amm. – ammonium concentration in pore water (mM)
Sulfate – sulfate concentration in pore water (mM)
Cu – copper (nitric acid leach) in sediment (ppm dry weight basis)
Zn – zinc (nitric acid leach) in sediment (ppm dry weight)
Ni – nickel (nitric acid leach) in sediment (ppm dry weight)
Cr – chromium (nitric acid leach) in sediment (ppm dry weight)
Fe – iron (nitric acid leach) in sediment (% dry weight)
Mn – manganese (nitric acid leach) in sediment (ppm dry weight)
Ag – silver (nitric acid leach) in sediment (ppm dry weight)
Cd – cadmium (nitric acid leach) in sediment (ppm dry weight)
Pb – lead (nitric acid leach) in sediment (ppm dry weight)
Hg – mercury (total analyses) in sediment (ppm dry weight)

ACKNOWLEDGEMENTS

I would like to thank the fieldwork team for collecting and processing samples: Bob Fitzgerald, Bob Murphy, Mike Parsons and the officers and crew of the CCGS Navicula. The home-based laboratory efforts of Bob Fitzgerald and Bill LeBlanc are very much appreciated. The encouragement by and co-operation of Paul Deveau and his colleagues at Brunswick Mining and Smelting made the operation possible and successful.

REFERENCES

Solorzano, L. (1969) Determination of ammonia in natural waters by phenolhypochlorite method. Limnology and Oceanography, v.14, p. 799-801.

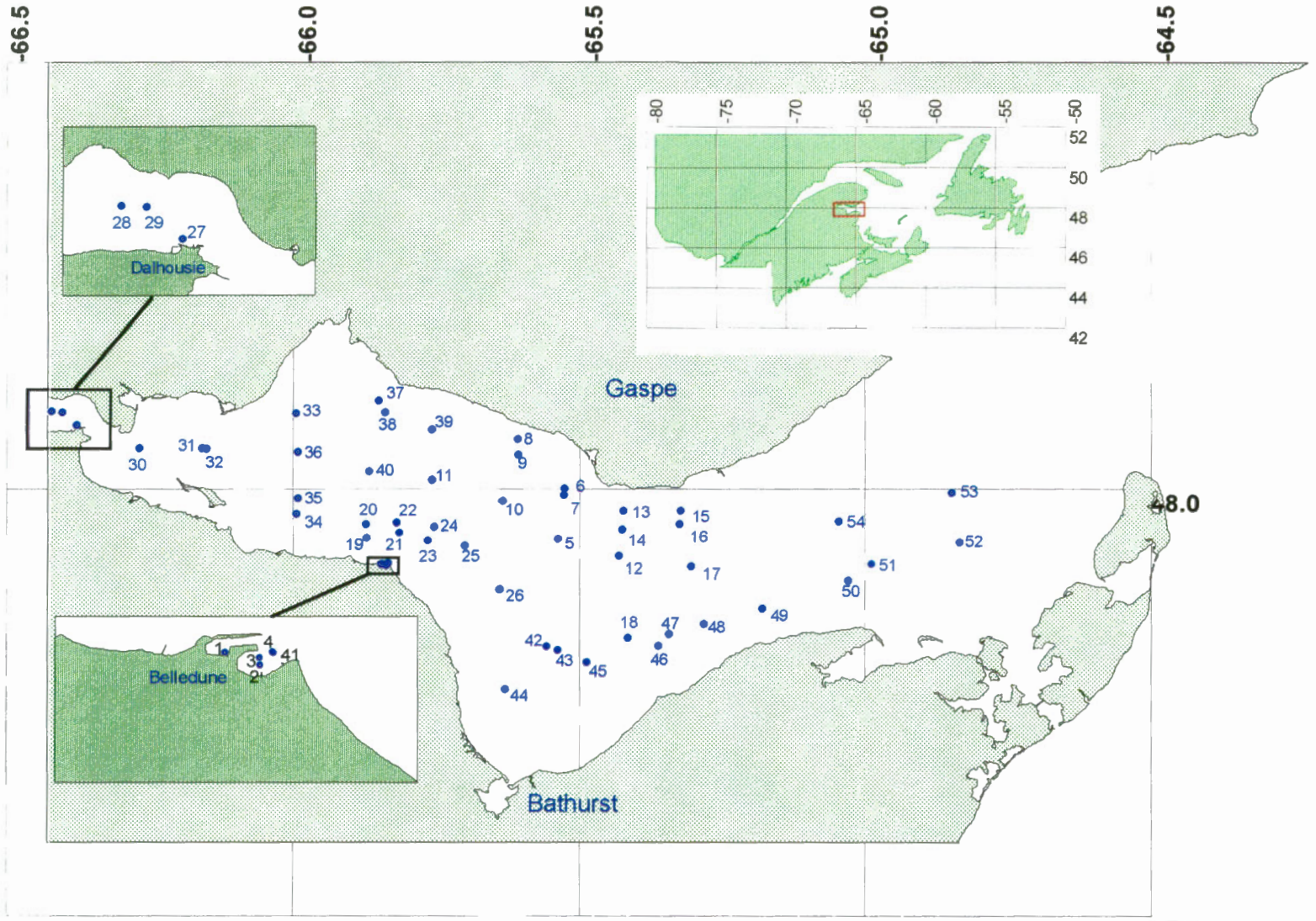

Figure 1 **Station Locations for Cruise 98012**

Table 1 Coring Summary

Cruise	Station	Longitude	Latitude	Water Depth	Core Length	Date	Time ADT
		degrees	degrees	metres	cm	yr mo da	hr min
98012	1	47.910	-65.847	10	85	19980520	820
98012	2	47.908	-65.839	10	19	19980520	840
98012	3	47.910	-65.839	11	56	19980520	855
98012	4	47.911	-65.836	12	19	19980520	905
98012	5	47.940	-65.539	59	104	19980520	1140
98012	6	48.000	-65.528	31	1	19980520	1212
98012	7	47.992	-65.529	31	0	19980520	1223
98012	8	48.058	-65.609	29	0	19980520	1303
98012	9	48.040	-65.609	35	80	19980520	1316
98012	10	47.985	-65.636	47	144	19980520	1346
98012	11	48.010	-65.759	36	57	19980520	1422
98012	12	47.920	-65.432	60	151	19980521	951
98012	13	47.973	-65.425	32	1	19980521	1028
98012	14	47.951	-65.426	45	49	19980521	1041
98012	15	47.973	-65.324	40	1	19980521	1120
98012	16	47.958	-65.326	54	144	19980521	1131
98012	17	47.907	-65.305	72	134	19980521	1232
98012	18	47.824	-65.416	58	111	19980521	1335
98012	19	47.942	-65.873	27	1	19980522	812
98012	20	47.958	-65.874	32	26	19980522	824
98012	21	47.948	-65.816	34	1	19980522	851
98012	22	47.960	-65.821	37	126	19980522	906
98012	23	47.938	-65.766	35	1	19980522	931
98012	24	47.954	-65.755	37	36	19980522	943
98012	25	47.932	-65.702	39	52	19980522	1020
98012	26	47.881	-65.640	42	112	19980522	1051
98012	27	48.074	-66.378	11	60	19980523	846
98012	28	48.090	-66.422	20	1	19980523	929
98012	29	48.089	-66.404	11	151	19980523	950
98012	30	48.047	-66.268	14	130	19980523	1035
98012	31	48.047	-66.160	30	1	19980523	1105
98012	32	48.046	-66.152	25	49	19980523	1120
98012	33	48.088	-65.996	25	74	19980523	1222
98012	34	47.970	-65.996	24	1	19980524	827
98012	35	47.989	-65.993	27	95	19980524	837
98012	36	48.042	-65.992	25	144	19980524	902
98012	37	48.103	-65.852	30	1	19980524	945
98012	38	48.089	-65.841	30	87	19980524	1010
98012	39	48.069	-65.759	34	59	19980524	1030
98012	40	48.020	-65.868	31	81	19980524	1120
98012	41	47.910	-65.836	11	81	19980524	1220
98012	42	47.814	-65.559	43	1	19980525	814
98012	43	47.809	-65.539	45	45	19980525	822
98012	44	47.764	-65.631	26	1	19980525	854
98012	45	47.795	-65.488	47	76	19980525	941
98012	46	47.814	-65.362	57	1	19980525	1017
98012	47	47.828	-65.344	64	49	19980525	1037
98012	48	47.840	-65.283	65	122	19980525	1057
98012	49	47.858	-65.180	62	74	19980525	1126
98012	50	47.891	-65.030	58	1	19980525	1214
98012	51	47.910	-64.989	65	28	19980525	1226
98012	52	47.936	-64.836	48	1	19980525	1314
98012	53	47.995	-64.850	72	49	19980526	857
98012	54	47.961	-65.047	73	122	19980526	955

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth cm	Water Content %	Total Carb. %	Organic Carb. %	Inorganic Carb. %	Clay %	Sal. ppt	Silica mM	Amm. mM	Sulfate mM	Cu ppm	Zn ppm	Ni ppm	Cr ppm	Fe %	Mn ppm	Ag ppm	Cd ppm	Pb ppm	Hg ppm
98012	1	196101	0	63.1	3.44	2.70	0.74	27	32.2	0.40	1.03	26	79	1254	47	153	2.58	358	0.55	10.00	651	0.74
98012	1	196102	5	63.8	3.17	2.42	0.75	34	32.8	0.53	1.25	25	93	1820	45	136	2.93	379	0.64	10.17	952	0.74
98012	1	196103	10	66.1	4.41	4.28	0.13	31	32.1	0.51	1.49	23	57	744	47	164	3.30	342	0.46	8.33	883	0.74
98012	1	196104	20	68.0	4.65	4.54	0.11	31	31.3	0.63	2.51	12	105	919	59	200	3.83	366	0.54	24.71	806	1.08
98012	1	196105	30	61.0	3.44	2.77	0.67	32	31.7	0.65	3.24	1	124	986	50	178	3.30	342	0.54	23.70	1061	1.44
98012	1	196106	40	59.5	2.90	2.41	0.49	20	32.1	0.58	3.95	1	116	1078	46	141	2.23	286	0.52	26.20	811	1.09
98012	1	196107	50	53.1	3.20	2.58	0.62	25	32.4	0.64	4.02	1	198	1569	47	179	2.85	351	0.56	34.50	1487	2.17
98012	1	196108	60	56.4	3.00	2.77	0.23	31	31.3	0.62	4.06	1	195	3157	50	183	2.60	300	0.57	68.60	2036	1.97
98012	1	196109	70	54.0	2.93	2.52	0.41	29	33.1	0.72	3.95	1	138	1243	52	167	2.53	301	0.62	19.70	1405	2.43
98012	1	196110	80	35.7	1.46	0.89	0.57	11	32.5	0.63	3.71	1	85	1631	41	101	1.94	290	0.86	10.60	1339	1.32
98012	2	196111	0	41.1	1.98	1.12	0.86	10	28.4	0.09	0.14	23	70	926	40	101	1.88	286	0.56	6.70	468	0.48
98012	2	196112	5	32.6	1.83	1.18	0.65	13	29.5	0.16	0.13	24	68	870	44	91	1.80	287	0.62	7.30	373	0.49
98012	2	196113	10	38.2	1.49	1.08	0.41	15	31.8	0.52	0.35	25	88	1344	44	109	1.97	287	0.71	14.10	783	0.47
98012	2	196114	20	37.0	1.40	1.11	0.29	13	31.9	0.34	0.79	24	65	908	40	105	1.86	281	0.73	14.40	623	0.53
98012	3	196115	0	43.6	2.23	1.54	0.69	19	31.2	0.41	0.56	25	71	1054	40	112	2.21	299	0.53	7.10	524	0.35
98012	3	196116	5	41.2	1.97	1.32	0.65	11	31.4	0.53	0.72	25	61	752	42	99	1.93	271	0.80	62.30	864	0.86
98012	3	196117	10	34.1	1.44	1.16	0.28	13	31.3	0.55	1.43	18	60	1046	40	103	2.05	297	0.71	12.80	713	0.51
98012	3	196118	20	32.0	1.50	1.19	0.31	12	31.1	0.57	1.13	23	18	186	38	92	2.06	332	0.22	2.30	201	0.32
98012	3	196119	30	34.9	1.80	1.66	0.14	13	31.4	0.91	1.44	16	12	60	38	89	2.08	291	0.07	0.52	4	0.04
98012	3	196120	40	29.7	0.90	0.83	0.07	7	31.3	0.80	1.41	17	8	44	33	80	1.93	264	0.10	0.53	3	0.02
98012	3	196121	50	29.5	0.92	0.91	0.01	4	30.9	0.90	1.45	16	8	43	37	65	2.50	360	0.08	0.28	2	0.02
98012	4	196122	0	37.0	1.83	1.33	0.50	14	30.8	0.36	0.30	25	41	465	30	85	1.79	255	0.32	4.90	449	0.34
98012	4	196123	5	35.0	1.90	1.62	0.28	8	31.2	0.54	0.49	25	45	473	39	98	1.88	264	0.48	5.80	537	0.36
98012	4	196124	10	40.8	1.92	1.55	0.37	14	30.8	0.49	0.68	25	62	746	38	104	2.59	290	0.52	8.30	850	0.44
98012	4	196125	20	36.6	2.26	1.73	0.53	8	31.1	0.78	1.20	17	58	677	33	80	1.78	249	0.46	9.60	735	0.46
98012	5	196140	-5						34.3	0.06	0.02	27										
98012	5	196126	0	39.3	1.58	1.41	0.17	27	34.9	0.78	0.26	27	11	64	32	85	2.23	199	0.01	0.10	6	0.03
98012	5	196127	2.5	35.4	1.72	1.48	0.24	22	34.0	0.76	0.29	27	12	66	34	80	2.65	261	0.01	0.12	11	0.03
98012	5	196128	5	35.0	1.38	1.12	0.26	19	34.9	0.65	0.22	27	10	52	31	86	2.67	250	0.02	0.07	2	0.02
98012	5	196129	7.5	30.1	1.21	1.05	0.16	20	34.1	0.63	0.22	26	10	54	32	80	2.19	219	0.01	0.08	5	0.02
98012	5	196130	10	29.7	1.11	0.98	0.13	13	33.9	0.53	0.15	25	10	51	35	78	2.71	270	0.01	0.10	2	0.02
98012	5	196131	20	28.6	0.94	0.83	0.10	18	34.3	0.59	0.13	27	8	45	31	71	1.99	191	0.01	0.13	1	0.01
98012	5	196132	30	25.6	0.74	0.40	0.34	16	34.1	0.54	0.14	27	8	49	44	74	2.09	228	0.01	0.17	1	0.01
98012	5	196133	40	22.8	1.02	0.58	0.44	23	33.5	0.40	0.17	26	10	53	48	81	2.30	273	0.01	0.09	2	0.01
98012	5	196134	50	27.6	1.30	0.49	0.81	37	34.4	0.66	0.18	26	21	67	54	103	2.82	369	0.01	0.07	4	0.01
98012	5	196135	60	34.0	1.58	0.46	1.12	41	34.1	0.80	0.19	27	23	74	65	129	2.86	403	0.01	0.07	5	0.01
98012	5	196136	70	37.3	1.76	0.53	1.24	39	34.8	0.55	0.20	26	19	64	54	101	2.75	357	0.01	0.13	4	0.01

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	5	196137	80	32.0	1.91	0.58	1.33	40	34.8	0.52	0.23	26	21	70	50	100	2.62	389	0.01	0.11	11	0.02
98012	5	196138	90	32.9	1.62	0.51	1.11	38	34.9	0.55	0.24	26	19	65	50	88	2.50	394	0.01	0.10	2	0.01
98012	5	196139	100	35.4	1.60	0.48	1.12	42	34.3	0.56	0.26	27	24	79	54	103	2.70	472	0.01	0.09	1	0.02
98012	6	196141	0		1.02	0.74	0.28	28					8	49	42	140	1.88	270	0.04	0.06	11	0.01
98012	9	196154	-5						33.1	0.03	0.01	27										
98012	9	196142	0	38.2	1.21	1.05	0.16	28	32.9	0.62	0.30	26	9	51	40	77	1.91	185	0.05	0.09	1	0.04
98012	9	196143	2.5	29.8	1.15	0.95	0.20	26	32.9	0.63	0.22	26	10	54	34	74	1.83	180	0.04	0.10	2	0.02
98012	9	196144	5	34.5	1.11	0.98	0.13	39	32.8	0.61	0.19	26	9	48	39	88	2.07	186	0.07	0.09	6	0.02
98012	9	196145	7.5	32.0	1.01	0.94	0.07	21	33.1	0.60	0.19	27	9	50	42	83	2.17	179	0.12	0.10	6	0.02
98012	9	196146	10	20.7	0.85	0.70	0.15	24	33.2	0.54	0.19	27	9	45	42	82	2.09	197	0.04	0.08	7	0.02
98012	9	196147	20	22.1	0.82	0.36	0.46	30	33.2	0.38	0.25	27	9	45	42	69	2.00	233	0.01	0.09	7	0.02
98012	9	196148	30	20.0	1.37	0.17	1.21	25	33.2	0.43	0.27	27	14	53	49	55	2.09	431	0.02	0.08	8	0.02
98012	9	196149	40	17.6	1.48	0.13	1.35	25	33.1	0.43	0.37	27	13	49	45	43	1.97	448	0.03	0.07	7	0.02
98012	9	196150	50	18.9	1.48	0.15	1.33	24	33.2	0.45	0.41	27	14	52	49	53	2.12	481	0.02	0.06	25	0.02
98012	9	196151	60	18.7	1.49	0.16	1.34	29	33.3	0.43	0.44	24	14	53	43	45	2.05	456	0.02	0.06	75	0.02
98012	9	196152	70	20.6	1.44	0.16	1.29	29	33.3	0.46	0.50	24	15	57	51	47	2.29	487	0.05	0.07	16	0.02
98012	9	196153	80	16.1	1.50	0.17	1.33	27	33.3	0.48	0.51	23	13	54	48	44	2.22	489	0.04	0.13	6	0.02
98012	10	196155	-5						31.0	0.19	0.03	25										
98012	10	196156	0	44.2	1.66	1.54	0.12	33	32.3	0.48	0.39	26	13	66	34	82	2.10	195	0.07	0.14	14	0.04
98012	10	196157	2.5	49.2	1.57	1.34	0.23	33	33.1	0.56	0.25	27	11	64	31	78	1.99	182	0.08	0.16	10	0.04
98012	10	196158	5	48.0	1.47	1.23	0.24	37	32.9	0.70	0.16	26	14	67	37	85	2.38	217	0.07	0.09	14	0.04
98012	10	196159	7.5	44.1	1.67	1.54	0.13	39	33.6	0.77	0.15	27	14	72	31	96	2.39	219	0.09	0.13	11	0.04
98012	10	196160	10	39.9	1.38	1.27	0.11	43	32.9	0.78	0.14	26	10	48	31	75	1.90	168	0.11	0.11	3	0.04
98012	10	196161	20	32.7	1.30	1.27	0.03	38	33.5	0.85	0.07	27	11	58	35	80	2.19	193	0.10	0.09	4	0.02
98012	10	196162	30	10.5	0.86	0.66	0.21	38	32.9	0.63	0.10	26	9	51	36	81	2.27	194	0.10	0.12	5	0.02
98012	10	196163	40	16.6	0.55	0.45	0.10	28	33.8	0.48	0.12	27	9	54	39	84	2.40	210	0.10	0.14	4	0.02
98012	10	196164	50	27.9	1.18	0.62	0.56	45	34.7	0.57	0.14	28	19	74	51	107	2.97	336	0.03	0.11	4	0.03
98012	10	196165	60	26.5	1.17	0.32	0.85	35	34.3	0.52	0.16	27	21	72	53	107	2.84	351	0.04	0.11	6	0.03
98012	10	196166	70	30.1	1.36	0.55	0.81	49	34.6	0.70	0.17	28	20	74	51	100	2.95	370	0.03	0.10	6	0.03
98012	10	196167	80	29.0	1.49	0.57	0.92	40	34.6	0.68	0.19	28	18	67	46	91	2.68	346	0.02	0.16	6	0.04
98012	10	196168	90	32.5	1.89	0.52	1.37	43	34.9	0.63	0.19	28	19	70	54	86	2.48	355	0.05	0.08	6	0.03
98012	10	196169	100	33.7	1.38	0.62	0.76	42	34.1	0.61	0.20	27	22	75	54	105	2.90	369	0.03	0.12	7	0.03
98012	10	196170	110	35.4	1.83	0.57	1.26	43	34.9	0.64	0.20	28	18	65	44	72	2.27	346	0.04	0.12	7	0.03
98012	10	196171	120	31.6	1.29	0.44	0.85	47	34.9	0.60	0.21	28	16	66	46	65	2.05	476	0.08	0.13	6	0.02
98012	10	196172	130	34.3	1.68	0.66	1.02	47	34.9	0.70	0.21	28	19	67	50	68	2.16	381	0.04	0.17	5	0.02
98012	10	196173	140	35.4	1.98	0.61	1.37	51	34.9	0.54	0.22	28	21	75	46	88	2.66	406	0.05	0.13	7	0.03
98012	11	196174	-5						33.6	0.07	0.00	27										
98012	11	196175	0	48.0	1.92	1.79	0.13	32	34.1	0.76	0.13	27	15	74	40	75	2.22	200	0.15	0.16	14	0.04

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	11	196176	2.5	50.6	1.81	1.73	0.08	30	33.4	0.64	0.72	27	14	61	35	78	2.27	191	0.20	0.19	5	0.02
98012	11	196177	5	52.8	1.67	1.56	0.11	27	33.8	0.61	0.40	27	13	64	44	77	2.25	182	0.20	0.17	5	0.02
98012	11	196178	7.5	44.0	1.56	1.45	0.11	29	33.5	0.60	0.16	27	13	63	39	64	2.21	187	0.18	0.21	7	0.02
98012	11	196179	10	49.5	1.67	1.56	0.11	35	33.6	0.74	0.12	27	13	59	41	70	2.59	213	0.20	0.18	4	0.02
98012	11	196180	20	27.7	1.48	1.47	0.01	34	33.4	0.68	0.12	27	13	60	40	65	2.57	203	0.20	0.18	4	0.02
98012	11	196181	30	28.1	1.11	1.09	0.02	24	34.3	0.63	0.17	27	12	53	45	70	2.56	192	0.10	0.15	6	0.02
98012	11	196182	40	21.0	0.38	0.35	0.03	24	34.1	0.61	0.21	27	6	46	45	62	2.15	200	0.19	0.45	3	0.02
98012	11	196183	50	23.2	0.45	0.44	0.01	38	34.2	0.69	0.26	27	6	46	41	51	2.25	190	0.18	0.21	3	0.02
98012	12	196186	-5						34.5	0.37	0.08	28										
98012	12	196187	0	55.4	2.07	1.65	0.42	35	34.6	0.50	0.18	28	13	69	36	56	2.04	220	0.12	0.12	13	0.03
98012	12	196188	2.5	52.3	2.16	1.65	0.51	30	34.7	0.54	0.15	28	16	69	31	59	2.10	222	0.12	0.12	13	0.04
98012	12	196189	5	52.4	1.88	1.63	0.25	39	34.1	0.61	0.13	27	14	65	34	54	2.04	216	0.12	0.38	10	0.03
98012	12	196190	7.5	50.9	1.95	1.68	0.27	28	34.0	0.63	0.14	27	13	59	36	50	1.99	204	0.17	0.09	8	0.03
98012	12	196191	10	48.6	1.92	1.67	0.25	30	34.3	0.64	0.14	27	14	55	36	47	2.14	225	0.14	0.08	5	0.02
98012	12	196192	20	43.5	1.91	1.68	0.23	30	34.3	0.59	0.14	27	14	55	42	71	2.07	213	0.19	0.12	5	0.01
98012	12	196193	30	37.3	1.90	1.65	0.25	28	34.3	0.63	0.11	27	14	56	47	65	2.18	232	0.13	0.15	5	0.01
98012	12	196194	40	38.7	1.75	1.52	0.23	26	34.3	0.68	0.20	27	14	54	44	69	2.26	238	0.11	0.12	4	0.01
98012	12	196195	50	43.8	1.85	1.72	0.13	41	34.3	0.75	0.35	27	14	54	43	68	2.36	228	0.17	0.08	5	0.01
98012	12	196196	60	45.3	1.79	1.62	0.17	30	34.3	0.71	0.27	27	13	56	43	57	2.25	218	0.17	0.06	4	0.01
98012	12	196197	70	41.2	1.77	1.51	0.26	31	34.3	0.72	0.41	27	13	55	46	62	2.23	228	0.12	0.09	5	0.01
98012	12	196198	80	47.6	1.63	1.49	0.14	38	34.3	0.69	0.50	27	14	54	49	64	2.37	226	0.18	0.13	4	0.01
98012	12	196199	90	44.4	1.47	1.40	0.07	27	34.3	0.72	0.57	27	13	53	42	60	2.31	237	0.13	0.09	5	0.01
98012	12	196200	100	40.7	1.52	1.40	0.12	37	34.3	0.71	0.62	27	12	50	38	50	2.04	216	0.12	0.12	6	0.01
98012	12	196201	110	41.5	1.49	1.28	0.21	25	34.3	0.75	0.69	24	13	52	41	48	2.22	236	0.08	0.04	5	0.01
98012	12	196202	120	44.0	1.50	1.27	0.23	34	34.3	0.75	0.77	23	11	51	42	54	2.18	255	0.06	0.06	5	0.01
98012	12	196203	130	39.6	1.48	1.22	0.26	30	34.3	0.74	0.80	23	10	49	41	51	2.00	228	0.08	0.09	6	0.01
98012	12	196204	140	36.3	1.37	1.01	0.36	24	34.4	0.75	0.87	23	11	51	38	53	2.08	247	0.05	0.05	5	0.01
98012	13	196184	0			0.48		47					7	37	28	92	1.34	168	0.06	0.05	10	0.01
98012	14	196205	-5						34.5	0.03	0.00	28										
98012	14	196206	0	23.9	0.85	0.64	0.21	38	34.3	0.48	0.31	27	9	40	34	28	1.59	167	0.06	0.06	8	0.02
98012	14	196207	2.5	25.2	0.81	0.66	0.15	36	34.3	0.62	0.10	27	8	38	35	28	1.65	159	0.05	0.05	7	0.02
98012	14	196208	5	23.7	0.76	0.59	0.17	36	34.3	0.59	0.10	27	8	35	40	32	1.44	159	0.11	0.05	6	0.02
98012	14	196209	7.5	20.1	0.80	0.59	0.21	34	34.3	0.56	0.09	27	7	40	39	42	1.58	172	0.06	0.04	5	0.01
98012	14	196210	10	20.6	0.72	0.48	0.25	24	34.3	0.33	0.05	27	6	34	39	31	1.44	151	0.08	0.09	4	0.01
98012	14	196211	20	20.0	0.69	0.43	0.26	30	34.3	0.33	0.06	27	7	30	36	32	1.41	249	0.04	0.12	3	0.01
98012	14	196212	30	17.7	0.76	0.44	0.32	16	34.3	0.30	0.10	27	7	41	42	33	1.41	201	0.03	0.08	4	0.01
98012	14	196213	40	27.3	1.01	0.76	0.25	16	34.3	0.43	0.19	27	9	41	44	31	1.92	195	0.13	0.14	4	0.02
98012	14	196214	50	27.1	1.16	1.15	0.01	14	34.1	0.43	0.25	27	10	42	49	35	2.20	189	0.17	0.20	4	0.02

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	15	196185	0			0.48		30					6	36	25	89	1.25	159	0.05	0.05	9	0.01
98012	16	196215	-5						33.8	0.16	0.00	27										
98012	16	196216	0	44.9	1.47	1.18	0.29	11	34.4	0.55	0.26	27	11	51	39	30	1.61	204	0.07	0.07	9	0.04
98012	16	196217	2.5	40.6	1.52	1.18	0.34	11	34.3	0.47	0.40	27	11	52	37	31	1.62	183	0.07	0.09	9	0.03
98012	16	196218	5	41.5	1.55	1.25	0.30	17	34.3	0.49	0.38	27	12	52	38	28	1.68	202	0.07	0.09	9	0.03
98012	16	196219	7.5	39.5	1.52	1.24	0.28	15	34.3	0.65	0.17	27	11	56	36	18	1.53	202	0.11	0.08	12	0.02
98012	16	196220	10	36.0	1.45	1.10	0.35	12	34.3	0.70	0.14	27	10	50	35	22	1.57	192	0.10	0.09	8	0.03
98012	16	196221	20	31.7	1.42	1.20	0.22	19	34.3	0.48	0.05	27	12	48	37	21	1.81	206	0.06	0.09	6	0.01
98012	16	196222	30	33.6	1.50	0.93	0.57	10	34.3	0.54	0.09	27	10	41	37	15	1.68	214	0.07	0.09	4	0.01
98012	16	196223	40	27.7	1.15	0.81	0.34	12	34.3	0.60	0.14	27	10	46	40	12	1.65	212	0.05	0.10	3	0.01
98012	16	196224	50	31.3	0.89	0.54	0.36	17	34.3	0.61	0.19	27	8	39	38	11	1.56	216	0.04	0.08	3	0.01
98012	16	196225	60	22.5	1.25	0.76	0.49	15	34.3	0.55	0.25	27	9	43	38	6	1.55	267	0.05	0.17	4	0.01
98012	16	196226	70	37.7	1.54	1.12	0.42	20	34.3	0.56	0.32	27	13	49	48	14	2.20	251	0.06	0.09	4	0.02
98012	16	196227	80	44.2	1.53	0.62	0.91	59	34.3	0.56	0.38	27	23	71	55	22	2.62	377	0.06	0.10	5	0.02
98012	16	196228	90	47.4	1.95	0.79	1.16	50	34.3	0.57	0.42	27	26	76	56	20	2.76	428	0.10	0.07	0	0.02
98012	16	196229	100	48.8	1.86	0.70	1.16	53	34.3	0.61	0.44	27	27	79	53	51	2.98	514	0.08	0.11	6	0.01
98012	16	196230	110	52.0	1.59	0.71	0.88	44	34.3	0.62	0.48	27	27	78	49	58	2.94	490	0.08	0.11	7	0.01
98012	16	196231	120	52.2	1.67	0.81	0.86	47	34.3	0.63	0.47	27	28	83	50	56	3.18	480	0.08	0.09	6	0.02
98012	16	196232	130	49.2	1.66	0.77	0.89	45	34.4	0.62	0.50	28	28	83	44	52	3.04	473	0.09	0.11	6	0.01
98012	17	196233	0	60.1	2.74	2.41	0.33	27	35.4	0.67	0.23	28	20	79	44	35	2.48	273	0.12	0.06	17	0.05
98012	17	196234	2.5	61.1	2.67	2.37	0.30	26	35.7	0.70	0.18	29	18	77	40	36	2.45	262	0.14	0.08	18	0.04
98012	17	196235	5	58.3	2.77	2.36	0.41	20	35.7	0.73	0.16	29	20	81	40	34	2.52	273	0.15	0.06	18	0.05
98012	17	196236	7.5	54.8	2.73	2.46	0.27	17	34.3	0.74	0.16	27	20	84	44	33	2.59	274	0.18	0.08	17	0.04
98012	17	196237	10	56.7	2.79	2.40	0.39	19	35.0	0.76	0.14	28	19	83	44	36	2.53	295	0.16	0.06	18	0.04
98012	17	196238	20	55.0	2.48	2.21	0.27	16	34.9	0.48	0.13	28	17	66	41	33	2.54	244	0.20	0.15	6	0.01
98012	17	196239	30	58.6	2.33	2.07	0.26	18	35.6	0.66	0.23	28	17	63	47	36	2.29	248	0.18	0.09	5	0.01
98012	17	196240	40	53.9	2.32	2.08	0.24	19	35.1	0.77	0.34	28	16	61	45	36	2.51	243	0.17	0.06	5	0.01
98012	17	196241	50	57.3	2.32	2.13	0.19	15	35.5	0.77	0.46	28	16	62	46	35	2.50	236	0.18	0.05	5	0.01
98012	17	196242	60	55.3	2.39	2.15	0.24	17	35.1	0.77	0.58	28	16	63	48	32	2.42	229	0.18	0.08	5	0.01
98012	17	196243	70	55.9	2.21	2.05	0.16	13	35.1	0.79	0.67	28	18	64	46	31	2.49	231	0.22	0.09	4	0.01
98012	17	196244	80	52.2	2.37	2.13	0.24	20	35.5	0.84	0.76	25	16	63	50	27	2.54	239	0.18	0.09	1	0.01
98012	17	196245	90	54.3	2.24	2.01	0.23	24	35.3	0.84	0.88	24	16	65	47	22	2.50	242	0.20	0.06	5	0.01
98012	17	196246	100	53.1	2.29	1.96	0.33	24	35.0	0.91	0.95	28	16	63	51	25	2.62	237	0.17	0.05	5	0.01
98012	17	196247	110	52.3	2.14	1.87	0.27	21	34.5	1.01	1.00	26	15	58	45	18	2.31	217	0.20	0.08	6	0.01
98012	17	196248	120	52.8	2.22	1.93	0.29	17	35.4	1.03	1.08	24	15	64	48	18	2.56	227	0.19	0.06	5	0.01
98012	17	196249	130	50.9	2.25	2.01	0.24	21	35.3	0.90	1.19	24	17	62	49	36	2.62	257	0.19	0.04	5	0.01
98012	18	196250	-5						34.1	0.08	0.01	27										
98012	18	196251	0	54.1	2.10	2.00	0.10	18	34.5	0.51	0.16	28	18	73	46	137	2.24	234	0.13	0.17	15	0.04
98012	18	196252	2.5	60.3	1.89	1.68	0.21	29	34.3	0.50	0.25	27	17	67	40	129	2.22	326	0.13	0.16	14	0.03

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	18	196253	5	50.0	2.26	1.96	0.30	22	34.3	0.56	0.52	27	17	70	34	129	2.17	222	0.17	0.15	14	0.04
98012	18	196254	7.5	52.9	2.08	1.73	0.35	33	34.1	0.58	0.15	27	15	58	35	132	2.04	206	0.21	0.13	8	0.02
98012	18	196255	10	55.7	2.20	1.95	0.25	22	34.5	0.60	0.13	28	15	57	31	129	2.06	212	0.20	0.18	7	0.02
98012	18	196256	20	48.5	1.93	1.66	0.27	31	34.2	0.58	0.16	27	16	57	36	118	2.14	208	0.19	0.18	6	0.01
98012	18	196257	30	40.5	1.52	1.45	0.07	28	34.6	0.61	0.17	28	12	50	35	120	2.06	208	0.20	0.11	5	0.01
98012	18	196258	40	39.9	1.32	1.15	0.17	25	35.0	0.68	0.25	28	13	54	41	127	2.23	238	0.19	0.17	6	0.01
98012	18	196259	50	34.6	1.45	1.27	0.18	28	35.3	0.64	0.29	28	15	59	37	125	2.44	241	0.18	0.13	4	0.01
98012	18	196260	60	27.5	0.69	0.60	0.10	29	35.6	0.61	0.38	29	10	48	33	91	2.00	228	0.08	0.20	4	0.01
98012	18	196261	70	28.8	0.87	0.62	0.26	30	35.2	0.59	0.45	28	11	49	39	88	2.08	264	0.10	0.17	6	0.01
98012	18	196262	80	36.8	1.02	1.01	0.01	44	35.3	0.55	0.51	28	18	66	45	118	2.60	322	0.04	0.14	6	0.02
98012	18	196263	90	40.7	1.07	0.42	0.66	41	35.0	0.55	0.59	28	20	67	40	144	2.49	362	0.06	0.15	7	0.02
98012	18	196264	100	36.7	1.10	0.47	0.63	43	35.4	0.53	0.69	28	25	74	49	145	2.84	430	0.05	0.10	7	0.01
98012	18	196265	110	37.0	1.08	0.48	0.60	34	35.3	0.53	0.75	28	19	64	34	113	2.43	344	0.07	0.13	7	0.02
98012	19	196557	0		1.48	1.19	0.29	42					13	71	36	120	1.99	206	0.20	0.17	21	0.01
98012	20	196266	-5						33.0	0.04	0.01	26										
98012	20	196267	0	58.9	1.92	1.86	0.06	24	33.8	0.44	0.08	27	16	81	40	115	2.41	212	0.09	0.21	13	0.09
98012	20	196268	2.5	58.6	1.97	1.90	0.07	19	33.6	0.48	0.09	27	17	85	44	116	2.50	214	0.14	0.25	18	0.08
98012	20	196269	5	54.6	1.90	1.73	0.17	26	33.8	0.52	0.09	27	16	81	44	118	2.40	213	0.17	0.25	17	0.10
98012	20	196270	7.5	50.3	1.79	1.64	0.15	21	33.6	0.64	0.14	27	15	78	41	109	2.39	214	0.14	0.22	16	0.07
98012	20	196271	10	42.9	1.72	1.65	0.07	25	33.6	0.61	0.14	27	15	73	42	103	2.34	217	0.12	0.22	14	0.09
98012	20	196272	20	41.9	0.98	0.97	0.01	29	33.6	0.62	0.18	27	10	56	37	92	2.29	211	0.13	0.15	6	0.03
98012	20	196273	30	35.3	1.73	1.29	0.44	25	33.4	0.38	0.16	27	11	49	37	88	2.21	216	0.09	0.20	5	0.03
98012	21	196558	0		1.82	1.40	0.42	39					14	70	40	125	2.40	203	0.20	0.12	21	0.01
98012	22	196274	-5						32.6	0.06	0.01	26										
98012	22	196275	0	62.3	2.39	2.23	0.16	21	33.4	0.53	0.14	27	16	74	46	120	2.53	219	0.16	0.13	12	0.06
98012	22	196276	2.5	56.4	2.28	2.12	0.16	23	33.0	0.47	0.12	26	17	80	44	112	2.63	208	0.18	0.16	20	0.06
98012	22	196277	5	55.2	2.29	2.07	0.22	26	33.6	0.55	0.09	27	17	79	46	123	2.71	223	0.16	0.18	15	0.06
98012	22	196278	7.5	56.0	2.21	2.20	0.01	16	33.4	0.55	0.14	27	16	75	41	109	2.37	214	0.18	0.16	19	0.07
98012	22	196279	10	53.7	2.02	2.00	0.02	18	33.4	0.58	0.13	27	15	62	45	97	2.47	199	0.21	0.10	10	0.05
98012	22	196280	20	17.9	1.54	1.48	0.06	14	33.9	0.61	0.17	27	13	60	42	97	2.55	195	0.23	0.12	5	0.02
98012	22	196281	30	7.9	1.21	1.00	0.22	13	33.9	0.59	0.19	27	11	50	37	68	2.12	175	0.05	0.12	5	0.02
98012	22	196282	40	20.2	0.99	0.98	0.01	15	33.9	0.62	0.24	27	11	52	41	70	2.25	186	0.17	0.17	6	0.03
98012	22	196283	50	6.4	0.56	0.46	0.10	18	33.9	0.59	0.28	27	8	48	39	54	2.09	189	0.04	0.11	4	0.02
98012	22	196284	60	31.7	1.25	1.20	0.05	15	33.8	0.57	0.33	27	13	53	45	72	2.64	268	0.22	0.26	6	0.03
98012	22	196285	70	18.2	1.20	1.14	0.06	13	34.1	0.56	0.39	27	12	58	49	102	2.44	308	0.17	0.09	4	0.04
98012	22	196286	80	35.8	1.35	1.34	0.01	16	33.8	0.55	0.42	27	12	52	40	96	2.36	295	0.23	0.13	6	0.03
98012	22	196287	90	26.7	1.36	1.32	0.04	26	33.4	0.54	0.48	27	15	63	50	101	2.78	305	0.23	0.17	7	0.05
98012	22	196288	100	37.5	2.73	2.67	0.06	17	33.4	0.52	0.51	27	20	69	55	122	3.34	421	0.24	0.10	5	0.07

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	22	196289	110	24.4	1.28	1.27	0.01	14	33.4	0.50	0.56	27	13	58	48	92	2.54	334	0.18	0.11	5	0.04
98012	22	196290	120	33.8	1.73	1.63	0.10	13	33.6	0.49	0.61	27	13	60	51	98	2.69	356	0.11	0.16	4	0.05
98012	23	196559	0		1.81	1.75	0.06	21					15	74	43	131	2.26	214	0.27	0.13	24	0.01
98012	24	196291	0	48.8	1.84	1.75	0.09	31	32.8	0.51	0.07	26	12	73	41	91	2.22	188	0.10	0.37	1	0.04
98012	24	196292	2.5	44.8	1.79	1.70	0.09	32	33.0	0.58	0.08	26	14	78	43	100	2.48	214	0.26	0.37	1	0.04
98012	24	196293	5	46.3	1.68	1.53	0.15	29	33.3	0.59	0.08	27	13	70	44	95	2.31	189	0.42	0.22	13	0.04
98012	24	196294	7.5	43.3	1.67	1.60	0.07	32	33.1	0.57	0.08	26	12	66	45	100	2.38	202	0.44	0.24	6	0.04
98012	24	196295	10	40.9	0.92	0.90	0.02	34	33.5	0.52	0.09	27	11	63	45	88	2.50	209	0.17	0.17	8	0.03
98012	24	196296	20	32.3	0.60	0.59	0.01	26	33.7	0.47	0.08	27	8	53	47	84	2.38	195	0.08	0.39	4	0.01
98012	24	196297	30	23.0	0.42	0.35	0.07	27	33.8	0.45	0.09	27	7	55	43	107	2.39	214	0.07	0.33	4	0.01
98012	25	196298	-5						34.2	0.03	0.01	27										
98012	25	196299	0	46.9	1.46	1.28	0.18	33	34.2	0.42	0.05	27	14	74	50	147	2.27	201	0.05	0.18	17	0.05
98012	25	196300	2.5	46.4	1.32	1.25	0.07	21	34.3	0.56	0.06	27	13	67	48	145	2.27	203	0.05	0.14	12	0.04
98012	25	196301	5	43.7	1.33	1.25	0.08	28	34.1	0.61	0.07	27	11	64	44	139	2.25	207	0.09	0.13	9	0.03
98012	25	196302	7.5	36.6	1.49	1.38	0.11	29	34.4	0.62	0.09	28	11	57	40	150	2.36	210	0.11	0.15	4	0.01
98012	25	196303	10	45.2	1.53	1.45	0.08	20	34.2	0.59	0.08	27	9	52	38	128	2.19	192	0.11	0.12	3	0.01
98012	25	196304	20	31.9	0.91	0.72	0.19	20	33.9	0.57	0.11	27	9	49	38	136	2.24	194	0.10	0.09	3	0.01
98012	25	196305	30	21.6	0.56	0.53	0.03	20	34.5	0.48	0.19	28	7	56	50	138	2.35	243	0.10	0.10	4	0.01
98012	25	196306	40	21.6	0.83	0.64	0.19	29	34.7	0.38	0.25	28	9	50	52	131	2.44	293	0.05	0.10	4	0.01
98012	25	196307	50	22.8	0.93	0.66	0.27	13	34.5	0.29	0.27	28	9	57	48	124	2.62	357	0.03	0.11	3	0.01
98012	26	196308	-5						34.0	0.45	0.02	27										
98012	26	196309	0	24.7	1.24	1.23	0.01	26	33.4	0.58	0.08	27	11	58	39	121	2.07	202	0.11	0.12	12	0.07
98012	26	196310	2.5	29.8	1.75	1.53	0.22	21	33.6	0.56	0.08	27	13	54	37	137	2.14	200	0.15	0.10	6	0.02
98012	26	196311	5	37.2	1.48	1.39	0.09	21	33.6	0.61	0.08	27	13	54	40	125	2.16	198	0.13	0.12	6	0.07
98012	26	196312	7.5	36.2	1.27	1.25	0.02	24	33.7	0.56	0.08	27	10	47	30	109	1.91	183	0.22	0.13	7	0.02
98012	26	196313	10	34.3	1.29	1.23	0.06	20	33.8	0.44	0.08	27	11	51	37	114	2.09	204	0.12	0.10	6	0.04
98012	26	196314	20	34.3	0.93	0.90	0.03	17	33.6	0.63	0.12	27	10	48	40	105	2.14	220	0.12	0.08	4	0.01
98012	26	196315	30	35.3	1.52	1.51	0.01	12	34.1	0.69	0.17	27	14	57	42	125	2.89	334	0.14	0.15	5	0.02
98012	26	196316	40	30.5	1.49	1.48	0.01	8	34.0	0.68	0.23	27	13	54	42	118	2.62	302	0.20	0.13	5	0.01
98012	26	196317	50	32.0	1.60	1.59	0.01	13	34.0	0.64	0.27	27	13	57	43	113	2.63	284	0.20	0.14	5	0.02
98012	26	196318	60	38.8	1.54	1.53	0.01	13	34.1	0.71	0.35	27	14	58	44	127	2.73	285	0.13	0.13	5	0.02
98012	26	196319	70	44.2	2.30	2.16	0.14	10	34.0	0.60	0.35	27	12	52	42	118	2.75	260	0.15	0.29	6	0.02
98012	26	196320	80	44.8	2.40	2.35	0.05	11	34.0	0.64	0.37	27	13	53	46	110	2.80	318	0.13	0.17	4	0.03
98012	26	196321	90	43.7	1.06	1.06	0.01	11	34.1	0.63	0.39	27	11	66	42	107	2.68	252	0.16	0.30	4	0.02
98012	26	196322	100	46.6	1.13	1.01	0.12	13	34.2	0.70	0.43	27	14	55	50	127	2.60	291	0.14	0.14	6	
98012	27	196323	0	54.2	3.92	3.87	0.05	15	29.3	0.22	0.16	22	21	313	53	147	2.64	216	0.15	0.93	20	0.14
98012	27	196324	2.5	51.4	3.96	3.90	0.06	23	29.7	0.44	0.44	22	22	369	55	146	2.62	200	0.17	0.79	25	0.13

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	27	196325	5.0	56.6	3.72	3.57	0.15	21	30.4	0.55	0.64	20	23	425	54	142	2.66	204	0.19	0.99	28	0.14
98012	27	196326	7.5	58.7	3.68	3.66	0.02	18	30.7	0.60	0.80	17	21	269	56	141	2.65	200	0.16	0.84	20	0.11
98012	27	196327	10	58.5	3.84	3.83	0.01	18	31.3	0.59	1.22	12	21	320	50	138	2.92	234	0.16	0.81	22	0.16
98012	27	196328	20	53.2	4.04	3.99	0.05	20	30.8	0.60	1.58	1	23	335	52	137	2.69	232	0.19	0.96	21	0.20
98012	27	196329	30	59.8	4.17	4.16	0.01	26	30.7	0.63	1.98	1	39	291	57	146	3.12	222	0.17	0.96	28	0.34
98012	27	196330	40	50.1	1.47	1.27	0.20	39	30.7	0.61	2.20	1	18	163	51	127	2.75	206	0.13	0.54	17	0.27
98012	27	196331	50	38.1	3.86	3.85	0.01	27	30.7	0.60	2.29	1	30	165	51	138	3.09	244	0.18	0.51	19	0.33
98012	27	196332	60	34.2	1.87	1.83	0.04	17	30.8	0.64	2.30	1	13	67	50	172	3.41	524	0.14	0.11	8	0.04
98012	28	196560	0		1.49	1.18	0.31	21					12	87	50	137	2.82	200	0.14	0.12	11	0.01
98012	29	196333	-5						23.0	0.15	0.14	18										
98012	29	196334	0	55.8	2.85	2.77	0.08	23	28.7	0.31	0.20	23	20	160	50	148	2.85	208	0.15	0.43	14	0.17
98012	29	196335	2.5	57.9	2.93	2.89	0.04	21	28.2	0.31	0.21	23	20	157	49	149	2.69	192	0.14	0.67	14	0.20
98012	29	196336	5.0	52.4	3.32	3.31	0.01	14	28.4	0.33	0.20	23	22	150	48	151	2.93	210	0.16	0.38	14	0.20
98012	29	196337	7.5	53.9	3.31	3.30	0.01	15	29.3	0.44	0.27	23	19	130	48	146	2.98	208	0.15	0.29	13	0.20
98012	29	196338	10	52.6	3.37	3.36	0.01	21	30.1	0.49	0.38	24	24	103	47	145	2.74	198	0.14	0.21	12	0.20
98012	29	196339	20	51.5	3.10	3.09	0.01	13	30.3	0.49	0.61	21	18	70	48	147	2.78	191	0.15	0.15	8	0.17
98012	29	196340	30	53.0	3.02	2.67	0.35	18	30.5	0.59	1.13	18	17	71	50	140	3.09	223	0.13	0.13	7	0.07
98012	29	196341	40	47.8	2.44	2.37	0.07	12	30.5	0.65	1.49	14	16	63	44	118	2.73	176	0.15	0.12	9	0.06
98012	29	196342	50	55.5	2.50	2.49	0.01	14	30.0	0.68	1.73	6	15	67	50	137	2.78	204	0.13	0.13	7	0.05
98012	29	196343	60	47.5	2.38	2.26	0.12	12	30.0	0.68	2.22	1	12	61	43	147	2.61	194	0.13	0.14	7	0.05
98012	29	196344	70	46.1	2.05	1.76	0.29	22	30.8	0.69	2.47	1	12	58	47	144	2.57	182	0.15	0.16	8	0.04
98012	29	196345	80	46.5	1.95	1.81	0.14	15	30.5	0.69	2.84	1	13	56	51	140	2.54	201	0.13	0.12	6	0.03
98012	29	196346	90	45.0	2.35	2.32	0.03	10	31.2	0.71	3.30	1	13	61	50	140	2.70	206	0.14	0.13	3	0.03
98012	29	196347	100	48.6	1.82	1.81	0.01	12	30.9	0.73	3.48	1	12	54	47	138	2.53	196	0.15	0.14	4	0.03
98012	29	196348	110	44.7	2.62	2.61	0.01	11	31.2	0.72	3.74	1	12	61	54	137	2.82	204	0.15	0.14	3	0.04
98012	29	196349	120	46.2	1.96	1.90	0.06	10	31.5	0.75	3.99	1	12	56	51	139	2.67	198	0.13	0.14	2	0.03
98012	29	196350	130	47.5	2.29	2.24	0.05	11	32.1	0.77	4.05	1	11	58	48	144	2.73	193	0.12	0.12	3	0.03
98012	29	196351	140	45.4	2.09	2.08	0.01	13	31.4	0.75	4.12	1	12	55	40	121	2.62	195	0.15	0.14	4	0.03
98012	30	196352	-5						28.3	0.07	0.01	23										
98012	30	196353	0	51.5	2.42	2.41	0.01	15	30.0	0.33	0.09	24	18	135	41	143	2.23	183	0.14	0.47	13	0.10
98012	30	196354	2.5	49.1	2.30	2.29	0.01	13	30.3	0.32	0.11	24	16	111	41	157	2.31	184	0.19	0.38	11	0.09
98012	30	196355	5.0	46.3	2.27	2.25	0.02	14	30.9	0.36	0.14	25	16	104	46	168	2.39	188	0.18	0.32	9	0.08
98012	30	196356	7.5	42.3	2.24	2.19	0.05	11	31.8	0.44	0.19	25	16	100	48	167	2.55	180	0.17	0.31	8	0.08
98012	30	196357	10	43.8	2.34	2.33	0.01	11	31.8	0.47	0.22	25	17	130	46	167	2.50	179	0.19	0.36	10	0.07
98012	30	196358	20	41.9	1.56	1.55	0.01	15	31.5	0.61	0.31	25	12	58	45	165	2.58	184	0.20	0.21	3	0.02
98012	30	196359	30	43.4	1.58	1.57	0.01	11	31.8	0.63	0.38	25	12	56	47	157	2.70	194	0.18	0.17	2	0.02
98012	30	196360	40	38.6	1.56	1.55	0.01	11	31.5	0.67	0.50	25	11	56	44	154	2.57	190	0.18	0.16	3	0.02
98012	30	196361	50	49.0	1.83	1.82	0.01	15	31.6	0.69	0.62	22	13	58	46	158	2.89	195	0.19	0.17	1	0.02
98012	30	196362	60	49.9	1.82	1.81	0.01	13	31.3	0.69	0.73	22	13	55	50	156	2.75	211	0.19	0.22	1	0.02

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	30	196363	70	44.7	2.04	2.03	0.01	16	31.4	0.73	0.85	21	14	58	50	154	2.67	199	0.19	0.21	1	0.02
98012	30	196364	80	41.8	1.68	1.67	0.01	11	30.9	0.71	0.88	17	12	57	41	154	2.64	193	0.19	0.18	1	0.02
98012	30	196365	90	41.8	1.83	1.77	0.06	17	30.7	0.69	1.01	16	13	59	48	150	2.76	211	0.18	0.20	1	0.02
98012	30	196366	100	41.6	1.77	1.76	0.01	12	30.5	0.69	1.01	14	12	62	49	148	2.78	206	0.18	0.21	1	0.02
98012	30	196367	110	42.3	1.14	1.16	0.01	19	30.1	0.72	1.09	13	11	54	45	135	2.53	191	0.16	0.19	1	0.02
98012	30	196368	120	43.4	1.17	1.14	0.03	16	30.3	0.71	1.18	13	11	55	41	125	2.59	207	0.19	0.17	1	0.02
98012	30	196369	130	41.2	1.62	1.59	0.03	19	29.6	0.74	1.29	13	11	69	47	141	2.96	198	0.15	0.19	1	0.02
98012	31	196561	0		1.94	1.76	0.18	23					14	101	47	139	2.60	226	0.19	0.17	14	0.01
98012	32	196370	-5						32.1	0.02	0.00	26										
98012	32	196371	0	42.4	1.21	1.20	0.01	34	32.4	0.23	0.03	26	13	85	52	125	2.63	205	0.09	0.11	12	0.04
98012	32	196372	2.5	37.5	1.75	1.19	0.56	25	32.3	0.27	0.10	26	13	82	46	128	2.69	213	0.14	0.13	12	0.04
98012	32	196373	5.0	32.9	0.90	0.83	0.06	30	32.3	0.34	0.06	26	8	68	55	126	2.86	225	0.06	0.05	7	0.03
98012	32	196374	7.5	33.9	0.82	0.80	0.02	37	32.6	0.34	0.09	26	9	61	51	125	2.73	204	0.11	0.04	6	0.02
98012	32	196375	10	28.6	1.05	0.90	0.15	34	32.4	0.43	0.12	26	9	64	51	115	2.90	214	0.19	0.10	5	0.01
98012	32	196376	20	28.1	1.24	0.78	0.47	33	33.1	0.49	0.10	26	11	57	39	110	2.63	230	0.06	0.12	5	0.02
98012	32	196377	30	22.7	1.21	0.57	0.64	31	33.1	0.42	0.11	26	12	60	46	77	2.40	358	0.12	0.06	5	0.02
98012	32	196378	40	27.5	1.70	1.05	0.65	35	33.2	0.45	0.15	27	12	64	52	97	2.79	321	0.12	0.07	5	0.02
98012	33	196379	-5						33.4	0.04	0.00	27										
98012	33	196380	0	58.2	2.16	1.98	0.18	20	33.0	0.38	0.23	26	16	71	42	117	2.28	212	0.13	0.16	14	0.04
98012	33	196381	2.5	57.6	2.26	2.25	0.01	13	33.0	0.47	0.14	26	17	76	45	117	2.38	223	0.18	0.15	15	0.04
98012	33	196382	5.0	57.1	2.31	2.23	0.08	17	32.8	0.46	0.20	26	18	76	45	114	2.39	215	0.18	0.15	15	0.03
98012	33	196383	7.5	53.8	2.29	2.18	0.11	13	33.0	0.59	0.21	26	16	77	42	106	2.35	213	0.19	0.15	17	0.03
98012	33	196384	10	51.1	1.75	1.74	0.01	13	33.0	0.72	0.30	26	12	61	35	100	2.18	191	0.08	0.08	9	0.03
98012	33	196385	20	47.9	1.80	1.76	0.04	20	33.1	0.67	0.29	27	14	58	44	111	2.69	198	0.22	0.12	5	0.02
98012	33	196386	30	38.3	1.56	1.55	0.01	17	33.2	0.65	0.29	27	15	60	43	103	2.87	215	0.22	0.16	5	0.01
98012	33	196387	40	47.1	1.44	1.43	0.01	27	33.5	0.64	0.28	27	16	64	45	117	2.89	233	0.22	0.17	6	0.01
98012	33	196388	50	44.2	1.36	1.35	0.01	22	33.0	0.62	0.26	26	12	53	36	74	2.14	268	0.12	0.16	6	0.01
98012	33	196389	60	36.8	1.23	1.16	0.07	21	33.0	0.60	0.26	26	17	66	49	120	3.28	246	0.23	0.20	6	0.01
98012	33	196390	70	32.7	2.65	1.60	1.05	28	33.4	0.54	0.25	27	15	52	35	73	2.17	333	0.10	0.10	5	0.01
98012	34	196562	0		2.28	1.82	0.46	35					14	78	40	123	2.24	194	0.27	0.18	19	0.01
98012	35	196410	-5						32.8	0.04	0.00	26										
98012	35	196411	0	57.5	2.63	2.46	0.17	23	32.7	0.43	0.13	26	16	78	42	127	2.31	195	0.22	0.16	19	0.03
98012	35	196412	2.5	58.3	2.67	2.46	0.21	20	32.7	0.37	0.09	26	18	84	42	133	2.47	222	0.20	0.15	17	0.01
98012	35	196413	5.0	54.8	2.50	2.46	0.04	14	33.0	0.54	0.15	26	18	81	47	141	2.39	209	0.24	0.16	15	0.05
98012	35	196414	7.5	55.1	2.56	2.40	0.16	25	33.1	0.61	0.17	27	17	85	50	121	2.51	217	0.22	0.16	16	0.06
98012	35	196415	10	53.4	2.20	1.74	0.46	15	33.2	0.66	0.20	27	15	75	49	125	2.40	219	0.21	0.13	12	0.05
98012	35	196416	20	53.8	2.02	2.01	0.01	19	33.2	0.65	0.20	27	16	71	43	118	2.40	213	0.14	0.13	10	0.04

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	35	196417	30	41.9	1.27	1.26	0.01	16	32.9	0.70	0.25	26	12	55	42	99	2.50	207	0.22	0.20	5	0.02
98012	35	196418	40	40.6	1.12	0.64	0.48	24	33.4	0.64	0.24	27	10	47	34	71	1.71	261	0.06	0.13	3	0.01
98012	35	196419	50	44.6	1.37	1.32	0.05	20	33.4	0.62	0.23	27	16	67	56	108	3.10	360	0.25	0.12	4	0.02
98012	35	196420	60	41.2	1.49	1.44	0.05	23	33.5	0.62	0.23	27	16	68	49	115	3.18	380	0.29	0.11	5	0.02
98012	35	196421	70	45.9	1.37	1.33	0.04	21	33.4	0.64	0.23	27	17	70	53	123	3.32	381	0.33	0.11	5	0.03
98012	35	196422	80	45.2	1.40	1.34	0.06	15	33.2	0.62	0.24	27	17	70	54	107	3.38	433	0.31	0.12	5	0.03
98012	35	196423	90	29.9	1.38	1.31	0.07	17	33.5	0.62	0.25	27	15	68	51	106	3.01	360	0.21	0.11	5	0.03
98012	36	196391	-5						32.1	0.29	0.06	26										
98012	36	196392	0	64.7	2.73	2.57	0.16	16	32.2	0.39	0.10	26	19	82	49	164	2.41	213	0.17	0.13	16	0.06
98012	36	196393	2.5	63.5	2.78	2.60	0.18	21	31.7	0.39	0.08	25	19	83	47	163	2.47	216	0.17	0.14	19	0.05
98012	36	196394	5.0	61.5	2.60	2.47	0.13	23	32.2	0.54	0.12	26	17	73	48	177	2.42	217	0.23	0.13	14	0.04
98012	36	196395	7.5	61.5	2.80	2.59	0.21	24	32.3	0.56	0.17	26	19	81	49	179	2.47	223	0.16	0.13	16	0.05
98012	36	196396	10	58.6	2.75	2.64	0.11	17	32.3	0.61	0.22	26	19	83	48	173	2.54	222	0.19	0.13	17	0.06
98012	36	196397	20	62.0	2.50	2.47	0.03	18	32.7	0.90	0.37	26	16	66	48	169	2.62	227	0.22	0.12	7	0.02
98012	36	196398	30	59.4	2.22	2.21	0.01	13	32.9	0.81	0.47	26	15	62	51	175	2.69	210	0.22	0.11	6	0.01
98012	36	196399	40	61.9	2.14	2.10	0.04	24	32.9	0.92	0.49	26	16	65	43	167	2.70	229	0.22	0.11	7	0.01
98012	36	196400	50	56.6	2.11	2.06	0.05	19	33.1	0.79	0.55	27	17	64	47	165	2.91	220	0.22	0.12	5	0.01
98012	36	196401	60	53.2	2.08	1.96	0.12	25	32.8	0.86	0.56	26	15	58	47	145	2.69	208	0.21	0.12	5	0.01
98012	36	196402	70	53.2	2.01	1.95	0.06	20	32.9	0.86	0.60	26	18	66	45	165	2.89	221	0.25	0.13	5	0.01
98012	36	196403	80	50.0	1.94	1.93	0.01	25	32.7	0.75	0.64	26	16	64	43	149	2.86	223	0.28	0.15	6	0.01
98012	36	196404	90	51.0	1.86	1.79	0.07	23	32.6	0.77	0.68	26	15	61	50	150	2.76	226	0.26	0.15	6	0.01
98012	36	196405	100	53.9	1.98	1.93	0.05	21	32.4	0.79	0.71	26	15	67	51	146	2.98	234	0.30	0.14	5	0.01
98012	36	196406	110	53.5	1.88	1.85	0.03	14	32.4	0.95	0.72	26	16	63	46	141	2.86	233	0.27	0.14	5	0.01
98012	36	196407	120	53.1	1.74	1.69	0.05	27	32.4	0.80	0.77	26	15	61	44	140	2.81	229	0.24	0.13	6	0.01
98012	36	196408	130	56.4	2.14	2.13	0.01	17	32.6	0.87	0.79	26	16	62	44	135	2.91	229	0.26	0.12	6	0.01
98012	36	196409	140	55.3	1.64	1.58	0.06	26	32.6	0.84	0.81	26	17	67	48	147	3.04	241	0.32	0.13	5	0.01
98012	37	196563	0		1.64	1.56	0.08	29					13	72	43	120	2.25	204	0.20	0.14	14	0.01
98012	38	196424	-5						31.9	0.05	0.00	26										
98012	38	196425	0	53.3	1.86	1.66	0.20	15	33.2	0.54	0.15	27	13	73	46	87	2.25	196	0.15	0.17	16	0.05
98012	38	196426	2.5	50.1	1.90	1.77	0.13	20	33.1	0.54	0.16	26	15	69	48	105	2.36	213	0.17	0.14	15	0.04
98012	38	196427	5.0	44.1	1.70	1.55	0.15	31	33.5	0.70	0.20	27	14	65	44	99	2.28	201	0.25	0.13	11	0.04
98012	38	196428	7.5	43.0	1.67	1.58	0.09	24	33.5	0.74	0.20	27	13	69	46	100	2.33	194	0.21	0.14	13	0.04
98012	38	196429	10	25.9	0.53	0.52	0.01	35	33.8	0.70	0.20	27	9	57	50	89	2.19	179	0.09	0.12	9	0.02
98012	38	196430	20	40.4	2.07	2.06	0.01	27	33.6	0.71	0.24	27	19	64	56	103	3.01	315	0.16	0.22	5	0.02
98012	38	196431	30	45.1	2.42	2.31	0.11	26	33.5	0.64	0.44	27	26	71	68	123	3.54	399	0.47	0.38	6	0.02
98012	38	196432	40	45.3	2.58	2.50	0.08	31	33.3	0.62	0.50	27	24	62	56	98	2.84	299	0.54	0.49	9	0.02
98012	38	196433	50	45.3	2.35	1.88	0.47	20	33.4	0.62	0.59	23	21	56	52	91	2.79	301	0.43	0.34	8	0.02
98012	38	196434	60	36.6	1.72	1.71	0.01	20	33.4	0.63	0.68	23	23	64	62	89	3.06	330	0.41	0.25	7	0.02
98012	38	196435	70	42.3	1.67	1.62	0.05	16	33.0	0.63	0.85	22	23	64	56	94	2.87	291	0.32	0.23	9	0.02

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	38	196436	80	38.5	2.15	2.14	0.01	21	33.2	0.63	0.74	22	25	68	51	105	3.03	310	0.39	0.38	8	0.02
98012	39	196437	-5						32.8	0.04	0.00	26										
98012	39	196438	0	47.6	1.84	1.77	0.07	22	33.8	0.61	0.13	27	13	68	57	152	2.07	186	0.17	0.20	16	0.05
98012	39	196439	2.5	47.1	1.49	1.39	0.10	20	32.9	0.63	0.14	26	12	70	57	143	2.17	196	0.21	0.18	15	0.05
98012	39	196440	5.0	39.7	1.41	1.37	0.04	24	33.5	0.71	0.18	27	12	56	42	144	2.05	197	0.28	0.13	10	0.04
98012	39	196441	7.5	40.1	1.42	1.29	0.13	16	32.9	0.70	0.17	26	11	56	43	150	2.18	193	0.20	0.11	9	0.03
98012	39	196442	10	41.0	1.22	1.19	0.03	21	33.7	0.73	0.22	27	10	47	44	143	2.19	193	0.29	0.10	6	0.02
98012	39	196443	20	34.8	1.12	1.05	0.07	17	34.0	0.62	0.28	27	10	46	41	140	2.14	176	0.27	0.14	6	0.02
98012	39	196444	30	30.9	0.92	0.91	0.01	18	33.7	0.64	0.31	27	9	46	43	142	2.27	198	0.31	0.12	6	0.01
98012	39	196445	40	30.2	1.19	1.15	0.04	15	34.0	0.61	0.38	27	16	55	48	156	2.78	235	0.41	0.18	6	0.02
98012	39	196446	50	34.7	1.61	1.55	0.05	13	33.7	0.58	0.42	27	21	66	57	175	3.39	292	0.42	0.21	6	0.03
98012	39	196447	60	33.7	1.63	1.62	0.01	18	34.0	0.61	0.52	27	22	65	51	172	3.15	336	0.38	0.20	7	0.03
98012	40	196448	-5						33.0	0.07	0.00	26										
98012	40	196449	0	60.7	2.16	2.11	0.05	16	33.5	0.51	0.11	27	15	68	46	168	2.50	218	0.29	0.19	10	0.03
98012	40	196450	2.5	61.2	2.45	2.17	0.28	26	33.6	0.58	0.08	27	16	81	45	167	2.35	213	0.22	0.27	18	0.05
98012	40	196451	5.0	55.9	2.51	2.29	0.22	16	33.8	0.59	0.08	27	17	81	53	161	2.48	213	0.26	0.23	15	0.05
98012	40	196452	7.5	45.7	2.30	2.11	0.19	20	33.5	0.64	0.11	27	16	67	51	168	2.67	223	0.21	0.15	10	0.02
98012	40	196453	10	61.8	2.26	2.23	0.03	18	33.3	0.67	0.12	27	16	68	56	170	2.46	210	0.30	0.20	8	0.02
98012	40	196454	20	53.0	2.15	2.14	0.01	13	33.5	0.68	0.14	27	15	63	53	172	2.76	210	0.37	0.19	5	0.01
98012	40	196455	30	61.3	1.86	1.85	0.01	23	33.5	0.68	0.13	27	14	60	52	172	2.70	219	0.35	0.19	6	0.01
98012	40	196456	40	53.2	1.77	1.47	0.30	23	33.5	0.71	0.14	27	13	58	47	159	2.49	200	0.27	0.25	7	0.01
98012	40	196457	50	50.3	1.64	1.63	0.01	25	33.3	0.70	0.14	27	13	60	45	150	2.48	216	0.27	0.23	8	0.02
98012	40	196458	60	44.2	1.49	1.45	0.04	14	33.7	0.75	0.17	27	11	56	44	154	2.51	201	0.11	0.19	6	0.02
98012	40	196459	70	47.3	1.44	1.43	0.01	18	34.2	0.73	0.18	27	11	55	44	149	2.38	198	0.26	0.21	6	0.02
98012	41	196460	-5						26.1	0.04	0.00	21										
98012	41	196461	0	40.2	1.76	1.37	0.39	9	27.8	0.22	0.12	22	40	571	36	143	1.67	255	0.64	4.70	348	0.26
98012	41	196462	2.5	39.9	1.93	1.35	0.58	10	28.7	0.30	0.16	23	48	579	42	138	1.72	260	0.73	5.90	480	0.26
98012	41	196463	5.0	45.2	2.19	1.78	0.41	14	28.7	0.19	0.17	23	64	1094	38	141	1.81	254	0.76	6.70	1166	0.40
98012	41	196464	7.5	38.2	2.07	1.73	0.34	14	30.2	0.40	0.25	24	47	541	32	111	1.50	313	0.85	7.40	794	0.57
98012	41	196465	10	39.1	2.02	1.83	0.19	9	30.9	0.47	0.35	25	54	762	41	126	1.87	251	0.79	7.30	771	0.37
98012	41	196466	20	34.9	1.28	0.94	0.34	10	31.4	0.67	1.00	22	17	148	40	118	1.77	280	0.23	1.11	37	0.09
98012	41	196467	30	26.9	1.37	1.13	0.24	14	31.3	0.77	1.39	21	11	54	36	117	1.96	286	0.12	0.34	5	0.02
98012	41	196468	40	30.1	1.00	0.89	0.11	5	31.3	0.75	1.60	15	9	43	34	112	1.85	272	0.08	0.11	2	0.01
98012	41	196469	50	33.4	0.93	0.64	0.30	7	31.2	0.73	1.81	12	10	41	38	117	1.85	258	0.07	0.20	2	0.01
98012	41	196470	60	30.4	1.09	0.99	0.10	9	31.2	0.74	1.90	10	9	40	34	116	1.80	243	0.09	0.17	2	0.01
98012	41	196471	70	29.0	0.94	0.85	0.09	10	31.5	0.75	2.00	7	9	38	35	107	1.74	236	0.07	0.23	2	0.01
98012	42	196564	0		1.74	1.57	0.17	34					14	67	35	104	2.03	214	0.22	0.10	18	0.01

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	43	196472	0	51.9	2.01	1.82	0.19	14	34.4	0.56	0.11	28	17	73	43	103	2.06	229	0.13	0.12	18	0.05
98012	43	196473	2.5	46.5	1.72	1.69	0.03	19	34.3	0.68	0.10	27	16	67	39	105	2.18	231	0.19	0.10	13	0.04
98012	43	196474	5.00	46.4	2.21	2.11	0.10	14	34.2	0.76	0.13	27	16	80	44	111	2.21	225	0.18	0.15	19	0.05
98012	43	196475	7.50	46.4	2.05	1.80	0.25	18	34.3	0.78	0.12	27	17	72	43	108	2.23	221	0.22	0.10	12	0.04
98012	43	196476	10	43.6	1.61	1.57	0.04	17	34.3	0.70	0.13	27	12	53	37	93	2.08	207	0.23	0.06	4	0.01
98012	43	196477	20	39.4	1.34	1.33	0.01	16	34.4	0.77	0.15	28	11	54	33	94	2.06	194	0.14	0.06	4	0.01
98012	43	196478	30	40.2	1.06	1.05	0.01	18	34.6	0.79	0.18	28	11	52	37	79	2.13	216	0.21	0.08	4	0.01
98012	44	196565	0		1.12	1.03	0.09	28					9	54	25	64	1.52	192	0.18	0.14	18	0.01
98012	45	196479	-5						33.6	0.04	0.02	27										
98012	45	196480	0	49.7	1.86	1.85	0.01	23	33.9	0.51	0.14	27	14	65	37	98	2.16	238	0.18	0.08	10	0.02
98012	45	196481	2.5	51.3	1.84	1.47	0.37	28	34.2	0.49	0.13	27	14	61	38	96	2.24	231	0.21	0.08	7	0.02
98012	45	196482	5	50.6	1.69	1.55	0.14	25	34.2	0.56	0.13	27	13	55	38	92	2.18	267	0.14	0.11	8	0.02
98012	45	196483	7.5	45.1	1.34	1.33	0.01	15	34.2	0.60	0.12	27	13	53	46	78	2.09	225	0.23	0.06	4	0.03
98012	45	196484	10	44.9	1.67	1.55	0.12	27	34.2	0.57	0.13	27	13	57	48	106	2.35	218	0.22	0.08	7	0.01
98012	45	196485	20	32.6	1.43	1.38	0.05	15	34.6	0.68	0.15	28	12	55	42	95	2.31	219	0.18	0.10	5	0.01
98012	45	196486	30	32.7	0.93	0.89	0.04	11	33.2	0.66	0.23	27	11	53	42	77	2.25	229	0.19	0.05	5	0.01
98012	45	196487	40	28.4	0.69	0.51	0.17	24	34.4	0.68	0.26	27	8	39	37	46	1.78	210	0.18	0.07	5	0.01
98012	45	196488	50	24.3	0.75	0.65	0.09	19	35.0	0.60	0.43	28	7	46	37	64	2.01	242	0.09	0.02	4	0.01
98012	45	196489	60	25.7	1.22	0.54	0.68	33	34.5	0.64	0.36	28	17	68	56	88	2.51	454	0.10	0.02	8	0.02
98012	46	196566	0		1.49	1.39	0.10	44					12	63	28	89	1.92	217	0.16	0.06	17	0.01
98012	47	196490	0	57.9	2.10	1.91	0.19	39	35.1	0.58	0.21	28	16	70	38	137	1.88	205	0.22	0.15	18	0.05
98012	47	196491	2.5	52.0	2.27	1.93	0.34	31	35.2	0.56	0.21	28	16	67	36	141	2.05	225	0.27	0.13	15	0.05
98012	47	196492	5	53.0	2.25	2.03	0.22	33	35.0	0.53	0.13	28	17	69	43	162	2.46	234	0.24	0.13	10	0.03
98012	47	196493	7.5	53.8	2.18	1.92	0.26	39	34.8	0.52	0.14	28	16	59	40	152	2.19	214	0.19	0.10	8	0.01
98012	47	196494	10	47.3	2.05	1.88	0.17	33	34.8	0.48	0.14	28	16	59	45	153	2.40	228	0.30	0.11	4	0.01
98012	47	196495	20	35.4	1.66	1.65	0.01	34	34.7	0.39	0.10	28	14	54	32	134	2.19	209	0.15	0.12	8	0.01
98012	47	196496	30	34.0	0.97	0.96	0.01	37	34.8	0.59	0.20	28	8	41	29	98	1.81	204	0.22	0.16	5	0.01
98012	47	196497	40	38.4	1.05	0.94	0.12	39	35.2	0.62	0.25	28	10	44	34	111	1.97	223	0.16		4	0.01
98012	48	196498	-5						30.9	0.10	0.00	25										
98012	48	196499	0	48.0	1.72	1.71	0.01	36	34.8	0.82	0.22	28	14	58	36	118	2.05	207	0.15	0.11	12	0.01
98012	48	196500	2.5	46.1	2.03	1.90	0.13	47	33.5	0.77	0.20	27	16	73	38	131	2.26	248	0.19	0.13	19	0.01
98012	48	196501	5	45.9	2.03	1.70	0.33	46	33.9	0.76	0.24	27	15	69	34	127	2.14	224	0.16	0.14	17	0.01
98012	48	196502	7.5	44.8	1.85	1.74	0.11	39	34.2	0.79	0.22	27	16	73	35	136	2.19	246	0.29	0.15	20	0.01
98012	48	196503	10	43.9	1.65	1.45	0.20	32	34.6	0.75	0.25	28	12	50	29	122	1.91	273	0.11	0.13	9	0.01
98012	48	196504	20	31.9	1.01	0.89	0.12	39	34.5	0.62	0.19	28	11	49	35	125	2.05	236	0.07	0.24	3	0.01
98012	48	196505	30	42.4	1.08	0.85	0.23	38	35.2	0.62	0.21	28	21	84	48	183	2.67	295	0.12	0.24	6	0.01
98012	48	196506	40	40.1	1.01	0.75	0.26	59	35.4	0.63	0.22	28	19	66	45	157	2.53	288	0.11	0.19	6	0.01

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	48	196507	50	39.9	0.74	0.60	0.14	48	35.1	0.58	0.22	28	20	66	43	170	2.59	319	0.10	0.20	7	0.01
98012	48	196508	60	30.6	0.70	0.50	0.21	40	35.7	0.58	0.25	29	21	66	43	167	2.73	359	0.08	0.11	7	0.01
98012	48	196509	70	27.4	0.92	0.52	0.40	44	35.8	0.57	0.26	29	16	55	36	125	2.20	314	0.14	0.12	5	0.01
98012	48	196510	80	35.6	0.97	0.41	0.56	47	35.8	0.48	0.28	29	22	71	45	169	2.73	406	0.09	0.09	6	0.01
98012	48	196511	90	37.3	1.00	0.46	0.54	43	36.2	0.62	0.32	29	20	62	43	144	2.36	370	0.10	0.09	5	0.01
98012	48	196512	100	42.7	1.29	0.46	0.83	43	35.5	0.61	0.30	28	21	64	44	147	2.44	408	0.13	0.11	5	0.01
98012	48	196513	110	38.6	1.14	0.52	0.62	38	36.7	0.60	0.31	29	24	72	45	151	2.80	442	0.10	0.09	6	0.01
98012	48	196514	120	36.9	1.24	0.52	0.72	42	35.3	0.62	0.32	28	22	69	49	142	2.83	433	0.11	0.10	6	0.01
98012	49	196515	-5						33.3	0.05	0.00	27										
98012	49	196516	0	50.3	1.73	1.41	0.32	32	34.4	0.48	0.17	28	13	54	29	93	1.97	253	0.13	0.08	11	0.01
98012	49	196517	2.5	44.9	1.16	1.15	0.01	30	34.4	0.52	0.18	28	13	54	33	97	2.11	235	0.26	0.07	4	0.01
98012	49	196518	5	45.8	1.59	1.41	0.18	36	34.2	0.54	0.37	27	14	48	28	93	1.95	203	0.60	0.09	3	0.01
98012	49	196519	7.5	44.7	1.08	1.07	0.01	38	34.9	0.60	0.21	28	11	49	30	89	1.97	234	0.33	0.08	5	0.01
98012	49	196520	10	36.1	1.28	1.20	0.08	34	34.7	0.60	0.17	28	13	46	31	85	2.01	228	0.53	0.08	5	0.01
98012	49	196521	20	35.0	0.90	0.85	0.05	33	34.7	0.64	0.19	28	11	51	31	62	1.86	207	0.19	0.23	4	0.01
98012	49	196522	30	33.7	1.03	0.84	0.19	32	34.8	0.66	0.22	28	11	44	29	66	1.82	212	0.08	0.13	4	0.01
98012	49	196523	40	27.2	1.00	0.75	0.24	21	34.5	0.64	0.24	28	14	52	32	70	2.42	722	0.08	0.14	5	0.01
98012	49	196524	50	30.1	1.22	0.43	0.79	25	34.7	0.62	0.26	28	16	53	34	79	2.15	747	0.08	0.05	5	0.01
98012	49	196525	60	38.0	1.02	0.44	0.58	35	35.2	0.62	0.28	28	20	69	42	126	2.46	391	0.06	0.07	8	0.01
98012	50	196567	0		1.20	1.12	0.08	34					10	49	33	82	1.85	205	0.22	0.06	9	0.01
98012	51	196526	0	61.7	2.15	1.97	0.18	30	34.8	0.65	0.18	28	19	74	35	121	2.32	246	0.12	0.10	13	0.01
98012	51	196527	2.5	56.4	2.18	1.93	0.25	34	34.8	0.70	0.18	28	16	68	34	108	2.13	225	0.15	0.09	13	0.01
98012	51	196528	5	49.5	1.97	1.91	0.06	30	34.9	0.65	0.16	28	18	69	35	117	2.17	228	0.15	0.10	12	0.01
98012	51	196529	7.5	55.8	2.27	1.84	0.43	32	35.2	0.62	0.15	28	16	63	35	111	2.25	226	0.17	0.13	7	0.01
98012	51	196530	10	47.3	1.97	1.85	0.12	20	34.7	0.58	0.15	28	16	60	34	114	2.32	232	0.18	0.08	5	0.01
98012	51	196531	20	45.6	1.80	1.65	0.15	28	34.7	0.63	0.16	28	15	54	36	96	2.18	212	0.18	0.08	5	0.01
98012	52	196568	0		1.13	1.03	0.10	45					8	45	23	51	1.50	211	0.15	0.05	10	0.01
98012	53	196532	-5						34.5	0.05	0.00	28										
98012	53	196533	0	57.8	1.75	1.46	0.29	30	34.9	0.51	0.11	28	15	64	33	109	2.20	232	0.20	0.08	8	0.01
98012	53	196534	2.5	50.1	1.67	1.51	0.16	34	34.9	0.47	0.10	28	15	60	32	100	2.09	217	0.25	0.08	8	0.01
98012	53	196535	5	51.6	1.45	1.38	0.07	28	34.5	0.53	0.11	28	11	52	30	87	2.05	205	0.26	0.11	5	0.01
98012	53	196536	7.5	45.6	1.34	1.24	0.10	46	34.5	0.50	0.09	28	12	49	36	94	2.13	203	0.28	0.09	5	0.01
98012	53	196537	10	47.3	0.83	0.82	0.01	33	34.0	0.47	0.10	27	10	45	28	73	2.05	302	0.08	0.10	3	0.01
98012	53	196538	20	36.0	1.07	0.82	0.25	43	33.3	0.57	0.12	27	10	46	32	74	2.04	230	0.17	0.07	3	0.01
98012	53	196539	30	28.1	1.30	0.81	0.49	31	34.9	0.55	0.11	28	11	53	33	79	2.20	274	0.16	0.08	3	0.01
98012	53	196540	40	37.9	1.05	0.74	0.31	43	35.2	0.59	0.13	28	12	49	37	80	2.38	258	0.20	0.08	5	0.01

Table 2 Geochemical Data

Cruise	Stn	Lab ID	Sed. Depth	Water Content	Total Carb.	Organic Carb.	Inorganic Carb.	Clay	Sal.	Silica	Amm.	Sulfate	Cu	Zn	Ni	Cr	Fe	Mn	Ag	Cd	Pb	Hg
			cm	%	%	%	%	%	ppt	mM	mM	mM	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
98012	54	196541	-5						31.3	0.06	0.00	25										
98012	54	196542	0	62.8	2.64	2.47	0.17	30	34.3	0.66	0.17	27	19	72	34	144	2.02	222	0.32	0.08	15	0.01
98012	54	196543	2.5	58.5	2.59	2.30	0.29	36	34.4	0.65	0.19	28	17	70	32	155	2.28	257	0.29	0.09	18	0.01
98012	54	196544	5	59.8	2.49	2.32	0.17	40	34.5	0.71	0.22	28	20	70	32	157	2.42	252	0.31	0.09	17	0.01
98012	54	196545	7.5	56.3	2.64	2.30	0.34	31	35.0	0.70	0.19	28	20	74	34	154	2.49	252	0.28	0.09	17	0.01
98012	54	196546	10	55.7	2.38	2.09	0.29	30	34.8	0.62	0.16	28	19	67	35	158	2.33	248	0.26	0.10	11	0.01
98012	54	196547	20	54.9	2.30	2.16	0.14	35	34.6	0.44	0.11	28	17	60	37	157	2.32	225	0.31	0.13	7	0.01
98012	54	196548	30	54.2	1.93	1.85	0.08	29	34.8	0.55	0.12	28	16	59	32	150	2.37	245	0.30	0.10	7	0.01
98012	54	196549	40	55.8	1.87	1.81	0.06	26	34.8	0.64	0.16	28	15	56	37	152	2.28	224	0.33	0.09	7	0.01
98012	54	196550	50	55.8	1.86	1.76	0.10	30	35.2	0.65	0.18	28	16	59	35	138	2.41	242	0.28	0.13	7	0.01
98012	54	196551	60	51.8	1.84	1.72	0.12	32	35.3	0.66	0.19	28	16	61	34	141	2.44	233	0.31	0.13	8	0.01
98012	54	196552	70	51.4	1.90	1.69	0.21	37	35.2	0.67	0.20	28	14	59	29	146	2.21	229	0.32	0.10	7	0.01
98012	54	196553	80	49.2	1.66	1.46	0.20	29	35.5	0.68	0.22	28	15	61	38	142	2.34	254	0.28	0.14	7	0.01
98012	54	196554	90	49.3	1.42	1.28	0.14	34	35.3	0.67	0.22	28	14	52	33	126	2.18	239	0.28	0.12	7	0.01
98012	54	196555	100	41.1	1.33	1.21	0.12	34	35.1	0.66	0.23	28	13	51	35	117	2.09	244	0.26	0.14	7	0.01
98012	54	196556	110	39.7	1.29	1.03	0.26	35	35.5	0.62	0.23	28	14	53	39	121	2.32	265	0.24	0.10	7	0.01