

12. DATA REPORT: SEDIMENT GEOCHEMICAL RESULTS FROM ODP LEG 189, SITE 1171—EOCENE TO PRESENT¹

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INTRODUCTION

A primary goal of Leg 189 was to evaluate Cenozoic changes in ocean circulation and the subsequent influence on climate variability (Exon, Kennett, Malone, et al., 2001; Exon et al., 2002). Our approach is to use bulk sediment geochemical records to try to understand the influences of changing ocean circulation and climate on biogeochemical cycles and export production (e.g., Latimer and Filippelli, 2001, 2002).

Site 1171 (48°S, 149°E) is located on the South Tasman Rise at a water depth of ~2150 m. Late Paleocene to late Eocene age sediments represent shallow-water silty claystones and claystones (Exon, Kennett, Malone et al., 2001). A 6-m section of glauconitic sandstone to siltstone is observed in the uppermost upper Eocene and is followed by a sharp lithologic change from shallow-water siliciclastics to pelagic carbonates (Exon, Kennett, Malone, et al., 2001). Sediments of Oligocene age to present are predominantly nannofossil ooze or chalk.

Sediment geochemistry allows us to identify changes in metal sources and terrigenous inputs using elemental data based on Fe, Al, and Ti concentrations and elemental ratios, such as Al/Ti and Fe/Ti. To assess export production, we use records of phosphorus (P) and barium (Ba) concentrations and P/metal and Ba/metal ratios, with elevated values being interpreted as higher export production.

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METHODS OF ANALYSIS

More than 350 samples from Site 1171 ranging in depth from 0.4 to 937 meters below seafloor (mbsf) were analyzed for P and a suite of metals (Fe, Al, Ti, and Ba) at a sample resolution of three per core by inductively coupled plasma–atomic emission spectroscopy (ICP–AES). Bulk samples were dried, crushed, and stored in glass scintillation vials.

Approximately 0.2 g of each carbonate-rich sample (>90 wt%) and 0.1 g of all other samples were dissolved using a CEM Corp. MDS 2000 microwave digestion system with concentrated trace-metal grade HNO₃, HF, and HCl following Environmental Protection Agency SW846 Method 3052, with the modification that carbonate-rich samples were digested using 1 mL (instead of 4 mL) of HF in order to prevent the precipitation of synthetic fluorite. Once the digestion was complete, 0.2 g of boric acid was added to stabilize the solutions. Samples were transferred to new 50-mL polyethylene centrifuge tubes and diluted to 50 mL with Milli-Q water. A Leeman Labs P950 ICP–AES with a CETAC Corp. AT 5000+ ultrasonic nebulizer was used to determine the total elemental concentrations. All elemental data are presented in Table T1. Ten percent of the samples were analyzed as randomly chosen replicates, which agreed within 6% for all elements analyzed. Details of replicate precision, relative error, and instrumental detection limits are listed in Table T2. Detection limits were calculated as three times the standard deviation of the blank value. Two internal consistency standards were created by homogenizing samples from different depths and different cores rather than standard reference materials. The internal consistency standards were used in order to matrix match samples with consistency standards in terms of acid concentrations and sediment lithology. The first standard was created from carbonate-rich samples, and the second was created from the siliciclastic samples of Eocene or older age. The digested standards were analyzed throughout the analyses to ensure digestions were complete and to ensure accuracy. The standards agreed within 5% for all elements analyzed.

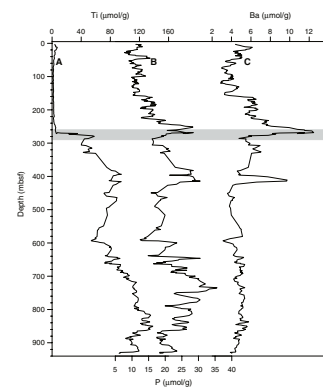
DISCUSSION OF DATA

Variability in downcore elemental concentrations is observed in all elements analyzed. Because the Ti record (Fig. F1A) illustrates typical trends seen in downcore concentrations of other terrigenous metals, such as Fe and Al, only Ti concentrations are plotted. Ti concentrations change considerably near the Eocene/Oligocene boundary coincident with sharp lithologic changes from claystone to glauconite sands to pelagic carbonates, with higher concentrations of Ti in the Eocene and older samples. Phosphorus concentrations (Fig. F1B) and Ba concentrations (Fig. F1C) increase by a factor of two before and decrease similarly after the Eocene–Oligocene transition (gray-shaded area in Fig. F1C). Variability after the Eocene–Oligocene transition appears to be at a higher frequency than that observed prior to the transitional time. This is also observed in the P/Ti (Fig. F2A) and Ba/Ti (Fig. F2B) records. During the Eocene, P and Ti appear to be increasing and decreasing in tandem, suggesting that some of the P may be of terrigenous origin rather than biologically related. This is further supported by the nearly constant P/Ti (Fig. F2A) and Ba/Ti (Fig. F2B) ratios observed during the Eocene. The absolute values of the P/Ti and Ba/Ti ratios change consid-

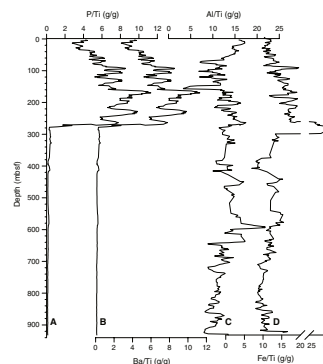
T1. Elemental data, p. 7.

T2. Analytical error and instrumental detection limits, p. 13.

F1. Downcore records of Ti, P, and Ba, p. 5.



F2. Downcore records of P/Ti, Ba/Ti, Al/Ti, and Fe/Ti, p. 6.



erably before and after the Eocene–Oligocene transition. This is related to differences in the average composition of the different rock types, for example, carbonates ($P/Ti = 1.0$) (Faure, 1998) vs. deep-sea clay ($P/Ti = 0.33$) (Faure, 1998).

Ratios of Fe, Al, and Ti can provide information about general changes in metal sources. The Al/Ti (Fig. F2C) ratios are variable down-core, fluctuating between values similar to basalt or oceanic crust ($Al/Ti \leq 9$) (Taylor and McLennan, 1985) and continental sources (average continental crust $Al/Ti = 15.6$) (Taylor and McLennan, 1985), whereas Fe/Ti ratios are similar to those observed for average continental crust ($Fe/Ti = 13.1$) (Taylor and McLennan, 1985). In general, more variability is observed in both records following the Eocene–Oligocene transition.

ACKNOWLEDGMENTS

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REFERENCES

- Exon, N.F., Kennett, J.P., Malone, M.J., et al., 2001. *Proc. ODP, Init. Repts.*, 189 [CD-ROM]. Available from: Ocean Drilling Program, Texas A&M University, College Station TX 77845-9547, USA.
- Exon, N., Kennett, J., Malone, M., Brinkhuis, H., Chaproniere, G., Ennyu, A., Fothergill, P., Fuller, M., Grauer, M., Hill, P., Janecek, T., Kelly, C., Latimer, J., McGonigal, K., Nees, S., Ninnemann, U., Nuernberg, D., Pekar, S., Pellaton, C., Pfuhl, H., Robert, C., Röhl, U., Schellenberg, S., Shevenell, A., Stickley, C., Suzuki, N., Touchard, Y., Wei, W., and White, T., 2002. Drilling reveals climatic consequences of Tasmanian Gateway opening. *Eos, Trans., Am. Geophys. Union*, 83:253, 258–259.
- Faure, G., 1998. *Principles and Applications in Geochemistry*: Upper Saddle River NJ (Prentice Hall).
- Latimer, J.C., and Filippelli, G.M., 2001. Terrigenous input and paleoproductivity in the Southern Ocean. *Paleoceanography*, 16:627–643.
- Latimer, J.C., and Filippelli, G.M., 2002. Eocene to Miocene terrigenous inputs, paleoproductivity, and the onset of the ACC: geochemical evidence from ODP Leg 177, Site 1090. *Palaeogeogr., Palaeoclimatol., Palaeoecol.*, 182:151–164.
- Taylor, S.R., and McLennan, S.M., 1985. *The Continental Crust: Its Composition and Evolution*: Oxford (Blackwell Scientific).

Figure F1. Downcore records of (A) Ti, (B) P, (C) and Ba. The gray-shaded area represents the Eocene–Oligocene transition. Data plotted have been smoothed using a 5-point moving average. See Table T2, p. 13, for relative error and instrumental detection limits for elements analyzed.

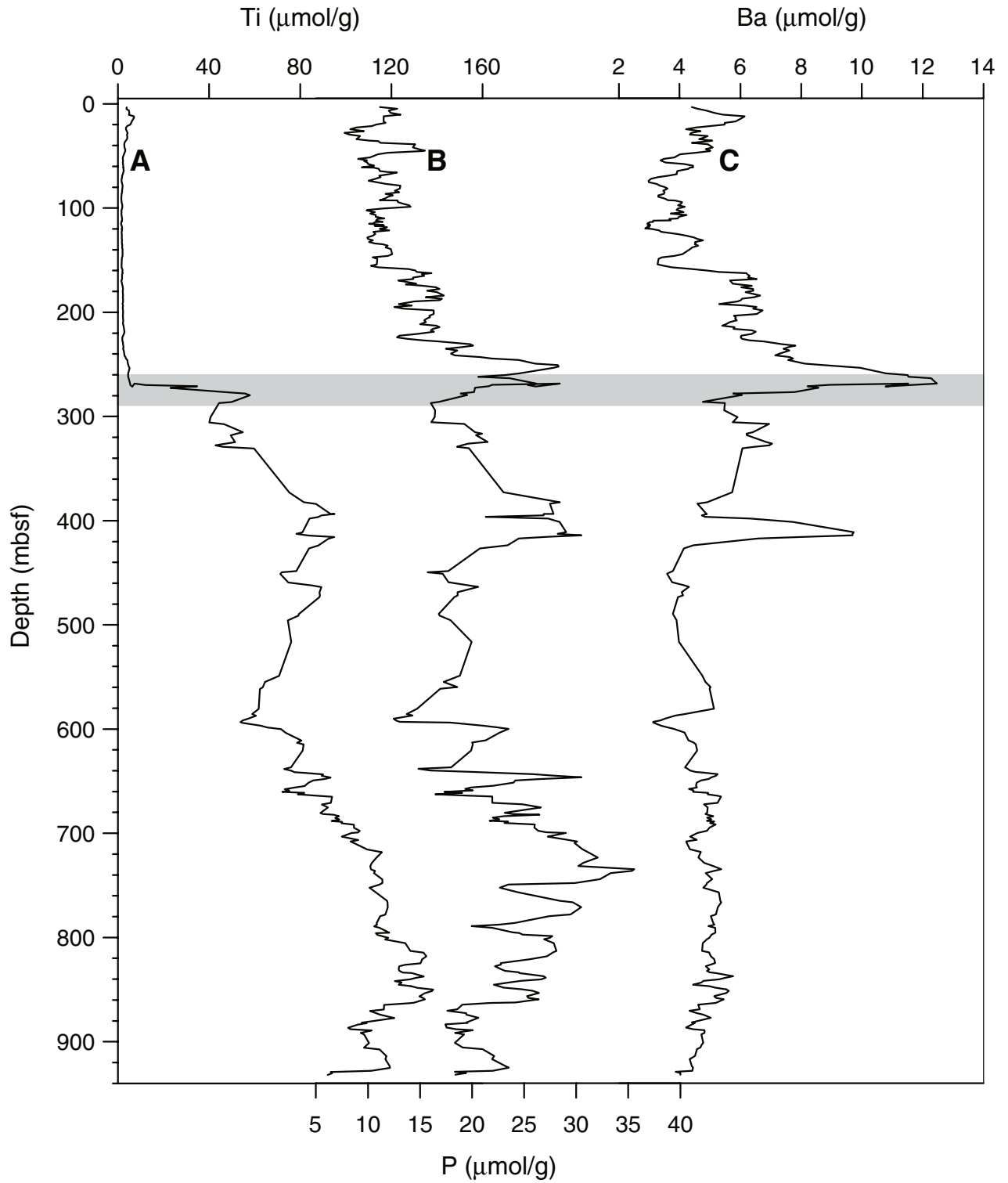


Figure F2. Downcore records of (A) P/Ti, (B) Ba/Ti, (C) Al/Ti, and (D) Fe/Ti. Data plotted have been smoothed using a 5-point moving average.

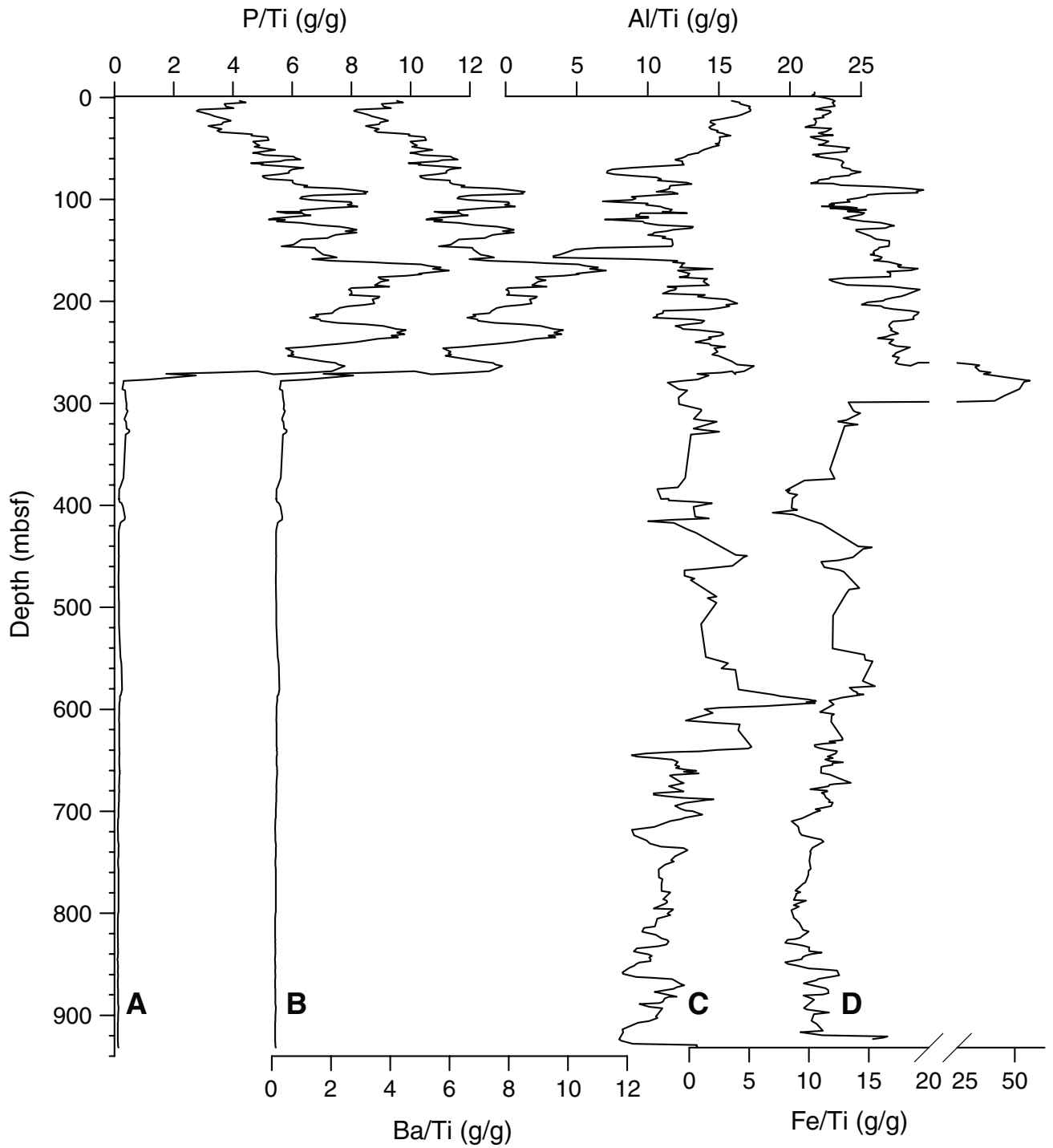


Table T1. Elemental data, Site 1171. (See table note. Continued on next five pages.)

Core, section, interval (cm)	Depth (mbsf)	P ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Ti ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Fe ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Al ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Ba ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)
189-1171A-											
1H-1, 36-37	0.36	4.41	0.11	5.79	0.05	52.81	0.40	144.8	0.9	5.48	0.06
1H-2, 36-37	1.86	14.60	0.74	2.69	0.03	23.97	0.44	81.8	2.1	5.60	0.05
1H-3, 36-37	3.36	8.41	0.15	3.46	0.06	35.41	0.49	80.6	1.2	3.76	0.05
1H-4, 36-37	4.86	13.21	0.31	5.70	0.11	54.65	1.03	189.6	3.3	3.72	0.09
1H-5, 36-37	6.36	15.11	1.10	1.33	0.03	9.30	0.13	38.7	0.8	3.44	0.01
2H-2, 36-37	8.96	12.72	0.51	4.98	0.09	45.41	1.02	149.1	1.0	6.51	0.15
2H-3, 36-37	10.46	10.49	0.75	8.25	0.14	66.22	1.70	254.7	3.4	6.95	0.15
2H-4, 36-37	11.96	9.43	0.46	4.32	0.08	65.24	0.41	127.1	1.1	5.12	0.08
2H-5, 36-37	13.46	17.96	0.49	4.65	0.08	55.39	1.19	151.5	3.1	5.05	0.12
3H-1, 36-37	16.96	6.93	0.65	12.53	0.19	100.28	2.19	378.3	5.1	7.07	0.12
3H-2, 36-37	18.46	12.71	1.05	5.34	0.08	43.73	0.65	158.4	1.0	6.14	0.08
3H-3, 36-37	19.96	10.54	0.43	3.53	0.02	31.35	0.53	90.3	0.7	5.81	0.11
3H-4, 36-37	21.46	10.37	0.74	2.32	0.02	25.58	0.99	60.2	1.7	3.32	0.05
3H-5, 36-37	22.96	13.34	0.48	3.40	0.04	31.11	0.40	91.4	2.4	5.04	0.07
3H-6, 35-36	24.45	5.01	0.14	5.39	0.06	70.55	0.95	139.1	2.4	4.75	0.12
4H-1, 36-37	26.46	5.20	0.37	2.67	0.04	22.74	0.35	63.5	0.3	3.76	0.06
4H-2, 36-37	27.96	7.60	0.20	3.57	0.05	27.86	0.49	90.5	1.5	4.21	0.04
4H-3, 36-37	29.46	16.93	1.14	4.21	0.11	38.39	0.58	121.5	2.5	5.71	0.12
4H-4, 36-37	30.96	4.03	0.33	5.07	0.07	48.64	0.64	123.8	1.5	3.54	0.04
4H-5, 36-37	32.46	7.35	0.52	3.76	0.05	35.87	0.39	92.7	1.3	4.48	0.08
4H-6, 36-37	33.96	10.36	0.78	3.56	0.04	32.94	0.18	88.8	0.5	6.66	0.07
4H-7, 36-37	35.46	6.84	0.53	3.91	0.02	31.15	0.36	115.8	1.3	3.67	0.04
5H-1, 36-37	35.96	15.86	1.92	3.19	0.08	27.90	0.72	90.3	2.1	4.85	0.10
5H-2, 36-37	37.46	10.20	0.54	2.85	0.05	27.26	0.35	81.4	0.4	5.73	0.07
5H-3, 36-37	38.96	11.75	0.58	2.26	0.03	17.11	0.19	56.9	0.5	3.98	0.04
5H-5, 36-37	41.96	11.34	0.72	2.08	0.04	15.97	0.39	60.1	0.4	3.79	0.03
5H-6, 36-37	43.46	23.58	1.32	3.34	0.06	57.91	0.83	75.5	2.0	6.30	0.11
5H-7, 36-37	44.96	14.64	1.21	3.51	0.03	23.79	0.27	100.4	2.4	5.64	0.10
6H-1, 36-37	45.46	13.02	0.56	4.27	0.05	29.60	0.40	120.1	1.8	4.61	0.10
6H-2, 36-37	46.96	14.78	2.35	2.47	0.02	24.50	0.34	61.8	1.3	4.70	0.06
6H-3, 36-37	48.46	9.86	0.63	2.01	0.04	21.05	0.53	53.7	1.0	3.74	0.06
6H-5, 36-37	51.46	7.08	0.34	1.86	0.04	17.31	0.30	46.2	1.2	3.90	0.07
6H-6, 36-37	52.96	10.09	0.82	2.43	0.06	19.58	0.35	60.3	0.9	3.16	0.06
6H-7, 36-37	54.46	9.19	0.43	1.59	0.02	19.26	0.32	35.2	0.6	3.64	0.04
7H-1, 36-37	54.96	9.07	0.23	2.48	0.02	21.69	0.56	57.5	0.8	2.96	0.04
7H-2, 36-37	56.46	14.12	0.71	2.51	0.05	23.06	0.37	63.9	2.5	3.17	0.12
7H-3, 36-37	57.96	5.73	0.51	1.75	0.02	14.28	0.57	39.6	0.7	4.16	0.03
7H-4, 36-37	59.46	11.56	0.94	2.19	0.03	32.43	0.36	44.6	0.9	3.75	0.05
7H-5, 36-37	60.96	9.62	0.46	1.68	0.02	27.70	0.18	35.1	1.6	6.67	0.06
7H-5, 72-73	61.32	11.91	0.33	3.38	0.04	25.75	0.50	70.1	1.7	4.44	0.08
7H-6, 36-37	62.46	8.25	0.54	2.03	0.03	19.17	0.40	43.3	0.6	3.17	0.05
8H-1, 36-37	64.46	11.41	0.77	2.48	0.03	19.97	0.37	56.8	1.1	3.66	0.07
8H-2, 36-37	65.46	14.15	0.78	2.43	0.06	23.68	0.12	59.6	1.3	3.53	0.09
8H-3, 36-37	66.1	9.96	0.35	2.15	0.02	20.08	0.17	44.9	1.3	4.78	0.04
8H-4, 36-37	67.6	15.64	1.37	2.20	0.05	21.58	0.65	47.4	0.7	4.49	0.06
8H-5, 36-37	69.1	12.77	0.60	2.11	0.03	17.89	0.15	45.3	1.7	3.08	0.06
8H-6, 36-37	70.6	7.65	1.40	1.27	0.01	14.84	0.13	5.0	0.6	3.68	0.05
8H-7, 36-37	72.1	9.43	0.30	0.87	0.02	11.98	0.19	8.6	0.6	2.19	0.03
9H-1, 36-37	73.96	10.59	1.19	1.87	0.03	20.48	0.30	18.6	1.5	3.00	0.04
9H-2, 36-37	75.46	13.05	0.40	1.86	0.02	19.51	0.41	34.1	0.9	3.38	0.04
9H-3, 36-37	76.96	9.60	1.01	1.81	0.04	14.16	0.25	38.3	0.9	2.64	0.03
9H-4, 36-37	78.46	11.49	0.42	1.62	0.03	18.77	0.37	13.8	0.5	3.75	0.05
9H-5, 36-37	79.96	13.81	1.02	2.25	0.06	31.36	0.71	51.1	1.7	3.43	0.11
9H-6, 36-37	81.46	17.66	1.55	2.14	0.05	29.03	1.06	50.2	1.4	3.55	0.08
10H-1, 36-37	83.46	12.83	0.57	1.98	0.03	22.21	0.26	42.1	0.8	4.21	0.08
10H-2, 36-37	84.96	9.56	0.62	1.08	0.02	11.88	0.14			3.07	0.04
10H-3, 36-37	86.46	8.93	0.73	1.31	0.03	10.62	0.07	30.1	0.8	3.04	0.08
10H-4, 36-37	87.96	16.00	1.01	2.16	0.03	28.80	0.64	54.7	1.9	3.66	0.08
10H-5, 36-37	89.46	11.11	0.71	1.44	0.01	9.94	0.19	18.6	0.6	3.41	0.06
10H-6, 36-37	90.96	16.29	0.95	1.74	0.02	18.85	0.41	36.1	0.3	3.35	0.06
10H-7, 36-37	92.46	7.25	0.27	0.62	0.01	4.45	0.08			3.06	0.06
11H-1, 36-37	92.96	7.54	0.61	1.26	0.02	9.75	0.11	25.7	0.6	4.07	0.02
11H-2, 36-37	94.46	13.49	0.48	1.75	0.01	19.12	0.21	37.1	0.8	4.22	0.03
11H-3, 36-37	95.96	19.60	0.83	2.06	0.06	30.25	0.50	42.8	0.8	4.48	0.10
11H-4, 36-37	97.46	16.47	1.36	2.26	0.07	31.09	0.61	53.2	1.9	4.59	0.20
11H-5, 36-37	98.96	10.00	0.26	1.52	0.03	35.17	0.30	8.9	1.0	2.83	0.04
11H-6, 36-37	100.46	10.26	0.49	1.42	0.04	21.55	0.53	10.3	1.1	3.63	0.06

Table T1 (continued).

Core, section, interval (cm)	Depth (mbsf)	P ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Ti ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Fe ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Al ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Ba ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)
11H-7, 36-37	101.96	14.16	1.52	2.33	0.03	39.86	0.71	55.4	0.7	5.30	0.05
12H-1, 36-37	102.46	6.54	0.47	1.22	0.02	14.74	0.12	22.4	0.4	3.42	0.05
12H-2, 36-37	103.96	8.84	0.97	1.25	0.01	17.83	0.17	6.8	0.8	4.34	0.05
12H-3, 36-37	105.46	9.53	0.64	1.11	0.02	12.89	0.16			3.09	0.03
12H-4, 36-37	106.96	14.29	1.39	1.72	0.03	14.86	0.24	40.2	1.1	4.51	0.06
12H-5, 36-37	108.46	11.95	1.25	1.56	0.05	26.19	1.25	35.9	0.5	3.16	0.09
12H-6, 36-37	109.96	9.21	0.74	1.78	0.02	16.62	0.24	45.4	0.8	6.06	0.10
189-1171C- 13X-1, 36-37	110.56	8.71	0.69	1.88	0.03	19.05	0.32	14.5	0.9	3.06	0.06
189-1171A- 13X-1, 36-37	111.96	13.71	1.31	1.61	0.03	19.24	0.71	38.9	1.3	2.89	0.08
189-1171C- 13X-2, 36-37	112.06	11.00	0.91	1.50	0.03	13.91	0.19	34.0	0.7	3.15	0.07
189-1171A- 13X-2, 26-27	113.36	11.25	0.87	1.64	0.03	18.30	0.38	36.7	0.6	3.41	0.04
189-1171C- 13X-3, 36-37	113.56	9.23	0.32	1.59	0.02	13.62	0.13	33.3	1.0	3.14	0.06
13X-4, 36-37	115.06	11.90	0.73	1.42	0.03	13.05	0.27	32.7	1.0	3.08	0.07
189-1171A- 14X-1, 36-37	115.16	9.97	0.43	0.85	0.01	11.66	0.34			2.33	0.04
189-1171C- 14X-1, 36-37	115.56	10.20	0.75	1.21	0.02	9.50	0.26	26.3	0.6	2.75	0.06
189-1171A- 14X-2, 36-37	116.66	9.26	0.32	1.62	0.03	13.21	0.21	33.0	0.7	3.40	0.02
189-1171C- 14X-2, 36-37	117.06	12.69	0.64	1.54	0.03	26.94	0.36	34.8	0.9	3.48	0.06
189-1171A- 14X-3, 36-37	118.16	15.50	0.77	2.42	0.06	31.26	1.01	52.0	0.7	3.25	0.07
189-1171C- 14X-3, 36-37	118.56	5.51	0.64	0.74	0.01	3.00	0.07	2.2	0.2	1.87	0.03
189-1171A- 14X-4, 36-37	119.66	14.84	0.67	2.02	0.04	27.77	0.80	43.7	0.8	3.08	0.06
189-1171C- 14X-4, 36-37	120.06	10.64	0.23	1.75	0.03	26.50	0.57	24.8	1.1	2.99	0.07
14X-5, 36-37	121.56	11.05	0.76	1.59	0.02	21.00	0.31	2.8	0.7	3.15	0.05
14X-6, 36-37	123.06	13.64	0.53	1.85	0.03	19.31	0.36	46.6	1.2	4.25	0.08
15X-1, 36-37	125.16	10.05	0.30	1.54	0.03	15.48	0.29	35.3	1.0	3.12	0.06
15X-2, 36-37	126.66	7.25	0.51	1.17	0.01	15.16	0.24	26.3	0.4	3.47	0.02
15X-3, 36-37	128.16	11.49	0.90	2.12	0.03	24.46	0.44	48.2	1.1	5.58	0.07
15X-4, 36-37	129.66	9.82	1.18	1.42	0.02	14.46	0.24	33.5	0.5	4.73	0.07
15X-5, 36-37	131.16	11.12	0.84	1.92	0.03	25.67	0.63	47.1	1.6	5.43	0.13
15X-6, 36-37	132.66	10.26	0.50	1.48	0.02	20.88	0.94	16.7	0.5	3.66	0.04
15X-7, 36-37	134.16	9.73	0.61	1.90	0.03	36.51	0.80	35.3	1.0	4.45	0.16
16X-1, 36-37	134.86	9.56	0.42	1.31	0.01	18.26	0.15	19.5	0.9	4.29	0.04
16X-2, 36-37	136.36	12.73	0.87	2.03	0.04	25.73	0.55	45.3	1.0	4.82	0.06
16X-3, 36-37	137.86	14.78	1.26	2.11	0.02	24.77	0.51	46.2	0.8	5.31	0.12
16X-4, 36-37	139.36	12.74	0.63	1.87	0.03	23.75	0.19	41.4	0.6	4.16	0.10
17X-1, 36-37	144.46	8.65	0.79	1.63	0.01	14.27	0.31	27.3	1.2	3.53	0.05
17X-2, 36-37	145.96	12.14	0.12	2.25	0.05	31.48	0.84	46.8	0.8	3.92	0.09
17X-3, 36-37	147.46	13.23	0.81	1.86	0.03	33.25	0.69	42.8	1.0	3.52	0.05
17X-4, 36-37	148.96	12.90	1.07	2.22	0.05	28.05	0.55	46.5	0.9	4.04	0.10
18X-1, 36-37	154.06	5.38	0.12	0.50	0.01	6.87	0.24			2.08	0.02
18X-2, 36-37	155.56	10.76	0.37	1.34	0.02	17.89	0.19	2.6	0.4	2.96	0.05
18X-3, 36-37	157.06	12.00	0.67	1.74	0.04	24.05	0.47	19.8	0.5	3.79	0.06
18X-4, 36-37	158.56	10.40	0.47	1.95	0.02	27.90	0.28	36.5	0.5	4.60	0.07
18X-5, 36-37	160.06	16.54	0.48	2.49	0.02	30.59	0.34	52.6	0.8	5.30	0.12
18X-6, 36-37	161.56	19.69	1.50	1.95	0.04	24.56	0.50	56.9	1.7	5.37	0.14
18X-7, 36-37	162.56	14.24	1.10	1.62	0.03	20.78	0.71	43.4	1.5	5.39	0.05
19X-1, 36-37	163.66	12.54	0.49	1.26	0.02	17.92	0.38	10.7	0.6	5.80	0.06
19X-2, 36-37	165.16	17.53	0.76	2.75	0.08	35.57	0.81	71.8	1.3	9.14	0.11
19X-3, 36-37	166.66	11.81	0.59	1.33	0.01	19.62	0.15	26.2	0.2	5.38	0.03
19X-4, 36-37	168.16	20.89	1.64	1.87	0.03	26.59	0.66	54.2	1.4	5.83	0.15
19X-5, 36-37	169.66	8.85	0.24	1.24	0.02	15.36	0.27	31.8	0.5	5.11	0.09

Table T1 (continued).

Core, section, interval (cm)	Depth (mbsf)	P ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Ti ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Fe ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Al ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Ba ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)
19X-7, 28-29	172.58	12.61	0.45	1.75	0.03	20.58	0.39	50.5	1.0	7.23	0.09
20X-1, 36-37	173.26	10.40	0.31	1.11	0.01	20.49	0.37	5.0	0.5	4.74	0.09
20X-2, 36-37	174.76	20.42	0.43	2.56	0.09	49.01	0.74	69.1	1.3	5.87	0.26
20X-3, 36-37	176.26	15.87	0.72	2.07	0.03	26.55	0.26	57.7	1.3	6.71	0.17
20X-4, 36-37	177.76	17.25	1.01	2.25	0.05	28.99	0.39	58.3	1.6	7.35	0.12
20X-5, 36-37	179.26	18.69	1.65	2.23	0.05	41.37	0.70	51.8	1.2	5.50	0.22
20X-6, 36-37	180.76	12.19	0.27	1.52	0.02	24.32	0.31	33.4	0.8	6.68	0.06
21X-2, 36-37	184.06	14.36	0.66	2.13	0.06	22.46	0.11	53.3	0.3	5.91	0.10
21X-3, 36-37	185.56	20.53	1.09	1.94	0.06	27.31	0.91	53.2	1.3	5.44	0.16
21X-4, 36-37	187.06	20.60	1.67	3.36	0.08	43.32	0.92	98.5	1.3	9.73	0.14
21X-5, 36-37	188.56	10.08	0.56	1.36	0.03	2.85	0.05			4.52	0.09
21X-6, 36-37	189.66	19.92	1.01	2.20	0.05	23.08	0.47	60.3	1.4	4.66	0.11
22X-1, 36-37	192.16	13.38	0.50	2.18	0.02	25.34	0.49	53.2	1.2	5.74	0.05
22X-2, 36-37	193.66	8.41	0.21	1.66	0.05	25.84	0.39	39.6	0.9	4.92	0.10
22X-3, 36-37	195.16	13.06	0.69	2.31	0.02	38.48	0.58	57.8	0.4	6.72	0.17
22X-4, 36-37	196.66	16.22	1.09	2.74	0.02	48.93	0.90	64.8	0.3	8.72	0.14
22X-5, 36-37	198.16	11.62	0.36	1.67	0.02	25.87	0.40	38.4	0.1	6.54	0.08
23X-1, 36-37	201.86	17.89	2.01	2.05	0.06	34.79	1.20	63.2	2.2	5.22	0.20
23X-2, 36-37	203.36	22.83	1.01	2.45	0.08	34.72	0.54	86.8	1.5	6.43	0.21
23X-3, 36-37	204.86	12.96	0.72	1.92	0.03	24.87	0.61	60.9	1.9	5.79	0.06
23X-4, 36-37	206.36	14.16	0.93	1.90	0.04	30.80	0.68	31.9	0.7	4.96	0.10
23X-5, 36-37	207.86	11.98	0.86	2.32	0.03	28.92	0.96	57.6	0.9	6.85	0.06
23X-6, 36-37	209.36	16.29	0.94	2.50	0.08	36.10	0.67	62.6	1.2	5.12	0.09
24X-1, 36-37	211.46	21.60	1.18	2.70	0.06	35.89	0.95	77.3	2.4	6.69	0.13
24X-2, 36-37	212.96	13.83	0.34	1.64	0.03	12.17	0.11	4.9	1.3	4.71	0.15
24X-3, 36-37	214.46	11.31	0.76	1.71	0.04	24.15	0.18	28.6	0.5	4.23	0.05
24X-4, 36-37	215.96	19.78	1.37	3.12	0.06	60.53	1.05	65.2	1.5	6.24	0.09
24X-5, 36-37	217.46	17.80	0.68	3.28	0.07	50.91	0.87	83.3	2.2	7.20	0.15
24X-6, 36-37	218.96	18.44	1.25	3.27	0.05	54.59	1.02	85.8	1.0	6.47	0.13
25X-1, 36-37	221.06	12.79	0.71	2.23	0.02	30.39	0.44	61.1	0.9	7.74	0.05
25X-2, 36-37	222.56	12.85	0.47	1.97	0.05	33.48	0.55	48.0	1.5	4.91	0.08
25X-3, 36-37	224.06	11.67	0.82	1.84	0.01	34.55	0.55	34.9	0.6	5.51	0.03
25X-4, 36-37	225.56	9.41	0.34	1.46	0.02	21.06	0.34	24.4	1.2	5.54	0.05
25X-5, 36-37	227.06	17.19	0.94	2.08	0.05	33.90	0.35	38.7	1.1	6.36	0.06
25X-6, 36-37	228.16	17.69	0.48	2.04	0.03	28.13	0.39	62.8	1.7	7.93	0.10
26X-1, 36-37	230.66	19.94	0.73	2.15	0.06	29.77	0.66	54.6	1.8	6.14	0.13
26X-2, 36-37	232.16	20.11	0.63	2.26	0.07	32.51	0.60	64.4	1.9	7.99	0.18
26X-3, 36-37	233.66	24.12	0.75	2.58	0.05	34.65	0.75	81.6	1.6	8.43	0.20
26X-4, 36-37	235.16	18.58	0.43	2.45	0.05	39.13	0.58	47.9	1.9	8.56	0.15
26X-5, 36-37	236.66	12.41	0.87	2.19	0.03	30.77	0.38	62.1	0.5	6.85	0.10
27X-1, 36-37	239.96	12.17	0.49	1.62	0.02	23.45	0.48	30.1	1.2	5.26	0.11
27X-2, 36-37	241.46	25.63	1.63	3.82	0.04	53.54	1.32	114.3	1.1	8.98	0.15
27X-3, 36-37	242.96	21.09	1.30	3.42	0.04	55.39	0.71	75.0	0.8	6.82	0.04
27X-4, 36-37	244.46	20.42	0.70	3.08	0.06	40.45	0.82	87.5	2.5	7.87	0.14
27X-5, 36-37	245.96	24.54	1.19	4.27	0.08	54.81	1.33	123.5	1.2	9.21	0.19
28X-1, 36-37	249.26	17.72	0.53	2.57	0.04	29.16	0.76	71.4	1.1	5.79	0.08
28X-2, 36-37	250.76	38.52	1.34	7.31	0.06	143.00	2.54	170.1	2.4	8.15	0.18
28X-3, 36-37	252.26	29.08	1.29	3.92	0.08	57.12	0.82	93.9	1.6	9.58	0.20
28X-4, 36-37	253.36	31.37	1.44	4.50	0.05	64.32	1.36	119.1	2.2	10.95	0.23
29X-1, 36-37	258.86	24.91	1.07	5.42	0.09	77.53	1.17	149.4	2.0	12.46	0.25
29X-2, 36-37	260.36	15.37	0.64	4.44	0.10	72.46	1.09	140.0	0.9	8.55	0.12
29X-3, 36-37	261.86	21.96	0.80	3.83	0.08	55.20	0.67	121.9	1.7	12.41	0.23
29X-4, 36-37	263.36	22.28	1.20	4.22	0.04	60.26	0.35	106.7	1.3	13.19	0.12
30X-1, 36-37	268.46	18.41	1.68	4.26	0.06	57.20	1.03	120.8	2.0	11.04	0.12
30X-2, 36-37	269.96	39.87	2.52	6.07	0.10	101.18	3.28	230.5	3.1	16.20	0.41
30X-3, 36-37	271.46	28.27	1.50	8.13	0.12	121.34	2.64	206.6	1.8	9.50	0.20
189-1171D-											
3R-2, 36-37	268.46	17.92	0.48	4.30	0.06	67.34	0.65	112.65	1.03	8.03	0.14
3R-3, 14-15	269.74	26.17	1.04	8.48	0.07	157.60	3.42	217.08	1.81	9.12	0.08
189-1171C-											
30X-4, 36-37	272.56	29.99	0.86	9.06	0.10	145.74	1.69	237.6	3.8	14.78	0.37
189-1171D-											
3R-4, 30-31	271.06	7.30	0.34	30.23	0.67	1598.0	15.6	940.3	13.9	3.35	0.04
4R-1, 36-37	276.56	19.90	0.43	63.13	0.75	1614.9	5.0	1116.7	8.6	7.56	0.09
4R-2, 36-37	278.06	24.61	0.83	62.29	1.42	1548.4	7.6	1182.6	13.7	6.25	0.20
4R-3, 36-37	279.56	19.09	0.70	69.61	0.27	1290.2	7.5	1795.4	21.1	6.97	0.11
5R-1, 36-37	286.16	23.64	0.99	53.17	1.36	2125.2	38.8	857.6	6.8	4.65	0.10

Table T1 (continued).

Core, section, interval (cm)	Depth (mbsf)	P (μmol/g)	Standard deviation (μmol/g)	Ti (μmol/g)	Standard deviation (μmol/g)	Fe (μmol/g)	Standard deviation (μmol/g)	Al (μmol/g)	Standard deviation (μmol/g)	Ba (μmol/g)	Standard deviation (μmol/g)
5R-2, 36-37	287.16	10.41	0.59	41.16	0.22	1571.5	11.6	929.7	12.9	4.80	0.08
6R-1, 36-37	294.16	6.44	0.53	22.10	0.14	2779.0	9.1	544.9	2.9	1.10	0.02
7R-1, 35-36	300.75	20.56	0.80	35.66	0.48	418.1	6.5	866.5	12.3	9.92	0.16
8R-1, 36-37	305.76	21.23	0.68	59.48	1.15	522.5	3.1	1211.1	19.2	6.88	0.15
8R-2, 36-37	307.26	23.35	0.57	44.51	1.16	343.7	3.4	729.4	6.9	6.83	0.23
9R-1, 36-37	315.06	8.76	0.37	38.37	0.86	642.6	9.9	1393.6	14.0	4.04	0.06
9R-2, 36-37	316.56	22.32	0.56	54.47	0.69	655.4	4.4	1345.3	16.8	7.06	0.10
9R-3, 36-37	318.06	25.65	0.62	77.01	0.53	1032.3	9.1	1518.7	14.4	7.22	0.11
10R-1, 36-37	324.66	24.68	0.41	46.20	2.46	439.1	2.9	1190.1	5.4	5.84	0.19
10R-2, 36-37	326.16	20.47	0.45	31.31	1.26	299.2	2.4	792.8	8.7	6.87	0.22
10R-3, 36-37	327.66	14.38	1.17	47.47	0.88	559.1	5.9	1035.5	9.9	7.21	0.12
10R-4, 36-37	329.16	12.95	0.70	30.61	0.40	276.8	1.2	942.3	13.0	8.07	0.12
10R-5, 35-36	330.65	22.48	1.16	58.09	1.97	971.6	5.8	1727.4	33.4	6.76	0.21
15R-1, 53-54	372.93	22.45	0.60	62.20	1.78	818.3	13.7	1141.0	18.2	3.44	0.13
16R-1, 36-37	382.36	26.24	0.96	99.64	2.10	492.0	6.3	1490.5	27.7	4.88	0.12
16R-2, 37-38	383.87	30.89	1.15	125.13	2.95	819.5	8.1	2285.4	26.4	5.50	0.16
17R-1, 36-37	393.65	40.09	0.78	62.40	0.44	667.1	4.3	1631.2	13.9	3.98	0.03
17R-2, 36-37	393.46	17.74	0.66	84.83	0.77	499.2	6.0	1439.0	22.8	5.15	0.06
17R-3, 36-37	394.96	24.15	1.06	95.04	1.54	622.0	5.9	1973.4	33.2	4.88	0.08
17R-4, 36-37	396.46	21.60	0.85	107.22	2.52	681.8	8.6	2099.1	31.4	5.01	0.11
17R-5, 36-37	397.96	30.77	1.04	97.01	2.76	549.2	6.6	1772.5	10.9	4.64	0.16
18R-CC, 2-3	401.22	12.24	0.85	54.40	0.80	619.2	1.9	2306.7	30.6	4.53	0.08
19R-1, 34-35	411.14	47.87	1.07	66.39	0.83	579.6	5.3	1849.9	18.4	12.54	0.20
19R-2, 37-38	412.67	29.51	0.78	91.10	1.50	438.8	4.4	837.8	10.2	11.93	0.24
19R-3, 36-37	414.16	24.77	1.00	95.86	1.91	581.5	3.8	1974.0	24.1	15.02	0.58
19R-4, 36-37	415.66	26.82	0.78	83.47	1.71	641.9	3.1	2241.2	37.3	4.40	0.08
19R-5, 36-37	417.16	23.51	0.76	81.55	1.72	567.5	4.3	1539.2	28.0	4.57	0.06
20R-3, 36-37	423.76	32.03	0.42	122.45	2.49	527.5	3.3	1641.8	35.4	5.04	0.08
20R-5, 36-37	426.76	15.21	1.37	78.35	1.75	945.7	12.6	1987.9	5.0	3.91	0.04
22R-7, 36-37	448.46	19.44	0.62	73.39	1.46	964.6	10.7	2148.2	38.1	4.31	0.08
23R-1, 36-37	449.56	13.54	0.21	63.44	1.35	699.5	8.7	2008.9	13.8	2.86	0.12
23R-2, 36-37	451.06	8.35	0.53	53.41	1.08	1063.6	20.1	2341.4	49.4	2.80	0.07
24R-1, 38-39	459.18	22.02	0.56	90.22	2.00	834.9	11.7	1848.0	25.0	4.54	0.14
24R-3, 36-37	462.16	22.49	0.99	75.25	2.80	671.6	2.4	1733.1	27.6	3.44	0.10
24R-4, 35-36	463.65	22.25	0.86	91.31	1.41	864.8	5.4	2074.0	27.3	5.18	0.13
25R-1, 36-37	468.86	23.34	0.91	114.87	2.20	668.6	3.7	1481.1	10.2	4.83	0.11
25R-3, 33-34	471.83	12.77	0.87	74.67	1.19	1026.4	3.8	2425.3	23.0	3.55	0.05
25R-4, 36-37	473.36	12.11	0.87	85.81	1.44	890.6	5.4	1764.6	15.2	3.34	0.11
27R-2, 36-37	489.56	22.61	1.01	76.22	1.95	1090.3	15.5	2224.5	48.6	3.68	0.06
27R-3, 36-37	491.06	20.62	0.50	90.36	2.22	998.0	13.5	1840.9	30.1	4.33	0.12
27R-6, 36-37	495.56	15.86	0.73	69.49	1.04	793.0	4.7	2022.9	10.2	4.00	0.08
29R-7, 36-37	516.36	13.08	0.26	73.81	2.76	747.3	8.1	1983.6	26.4	3.68	0.17
33R-3, 36-37	548.86	17.36	0.47	62.39	1.02	574.9	4.9	1623.6	17.0	3.83	0.10
33R-7, 36-37	554.86	32.78	1.51	83.80	1.29	807.8	5.6	1645.9	7.8	4.08	0.15
34R-4, 36-37	559.96	15.02	0.72	63.95	0.66	697.2	8.2	1497.2	16.3	8.19	0.11
34R-5, 36-37	561.46	8.06	0.44	38.22	0.33	869.1	5.5	1639.7	29.0	4.47	0.02
36R-5, 36-37	580.66	19.61	0.86	69.12	1.13	725.2	8.0	1568.7	34.4	4.51	0.11
37R-2, 36-37	585.76	9.17	0.40	55.89	0.46	662.7	5.3	1943.2	26.7	3.70	0.02
37R-3, 36-37	587.26	21.74	0.98	81.15	1.53	493.9	5.1	1758.6	7.6	4.78	0.13
37R-5, 36-37	590.26	10.05	0.56	49.63	0.71	757.5	6.4	2244.8	51.5	3.40	0.05
37R-6, 36-37	591.76	10.86	0.47	46.93	1.24	642.8	5.7	2200.5	27.7	2.98	0.09
37R-7, 36-37	593.26	10.43	0.54	50.33	0.76	602.8	10.7	2015.1	53.0	2.72	0.04
38R-1, 36-37	593.96	10.27	0.48	45.59	0.51	597.3	8.8	1815.3	45.1	2.99	0.07
38R-3, 36-37	596.96	23.58	1.36	75.84	3.29	453.8	8.5	1189.7	20.9	3.57	0.09
38R-4, 36-37	598.46	34.43	0.84	53.37	0.82	940.3	12.8	2701.6	97.9	3.41	0.06
38R-5, 36-37	599.96	26.73	0.88	88.21	2.38	531.8	5.1	1402.3	5.8	4.29	0.16
39R-1, 36-37	603.56	16.40	0.74	63.98	0.54	619.0	7.0	713.0	10.3	3.64	0.06
39R-6, 36-37	611.06	16.33	0.63	76.01	1.15	821.5	7.9	2346.1	25.2	4.15	0.08
40R-1, 36-37	613.16	19.38	0.70	86.02	0.55	652.3	3.7	1778.0	23.8	5.29	0.09
40R-2, 36-37	614.66	27.65	0.55	87.88	3.59	1114.1	16.0	2964.9	88.6	4.06	0.20
40R-6, 36-37	620.66	20.24	0.56	78.86	1.35	872.8	10.4	2636.9	46.8	5.15	0.12
42R-4, 36-37	636.86	16.69	0.74	78.42	1.68	696.3	5.0	2148.0	12.2	3.99	0.06
42R-5, 36-37	638.36	15.58	1.22	73.87	1.17	783.7	4.6	2216.3	10.6	4.40	0.06
42R-6, 36-37	639.86	9.78	0.34	60.49	0.80	702.4	8.6	1749.0	13.2	3.29	0.04
42R-7, 36-37	641.36	11.83	0.52	72.98	0.83	924.7	5.6	2311.5	13.0	4.50	0.07
43R-1, 36-37	641.96	26.07	0.61	93.90	1.91	607.7	2.0	1300.0	8.3	5.50	0.14
43R-2, 35-36	643.45	37.33	0.54	85.72	2.58	937.7	9.3	1441.5	14.2	4.89	0.12
43R-3, 37-38	644.97	24.79	0.96	97.41	2.25	664.9	5.2	1163.1	13.1	5.81	0.18

Table T1 (continued).

Core, section, interval (cm)	Depth (mbsf)	P (μmol/g)	Standard deviation (μmol/g)	Ti (μmol/g)	Standard deviation (μmol/g)	Fe (μmol/g)	Standard deviation (μmol/g)	Al (μmol/g)	Standard deviation (μmol/g)	Ba (μmol/g)	Standard deviation (μmol/g)
43R-4, 36-37	646.46	28.92	1.02	99.69	1.61	793.0	10.9	1308.7	5.3	5.54	0.13
43R-5, 36-37	647.96	23.41	0.89	69.75	1.69	895.5	3.4	1602.6	5.0	4.27	0.05
43R-6, 36-37	649.46	38.12	1.64	113.48	3.00	902.7	15.4	1941.3	5.3	4.76	0.11
44R-1, 36-37	651.66	18.11	0.83	73.38	0.78	1010.2	11.5	2201.9	23.5	4.42	0.03
44R-3, 36-37	654.66	12.12	0.58	71.55	1.30	745.7	7.9	1496.0	21.6	4.57	0.06
44R-4, 36-37	656.16	28.07	0.99	89.13	2.93	665.2	10.8	1470.2	10.8	4.77	0.19
44R-5, 39-40	657.69	13.59	0.74	61.72	0.41					4.18	0.03
44R-6, 35-36	659.15	27.55	0.42	92.37	3.42	870.5	11.1	1783.2	23.6	4.89	0.21
44R-7, 36-37	660.36	15.40	0.75	50.74	0.63	590.9	4.8	1442.6	18.1	3.14	0.04
45R-1, 36-37	661.26	15.74	0.29	81.61	0.98	966.6	10.6	2087.3	37.4	5.33	0.04
45R-2, 36-37	662.76	14.35	0.81	73.88	0.83	823.2	5.3	1620.3	12.6	4.66	0.05
45R-3, 36-37	664.26	22.21	1.15	110.20	1.41	786.1	9.5	1771.3	26.6	6.65	0.12
45R-4, 36-37	664.9	14.63	0.44	78.08	0.86	745.0	6.9	2232.0	24.0	4.80	0.05
46R-1, 36-37	670.86	32.71	1.27	101.45	3.65	852.2	16.0	1301.5	14.0	4.82	0.22
46R-2, 36-37	672.36	25.79	1.05	105.80	1.41	1167.0	8.0	2444.7	35.4	5.86	0.16
46R-4, 36-37	675.36	14.37	0.83	71.15	0.42	787.7	8.1	2002.7	18.1	4.13	0.04
47R-1, 36-37	680.56	36.70	0.93	90.47	2.80	932.7	7.3	1678.7	15.3	4.37	0.14
47R-2, 36-37	681.56	23.52	0.65	91.61	0.69	1113.6	4.2	1762.4	17.3	5.42	0.09
47R-3, 36-37	682.27	15.22	0.42	84.72	0.79	1126.2	12.3	1870.2	28.3	4.75	0.09
47R-4, 36-37	683.77	29.70	0.84	111.11	2.80	565.3	5.2	1156.7	11.9	5.59	0.10
47R-5, 36-37	685.27	27.27	0.92	94.66	2.02	882.3	11.8	2100.3	42.4	4.48	0.10
47R-6, 36-37	686.77	19.36	0.70	102.68	1.93					5.29	0.14
47R-7, 36-37	688.27	18.34	0.60	83.04	1.00	830.4	7.1	2095.1	19.1	4.45	0.05
47R-8, 36-37	688.96	18.44	0.81	93.90	0.80	964.2	15.8	2864.1	66.8	5.40	0.02
48R-1, 36-37	690.26	24.92	0.69	93.92	1.59					4.87	0.08
48R-2, 36-37	691.76	36.20	1.28	117.84	2.52	1106.7	8.6	2315.8	36.3	5.67	0.16
48R-4, 36-37	694.76	17.59	0.67	101.66	1.47	844.1	6.7	2026.1	27.7	4.59	0.05
48R-6, 36-37	697.76	33.05	0.46	110.26	1.62	1182.9	11.9	2188.1	33.1	5.44	0.07
48R-7, 36-37	699.26	18.19	0.32	93.97	1.06	1001.1	11.5	2364.2	49.8	4.38	0.05
49R-1, 36-37	699.86	26.78	1.03	106.72	1.73	1194.7	6.3	2663.9	41.8	4.42	0.09
49R-4, 36-37	703.38	39.94	0.58	113.25	5.57	1028.0	6.5	2567.9	29.0	4.64	0.23
49R-6, 36-37	706.38	27.07	0.94	88.03	2.59	853.5	6.7	2110.8	20.1	4.05	0.08
49R-7, 36-37	707.88	24.36	0.70	89.13	1.04	907.4	5.8	2319.4	6.8	4.26	0.03
50R-2, 36-37	709.46	27.49	0.71	129.77	3.18	656.3	3.5	1864.4	12.2	5.40	0.17
50R-5, 36-37	715.46	31.59	0.95	90.08	2.71	1158.1	9.5	2016.3	16.6	2.76	0.05
50R-7, 36-37	718.15	38.65	1.13	120.98	4.31	856.5	11.9	1950.0	27.1	4.75	0.16
51R-4, 36-37	723.56	30.97	0.64	116.62	2.47	590.6	9.3	1613.8	23.5	4.51	0.12
52R-1, 36-37	728.66	26.77	0.99	121.40	1.53	803.4	3.9	1477.3	7.2	6.09	0.16
52R-3, 36-37	731.66	32.36	1.01	117.54	3.88	873.2	3.5	1851.1	20.3	4.99	0.21
52R-5, 36-37	734.66	24.63	0.71	79.96	1.54	1060.6	6.6	2405.6	30.3	3.71	0.03
52R-6, 36-37	736.16	36.33	1.07	117.76	2.61	916.0	12.7	2148.3	39.6	6.23	0.14
53R-1, 36-37	738.26	57.78	1.59	118.02	2.11	1140.1	8.5	2463.8	27.0	5.84	0.12
53R-5, 36-37	744.26	25.67	1.26	130.73	1.85	1189.8	16.6	3405.2	62.6	4.89	0.07
54R-1, 36-37	747.86	22.19	0.72	114.79	5.58	948.7	13.0	2101.2	25.5	3.64	0.13
54R-2, 36-37	749.36	19.50	0.75	98.33	1.73	917.7	6.0	2195.1	33.7	4.79	0.06
54R-4, 36-37	752.36	24.18	0.88	117.95	1.99	805.9	5.9	1854.6	14.1	5.35	0.08
54R-7, 36-37	756.86	25.86	0.76	110.75	1.48	1103.4	15.5	2501.1	47.0	5.71	0.12
55R-6, 36-37	764.96	21.56	0.88	109.90	1.97	967.5	7.5	2261.4	50.0	4.41	0.08
55R-7, 36-37	766.46	30.86	0.53	128.97	2.70	1033.5	21.9	1853.7	35.6	6.20	0.10
56R-4, 36-37	771.06	39.76	1.16	122.63	4.65	1208.4	11.0	2757.6	35.0	5.00	0.15
57R-2, 36-37	778.16	30.37	0.61	118.82	2.01	719.5	7.1	2119.3	10.1	5.51	0.10
57R-3, 28-29	779.58	29.87	0.54	111.24	0.78	1100.7	5.6	2452.0	43.4	5.19	0.07
58R-1, 36-37	786.26	16.38	0.54	104.83	1.46	809.9	9.1	2147.3	19.1	4.08	0.04
58R-2, 36-37	787.76	20.80	0.97	117.47	1.75	838.2	9.8	2347.8	11.2	5.37	0.04
58R-3, 35-36	789.25	23.11	0.99	114.67	2.99	824.2	4.7	2073.4	18.8	5.42	0.10
58R-4, 36-37	790.76	22.68	1.39	120.02	1.35	946.4	11.4	2398.1	17.8	5.68	0.11
58R-7, 36-37	795.26	16.85	0.43	104.87	1.24	868.0	5.9	2345.9	48.7	4.18	0.06
59R-1, 36-37	795.86	26.22	0.63	116.72	1.77	902.6	5.4	2231.3	23.5	5.18	0.11
59R-2, 36-37	797.36	30.82	1.27	138.88	3.36	880.9	7.7	1787.1	21.0	5.46	0.14
59R-3, 36-37	798.86	25.93	0.71	85.10	1.70	983.8	8.3	2570.3	37.8	5.29	0.15
59R-4, 36-37	800.36	24.46	0.66	123.30	2.91	797.8	9.4	2370.7	34.8	5.14	0.10
59R-5, 36-37	801.86	31.11	0.85	116.53	3.49	777.1	3.2	2419.3	20.5	4.02	0.14
60R-1, 36-37	805.46	25.08	0.71	128.97	3.68	817.1	3.3	2309.6	56.5	5.02	0.12
60R-6, 36-37	812.96	28.01	0.60	131.97	2.13	1091.9	6.3	1931.9	24.9	5.01	0.12
61R-1, 36-37	814.46	30.59	0.59	129.61	4.76	1141.2	6.2	2873.3	74.0	4.64	0.14
61R-3, 36-37	818.06	25.71	1.23	133.98	2.42	989.6	10.0	2373.9	22.8	5.01	0.08
61R-5, 36-37	821.06	29.56	0.98	145.85	4.61	1066.2	6.3	2045.6	29.3	5.15	0.20
62R-1, 36-37	824.66	22.05	1.07	135.38	2.78	1033.8	8.5	2252.5	31.5	5.33	0.07

Table T1 (continued).

Core, section, interval (cm)	Depth (mbsf)	P ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Ti ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Fe ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Al ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)	Ba ($\mu\text{mol/g}$)	Standard deviation ($\mu\text{mol/g}$)
62R-2, 36-37	826.16	19.99	0.43	122.05	2.56	1085.7	8.8	2829.9	23.8	5.55	0.10
62R-3, 36-37	827.66	16.37	0.54	126.12	2.31	1193.0	8.1	3256.9	61.5	4.82	0.13
62R-5, 36-37	830.66	25.93	0.51	100.44	2.66	942.9	8.0	2121.2	15.6	4.31	0.11
62R-6, 36-37	832.16	26.64	0.77	132.61	4.65	898.0	11.5	1981.9	7.2	4.27	0.13
62R-7, 36-37	833.66	25.14	0.99	134.33	3.08	801.1	3.2	2050.4	18.3	5.95	0.14
63R-1, 36-37	834.26	21.83	0.97	123.64	2.45	1019.4	3.4	2281.8	22.6	5.13	0.09
63R-3, 36-37	837.26	22.96	1.90	133.70	2.24					5.27	0.08
63R-4, 36-37	838.76	26.00	0.86	120.16	3.10	864.8	6.1	2030.5	25.8	5.32	0.14
63R-5, 36-37	840.26	38.37	1.81	158.84	4.49	967.9	3.7	2130.9	18.5	7.11	0.06
63R-6, 36-37	841.76	26.19	0.34	116.71	2.10	1048.3	7.3	2141.6	18.8	4.78	0.08
63R-7, 36-37	843.28	19.63	0.61	110.63	1.85	1148.7	7.8	2478.7	27.5	3.97	0.06
64R-2, 36-37	845.36	13.44	0.55	100.94	2.57	1037.9	7.4	2046.6	31.1	2.75	0.06
64R-3, 36-37	846.86	19.84	1.16	134.99	1.45	951.4	9.4	2052.2	32.4	5.00	0.10
64R-4, 36-37	848.36	31.42	1.22	152.22	3.07	956.7	7.2	2177.8	29.9	5.68	0.18
64R-5, 36-37	849.86	28.45	1.80	144.25	1.41	1939.9	13.0	2620.5	63.5	7.47	0.20
64R-6, 36-37	851.36	21.96	0.50	124.68	3.35	849.5	8.6	1934.0	8.7	4.93	0.08
65R-1, 36-37	853.46	22.52	0.72	135.35	3.18	1085.4	9.2	2458.5	24.0	4.55	0.11
65R-3, 36-37	856.46	24.70	0.94	132.00	1.77	796.1	6.8	1880.6	17.4	5.46	0.14
65R-4, 36-37	857.96	34.53	0.86	136.14	2.63	811.9	5.8	1535.7	27.7	5.30	0.14
65R-5, 36-37	859.46	22.72	1.09	132.73	2.69	991.0	5.6	2026.8	25.3	5.46	0.08
66R-3, 36-37	862.48	22.55	1.14	131.98	2.04	1033.2	8.7	1837.0	15.1	5.22	0.10
66R-1, 36-37	863.06	27.47	1.34	140.16	3.11	1516.5	9.4	2621.4	34.2	5.79	0.19
66R-2, 36-37	864.56	13.62	0.50	108.28	1.07	1154.9	5.9	2415.4	39.6	4.36	0.07
66R-5, 36-37	869.06	22.25	1.83	125.60	2.42	1270.6	11.4	2532.0	50.2	5.09	0.09
66R-6, 36-37	870.56	9.42	0.63	77.38	1.38	1041.4	14.5	2233.6	25.0	2.58	0.03
67R-1, 36-37	872.66	20.09	0.70	131.76	1.83	1129.8	8.6	2514.6	36.0	5.54	0.08
67R-2, 36-37	874.16	22.72	0.89	109.47	3.15	880.6	9.7	2301.6	15.9	4.00	0.09
67R-6, 36-37	877.16	22.68	0.72	121.68	1.49	735.8	10.3	2109.3	6.8	5.64	0.06
67R-7, 36-37	881.66	22.27	0.43	134.13	2.09	1248.8	8.7	2476.4	38.5	6.13	0.11
68R-1, 36-37	882.06	15.30	0.47	109.26	3.45	977.2	7.0	1870.5	30.7	3.85	0.09
68R-2, 36-37	883.56	14.32	0.79	60.17	0.61	977.7	4.5	1975.1	7.8	2.36	0.02
68R-4, 36-37	886.56	23.18	0.50	119.95	1.78	988.5	10.1	1918.8	17.3	4.59	0.13
68R-5, 36-37	888.06	12.04	0.59	102.35	1.28	711.7	7.0	1514.8	8.3	5.11	0.15
68R-6, 36-37	889.06	22.89	0.80	113.12	2.40	1071.3	4.2	1972.6	8.9	5.13	0.09
69R-1, 36-37	891.66	19.74	0.77	113.97	2.05	783.5	10.2	1725.5	12.4	5.02	0.08
69R-2, 36-37	893.16	22.50	0.21	107.27	2.34	1003.5	3.1	2155.7	22.2	4.27	0.07
70R-1, 36-37	901.26	14.64	0.41	95.94	2.33	1059.2	7.0	2132.7	25.1	4.57	0.14
70R-2, 36-37	902.76	16.29	0.90	109.61	2.85	871.4	8.5	2530.7	48.9	4.61	0.18
70R-4, 36-37	905.76	18.60	0.81	123.66	3.99	727.2	6.1	1627.9	16.2	5.46	0.26
70R-5, 39-40	907.29	21.13	0.34	110.69	0.96	862.8	4.4	1793.5	12.3	4.76	0.09
71R-3, 36-37	913.86	24.69	0.91	99.45	1.45	1728.3	20.4	1489.5	23.4	4.00	0.06
71R-5, 36-37	916.86	24.35	1.12	130.09	4.04	724.2	11.1	1973.0	13.4	4.01	0.05
72R-3, 36-37	923.56	21.89	0.63	125.04	2.25	893.4	12.2	1671.9	7.5	4.33	0.07
72R-4, 36-37	925.06	17.54	0.67	120.95	3.53	933.8	8.9	1641.4	16.6	4.53	0.10
72R-6, 36-37	928.06	27.57	0.84	120.18	3.06	1205.8	6.8	1651.6	21.5	5.13	0.15
72R-7, 36-37	929.06	26.26	0.51	100.03	4.63	931.6	10.7	1644.6	25.8	4.19	0.12
73R-1, 36-37	930.26	16.62	1.20	89.28	1.80	1208.5	8.6	1994.9	29.8	3.90	0.09
73R-2, 36-37	931.76	3.78	0.16	36.07	0.40	1095.1	10.5	1919.4	15.8	1.58	0.01
73R-4, 36-37	934.76	22.89	0.56	123.61	2.17	777.7	6.2	1675.6	21.3	5.34	0.14
73R-5, 36-37	936.26	22.40	0.94	110.95	2.47	690.7	4.5	1602.6	17.4	5.15	0.16
73R-6, 36-37	937.76	21.85	1.55	120.19	2.05	1186.4	7.9	1854.0	28.8	5.67	0.12

Note: Error has been overspecified for calculation purposes.

Table T2. Analytical error and instrumental detection limits.

Element	Precision of replicates (%)	Average relative error (%)	Typical instrumental detection limit ($\mu\text{mol/g}$)
P	5.6	4.7	2.10
Fe	2.7	1.4	1.50
Al	4.6	2.0	5.30
Ti	3.0	1.9	0.03
Ba	1.7	2.0	0.01