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# 16. Data Report: Trace Element Geochemistry of Cenozoic Cool-Water Carbonates, Sites 1126–1132, Great Australian Bight[1]

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## ABSTRACT

An intensive geochemical investigation was conducted on carbonate sediments recovered during Ocean Drilling Program Leg 182. Four trace elements in 635 sediment samples from Sites 1126–1132 on the Great Australian Bight were examined by atomic absorption spectrometry on the acid-soluble fraction. Downhole profiles of these elements exhibit complicated fluctuations throughout the late Eocene to Pleistocene, principally because of the variations in the acid-soluble fraction. The purpose of this study is to present initial results on the geochemical composition of Cenozoic cool-water carbonates as a basis for a future detailed investigation to determine the paleoenvironment of a carbonate-dominated continental margin during the evolution of the Southern Ocean.

## INTRODUCTION

This report provides the results of geochemical analyses performed on late Eocene to Pleistocene sediments recovered during Ocean Drilling Program (ODP) Leg 182 at Site 1128, Miocene to Pleistocene sediments at Sites 1126, 1130, and 1132, and Pliocene and Pleistocene sediments at Sites 1127, 1129, and 1131. The main objective of this report is to present geochemical profiles compared to mineralogical and biostratigraphic data.

[1]Emmanuel, L., Robin, C., and Renard, M., 2002. Data report: Trace element geochemistry of Cenozoic cool-water carbonates, Sites 1126–1132, Great Australian Bight. *In* Hine, A.C., Feary, D.A., and Malone, M.J. (Eds.), *Proc. ODP, Sci. Results,* 182, 1–24 [Online]. Available from World Wide Web: <http://www-odp.tamu.edu/publications/182_SR/VOLUME/CHAPTERS/008.PDF>. [Cited YYYY-MM-DD]
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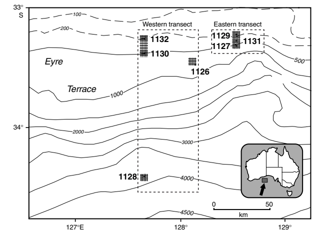
Site 1128, in 3875 m of water at the toe of the slope, is the most distal of five sites along the western transect drilled into sediments from the upper continental rise of the Eucla margin. Other sites are located on the upper slope and outermost shelf, in 218–784 m of water for the western transect (Sites 1126, 1130, and 1132), and in 202–480 m of water for the eastern transect (Sites 1127, 1129, and 1131) (Fig. F1), (Feary, Hine, Malone, et al., 2000).

**F1.** Locations of the Leg 182 drill sites, p. 8.




# SUMMARY OF LITHOSTRATIGRAPHIC FRAMEWORK

## Western Transect

### Site 1128

The sedimentary succession at Site 1128 is composed of calcareous nannofossil ooze interbedded with numerous thin glauconite and planktonic foraminiferal sand calciturbidites, conglomeratic sediment gravity-flow deposits such as debrites and slumps, and a thick section of uniform, green, variably calcareous clay and claystone.

Two major biostratigraphic successions were recovered at Site 1128 and dated by calcareous nannofossils and planktonic foraminifers as late Miocene–Quaternary (0–55 meters below seafloor [mbsf]) and early Eocene–early Oligocene (72–427 mbsf).

### Site 1126

Site 1126 is located on the eastern Eyre Terrace upper slope in 783.8 m of water. This site was designed to intersect Cenozoic seismic Sequences 2, 3, and 4, and Lobes 1 and 3 of Sequence 6A. The sedimentary sequence recovered at Site 1126 is dated by calcareous nannofossils and planktonic foraminifers as Quaternary–middle Eocene.

The sedimentary succession at Site 1126 consists of calcareous ooze with interbeds of silicified layers. Downhole, sediments are composed of alternating calcareous ooze to chalk intervals and silicified pelagic limestones with some planktonic foraminifers and bioclasts with events of sandstones, silty sandstones, clayey siltstones, and minor granule conglomerates.

### Site 1130

Site 1130 intersects Neogene cool-water carbonate shelf-edge sequences and the nearshore portion of a Paleocene?–middle Eocene progradational siliciclastic wedge (seismic Sequences 2, 4, and 6A). The sediments recovered at Site 1130 are mainly composed of bioclastic packstone punctuated by unlithified bioclastic mud layers and occasional nannofossil foraminiferal ooze to chalk intervals. The base of the core consists of chert layers interbedded with intervals of white nannofossil planktonic foraminiferal ooze and calcareous sandstone.

Calcareous nannofossils and planktonic foraminifers indicate a Quaternary–Oligocene age. Preliminary results indicate that the upper part of the lower Pliocene is missing (>1 m.y.) and that the major disconformity between upper Miocene and Oligocene sediments represents a hiatus of at least 15 m.y.

### Site 1132

Site 1132 was located to intersect and characterize Neogene cool-water carbonate shelf-edge sequences and the nearshore portion of a Paleocene?–middle Eocene progradational siliciclastic wedge (seismic Sequences 2, 3, 4, 6A, and 7).

The recovered succession consists of a bryozoan floatstone and rudstone mound complex alternating with bryozoan packstone and bioclastic wackestone, muddy bioclastic sand, and minor mud and sand layers, with an interbedded thin package of foraminiferal ooze. The lowest part of the core is recovered by a bed containing pebbles of siliciclastic sandstone rich in lithic fragments.

Calcareous nannofossils and planktonic foraminifers indicate that drilling at Site 1132 recovered a thick Quaternary–Eocene sequence (~550 m thick) overlying a relatively thin, barren section (~45 m) of unknown age. Calcareous nannofossils from the basal Quaternary–uppermost Pliocene unit contain the "Braarudosphaera Nannofossil Event" previously recorded at Sites 1127, 1130, and 1131.

## Eastern Transect

### Site 1127

Site 1127 was the first and most seaward of a three-site transect through a spectacular set of upper Neogene clinoforms immediately seaward of the present-day shelf edge. Site 1127, located on the upper slope in 479.3 m of water, intersected an expanded record of the youngest clinoforms as well as the lowest, more condensed portion of the clinoform sequence.

At Site 1127, this 510.7-m-thick monotonous succession is dominated by fine-grained wackestones to packstones made up of nannofossil and foraminiferal ooze.

Calcareous nannofossils and planktonic foraminifers indicate a greatly expanded Quaternary–uppermost Pliocene sequence of ~470 m, with a hiatus of ~3 m.y. between basal Quaternary–uppermost Pliocene (Zone NN19) and underlying Miocene sediments.

### Site 1131

Site 1131 was the intermediate site of this transect. It is located on the upper slope in 332.4 m of water and intersecting a more expanded record of the middle part of the clinoform sequence.

The recovered succession consists dominantly of bioclastic packstone, floatstone, and rudstone with sometimes a significant bryozoan component. Below a major unconformity at 531.7 mbsf that spans ~10 m.y., the sedimentary succession consists of silicified nannofossil ooze beds within bioclastic grainstone containing blackened grains and glauconite.

The sedimentary successions at Site 1131 record (1) an expanded Quaternary interval more than 510 m thick underlain by a thin and conformable uppermost Pliocene interval and (2) a middle and lower Miocene section lacking hiatuses.

### Site 1129

Site 1129 was the proximal site of the eastern transect through the upper Neogene clinoforms and is located just seaward of the shelf edge in 202.5 m of water. It intersects a more expanded record of the oldest part of the clinoform sequence.

The top of the succession recovered at Site 1129 consists mainly of unlithified bryozoan floatstone to rudstone and bioclastic packstone to grainstone with abundant bryozoan fragments. The middle part of the core consists of bioclastic packstone and minor grainstone and wackestone with nannofossil chalk intervals. The base of the core consists of dolomitized fine sand–sized bioclastic grainstone and chert fragments.

As observed at Sites 1127 and 1131, Site 1129 shows (1) an expanded Quaternary section more than 554 m thick that is underlain by a thin and conformable uppermost Pliocene section; (2) a middle–lower Miocene section; and (3) at 556 mbsf, one unconformity representing ~12 m.y., marked by a bryozoan turbidite overlying indurated sediments and chert layers.

## ANALYTICAL METHODS

Bulk sediment samples (~10–20 cm$^3$) were collected aboard the *JOIDES Resolution* during Leg 182. Geochemical samples were taken at regular intervals on the basis of core descriptions and visual observations. Approximately one-half of each bulk sample was (1) disaggregated, (2) washed repeatedly in deionized water, and (3) oven dried at 80°C. Bulk powders were subsequently analyzed for carbonate content and trace element content.

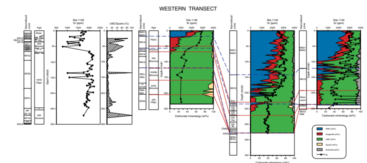
In preparation for analysis, ~1 g of powdered sample was reacted in a buffered (pH = 5) ~6% acetic acid solution. The buffered acetic acid was chosen to minimize contamination from noncarbonate phases. The insoluble noncarbonate fraction was subsequently removed by filtration and dried overnight in a 80°C oven. The amount of carbonate in each sample was calculated as the difference between the dry weights of the original sample and the filtered, insoluble fraction. After filtration, the leachate was stored in high density polyethylene bottles until analyses. After appropriate dilutions, concentrations of Ca, Fe, Mg, Mn, and Sr in the carbonate fraction of selected samples throughout the cores at Sites 1126–1132 were determined by atomic absorption spectroscopy using Perkin Elmer 3300 and Hitachi Z-8100 spectrophotometers. Analytical run precision was within ±5% for these elements.

Carbonate mineralogy was determined on carbonate samples using X-ray diffraction (XRD). Shipboard quantitative XRD analyses were performed on bulk samples to determine the relative percentage of aragonite, low-Mg calcite (LMC), high-Mg calcite (HMC), quartz, and dolomite. All results of carbonate mineralogy can be founded in Feary, Hine, Malone, et al. (2000) and are plotted vs. depth in Figures F2, F3, F4, and F5 to compare geochemical and mineralogical data.

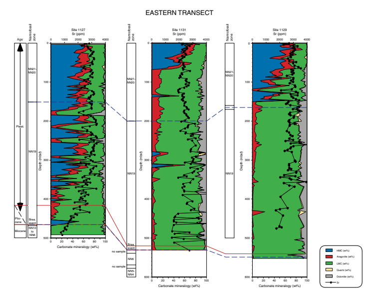
## RESULTS

The results of geochemical analyses for the acid-soluble fraction of samples for Sites 1126–1132 are listed in Tables T1, T2, T3, T4, T5, T6, and T7, respectively.

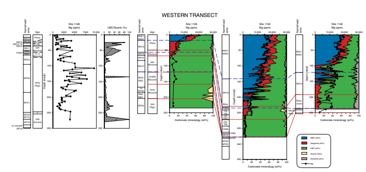
F2. Western transect Sr values and carbonate mineralogy, p. 9.



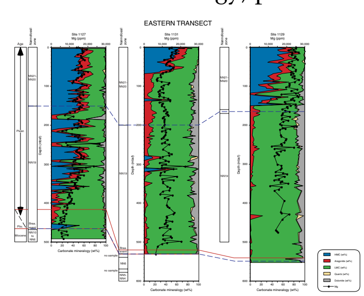

F3. Eastern transect Sr values and carbonate mineralogy, p. 10.




F4. Western transect Mg values and carbonate mineralogy, p. 11.




F5. Eastern transect Mg values and carbonate mineralogy, p. 12.




T1. Geochemical data, Site 1126, p. 17.

T2. Geochemical data, Site 1127, p. 18.

T3. Geochemical data, Site 1128, p. 20.

# Trace Element Geochemistry

## Strontium

### *Western Transect*

Strontium values (Fig. F2) range from 1000 to 4000 ppm for Sites 1126, 1130, and 1132. Data display a generally increasing trend in the upper Oligocene to Pleistocene interval. At Site 1126, two main negative shifts are recorded in the middle and upper Miocene. A sharp increase in Sr occurs at the base of the Pleistocene and coincides with the appearance of HMC and aragonite at all three sites. Strontium concentration is lower at Site 1128 than at other sites and does not exceed 2500 ppm. The sediments at Site 1128 are almost entirely LMC.

T4. Geochemical data, Site 1129, p. 21.

T5. Geochemical data, Site 1130, p. 22.

T6. Geochemical data, Site 1131, p. 23.

T7. Geochemical data, Site 1132, p. 24.

### *Eastern Transect*

This transect (Fig. F3) (Sites 1127, 1131, and 1129) provides higher-resolution data in the Pliocene–Pleistocene interval. Strontium content also ranges from 1000 to 4000 ppm. This interval is characterized by rather constant downhole concentrations, and the occurrence of HMC in Zones NN21–NN20 does not influence Sr values for Sites 1131 and 1129.

## Magnesium

### *Western Transect*

Magnesium content (Fig. F4) ranges from 900 to 21,000 ppm for Sites 1130 and 1132. Data display generally increasing trends during the late Oligocene to Pleistocene interval. At Site 1126, all values are lower than 5,000 ppm, except within the upper sections of the Pleistocene where values reach 13,000 ppm and correspond to elevated HMC content (40–50 wt%). Magnesium values at Site 1128 do not exceed 10,000 ppm and display a complicated downhole profile.

### *Eastern Transect*

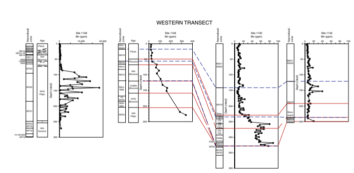
Magnesium values (Fig. F5) are higher than in the western transect and range from 4,000 to 26,000 ppm at Site 1127, from 6,000 to 23,000 ppm at Site 1131, and from 11,000 to 27,000 ppm at Site 1129. The Pleistocene interval has rather constant concentrations in sediments that are characterized by LMC mineralogy, but generally show increasing values of Mg when HMC content is greater than 40–50 wt% at lower depths.

## Manganese

### *Western Transect*

The Pleistocene interval at Sites 1126, 1130, and 1132 displays relatively low Mn concentrations (Fig. F6), ranging from 5 to 40 ppm. Below the "Braarudosphaera Nannofossil Event," Mn concentrations exhibit a notable downhole enrichment as high as 100 ppm at Site 1130 and 400 ppm at Site 1126 in the lower to upper Miocene interval. The same trend also occurs at Site 1128 for the same period, but downcore concentrations show an extensive increase with high-amplitude fluctuations (ranging from 200 to 18,000 ppm) in the lower Oligocene section. Extreme Mn enrichment in the section spanning 135–235 mbsf can probably be attributed to manganese oxide phases that are present in the carbonate sediments.

F6. Western transect Mn values, p. 13.

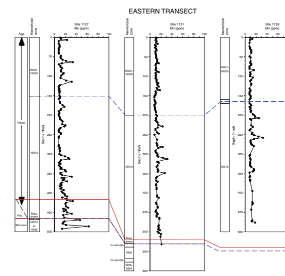


### *Eastern Transect*

Mn concentrations at Sites 1127, 1129, and 1131 (Fig. F7) generally range between 4 and 15 ppm and are very similar to values of the same age from the western transect. At Site 1127 and below 420 mbsf, concentrations increase to 40 ppm with occasional spikes as high as 70 ppm below the "Braarudosphaera Nannofossil Event."

Also notable in the Mn profile is the frequent occurrence of peaks, sometimes close to 30 ppm, in the Pleistocene interval of all sites, which can be used as marker beds.

F7. Eastern transect Mn values, p. 14.

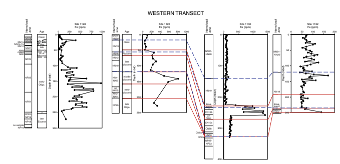


## Iron

### *Western Transect*

Iron concentrations are more variable than Mn, and range from 15 to 1500 ppm (Fig. F8). In detail, the Pleistocene section is characterized by low concentrations (<200 ppm) for all four sites. As for Mn profiles, sharp increases occur near the "Braarudosphaera Nannofossil Event" and might suggest a drastic change in geochemical and/or paleoenvironmental conditions.

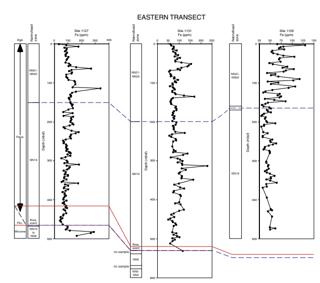
F8. Western transect Fe values, p. 15.



### *Eastern Transect*

The concentration-depth profiles of Fe in Sites 1127, 1129, and 1131 show complex distributions (Fig. F9). The predominant features in the profiles are the downhole decreasing trends (from 200 to 40 ppm at Site 1127 and from 130 to 30 ppm at Site 1129), whereas the Pleistocene section at Site 1131 exhibits a slight increase, reaching a maximum of 230 ppm at 313 mbsf.

F9. Eastern transect Fe values, p. 16.



## ACKNOWLEDGMENTS

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Feary, D.A., Hine, A.C., Malone, M.J., et al., 2000. *Proc. ODP, Init. Repts.,* 182 [CD-ROM]. Available from: Ocean Drilling Program, Texas A&M University, College Station, TX 77845-9547, U.S.A.

**Figure F1.** Locations of the Leg 182 drill sites in the western Great Australian Bight.

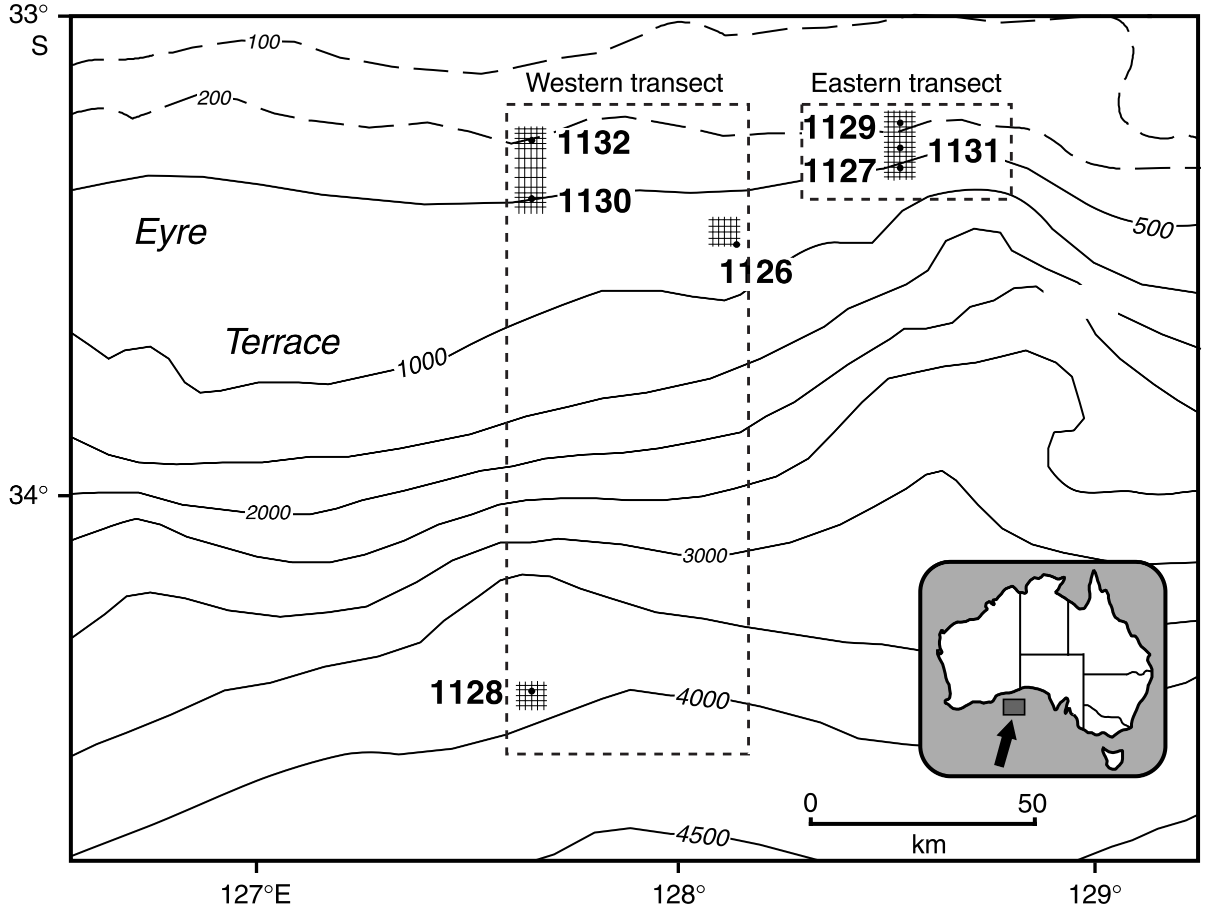

**Figure F2.** Downcore variation of Sr concentration in the acetic acid–soluble fraction for Sites 1126, 1128, 1130, and 1132 (western transect), bulk cumulative carbonate mineralogy vs. depth for Sites 1126, 1130, and 1132, and low-Mg calcite/quartz ratio vs. depth for Site 1128. HMC = high-magnesium calcite, LMC = low-magnesium calcite. (This figure is also available in an **oversized format.**)

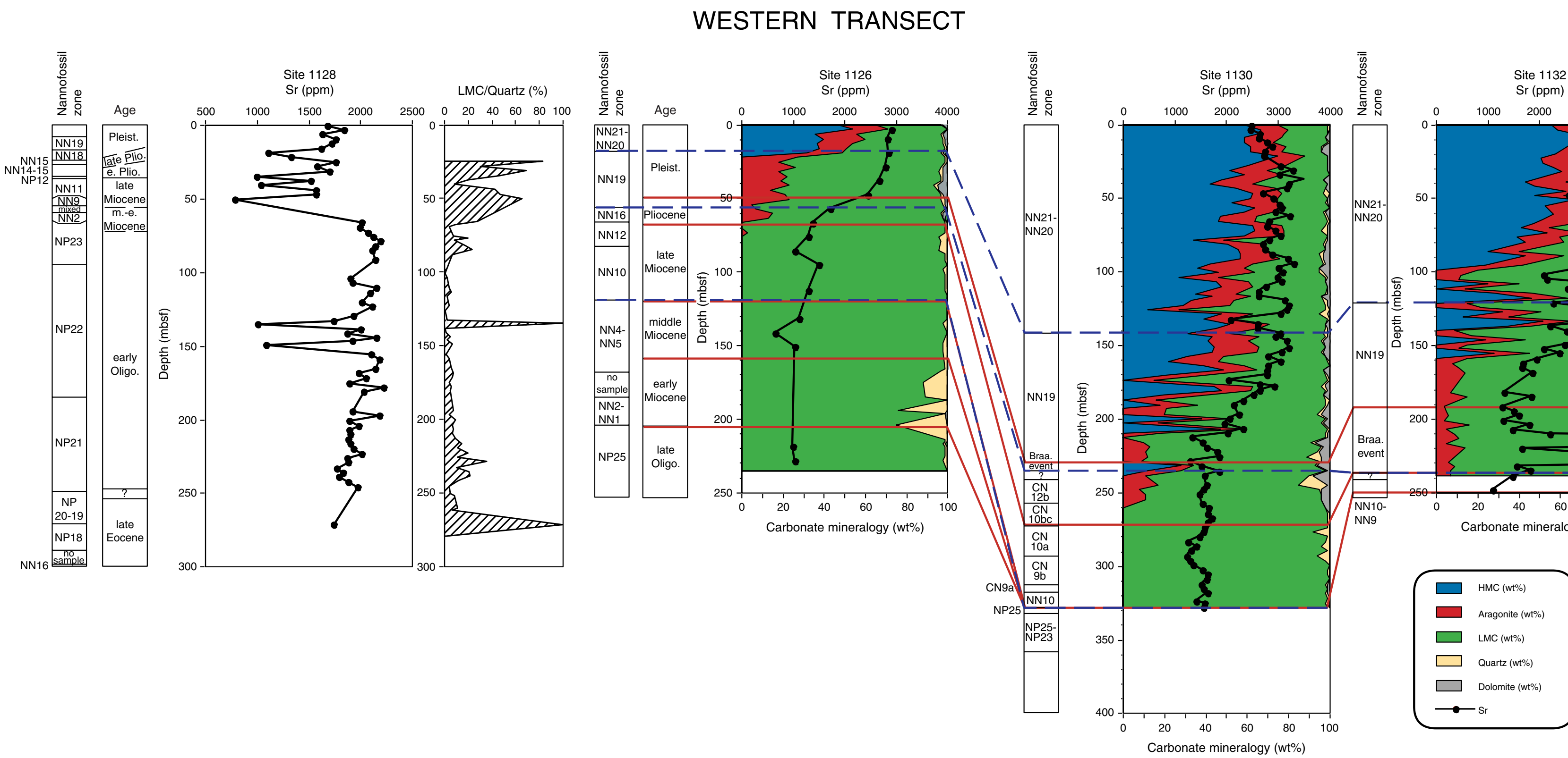

**Figure F3.** Downcore variation of Sr concentration in the acetic acid–soluble fraction for Sites 1127, 1129, and 1131 (eastern transect) and bulk cumulative carbonate mineralogy vs. depth. HMC = high-magnesium calcite, LMC = low-magnesium calcite. (This figure is also available in an **oversized format.**)

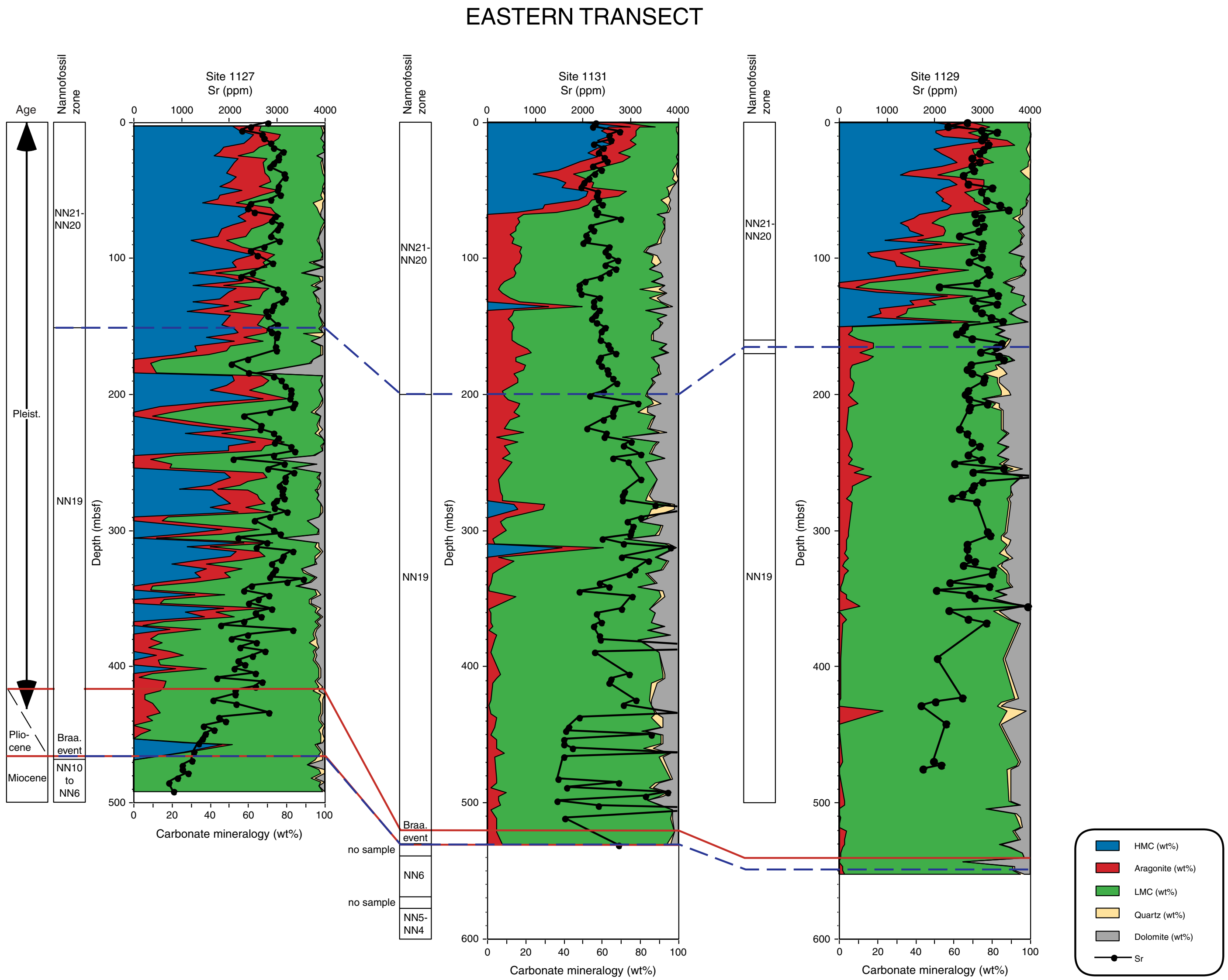

**Figure F4.** Downcore variation of Mg concentration in the acetic acid–soluble fraction for Sites 1126, 1128, 1130, and 1132 (western transect), bulk cumulative carbonate mineralogy vs. depth for Sites 1126, 1130, and 1132, and low-Mg calcite/quartz ratio vs. depth for Site 1128. HMC = high-magnesium calcite, LMC = low-magnesium calcite. (This figure is also available in an **oversized format.**)

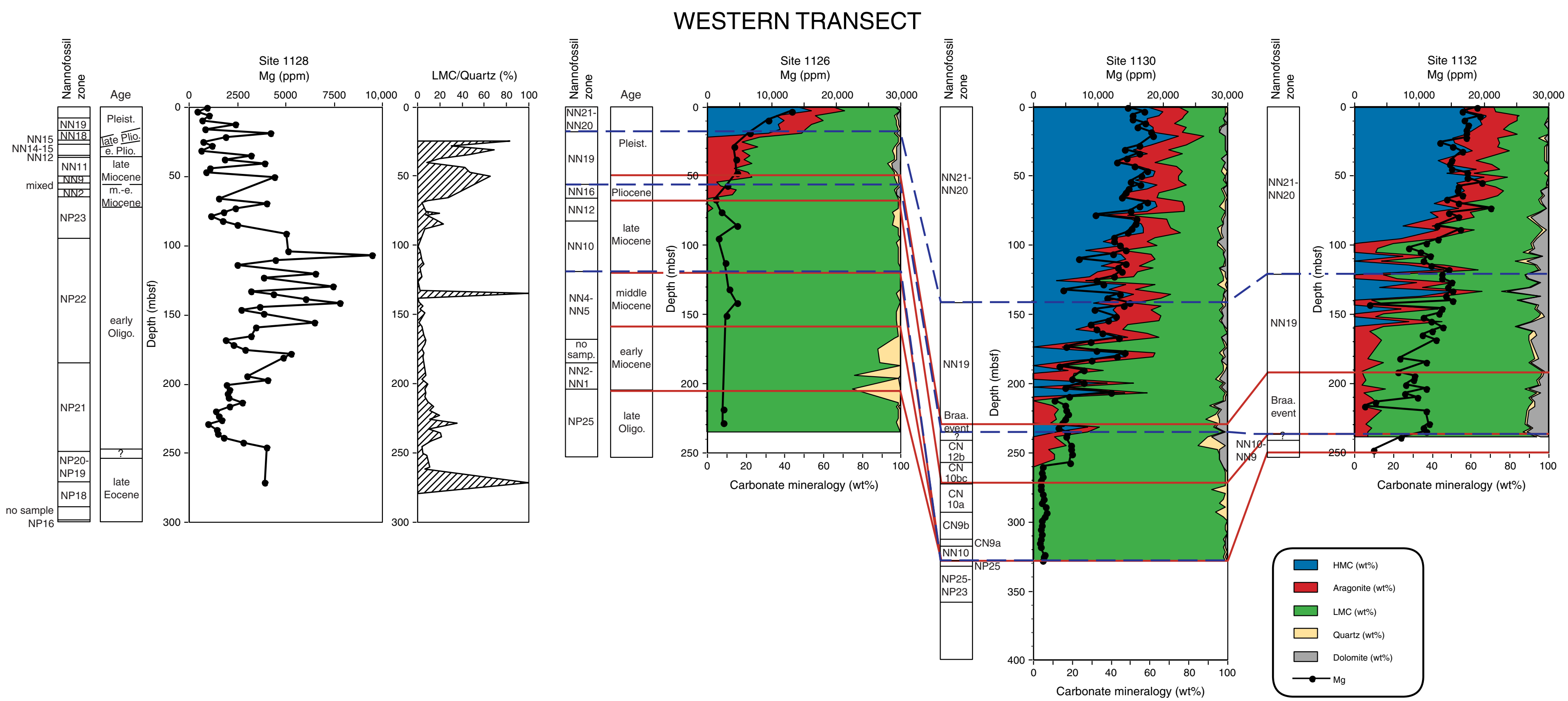

**Figure F5.** Downcore variation of Mg concentration in the acetic acid–soluble fraction for Sites 1127, 1129, and 1131 (eastern transect) and bulk cumulative carbonate mineralogy vs. depth. HMC = high-magnesium calcite, LMC = low-magnesium calcite. (This figure is also available in an **oversized format.**)

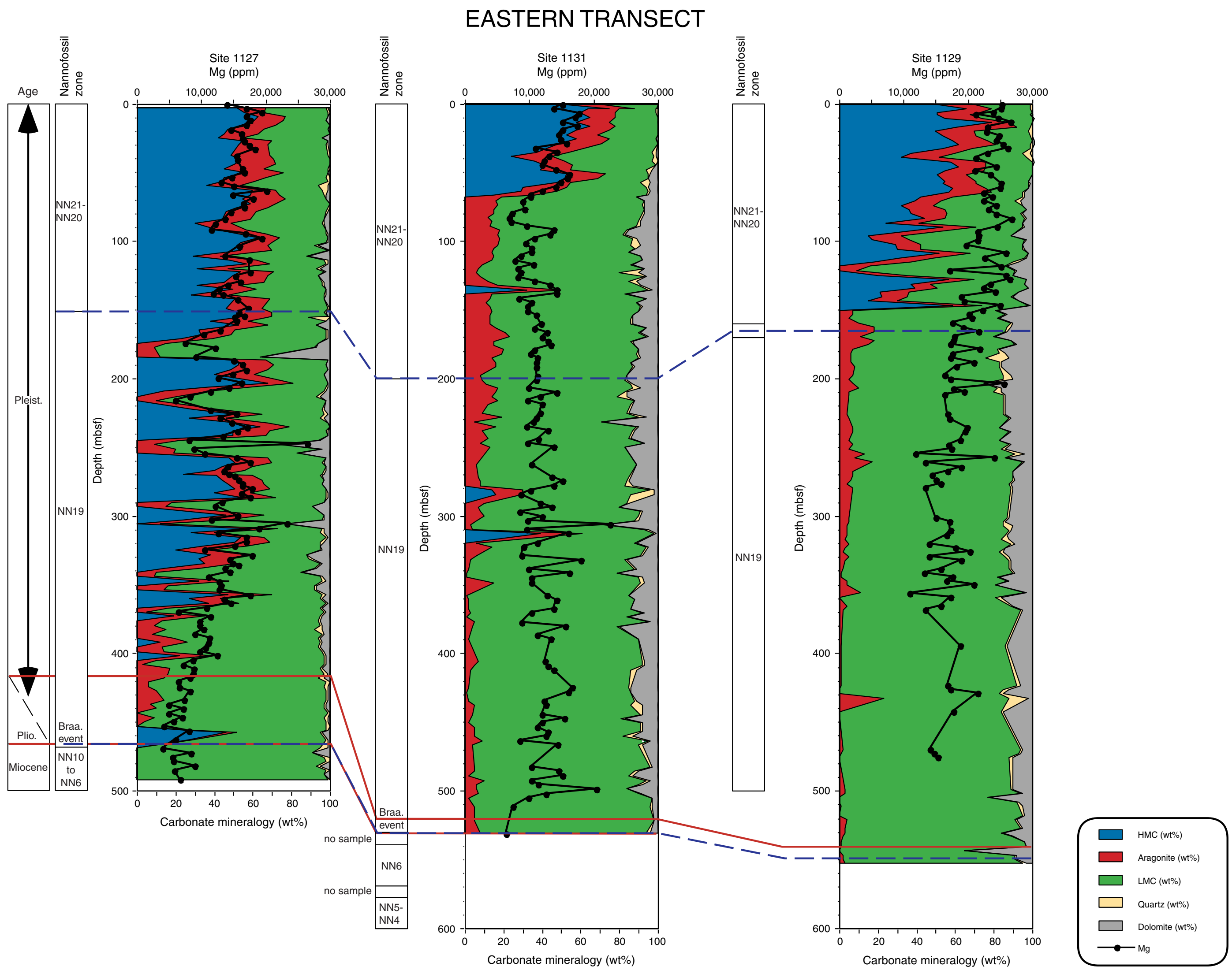

**Figure F6.** Downcore variation in Mn concentration in acetic acid–soluble fraction for Sites 1126, 1128, 1130, and 1132 (western transect). (This figure is also available in an **oversized format.**)

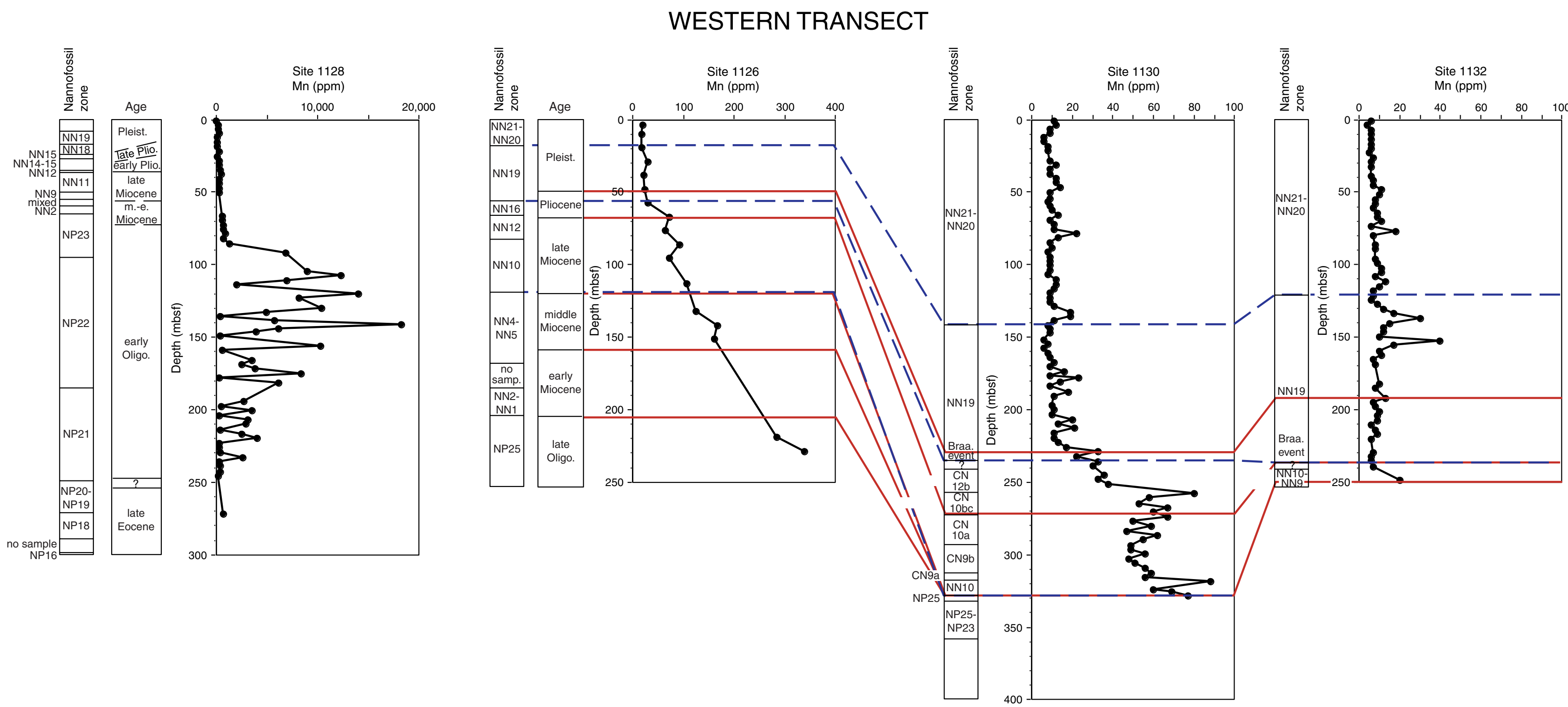

**Figure F7.** Downcore variation in Mn concentration in acetic acid–soluble fraction for Sites 1127, 1129, and 1131 (eastern transect). (This figure is also available in an **oversized format.**)

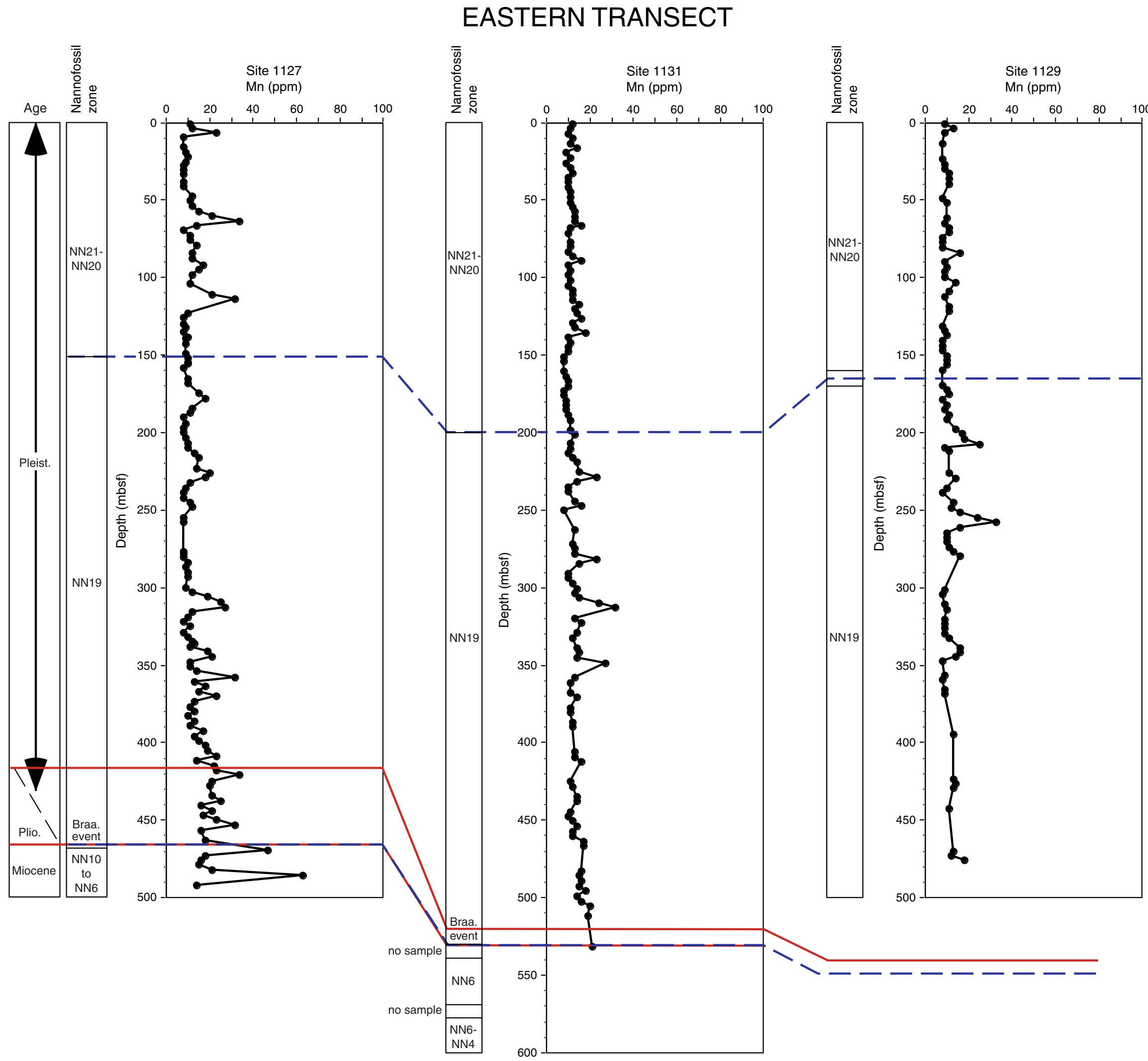

**Figure F8.** Downcore variation in Fe concentration in acetic acid–soluble fraction for Sites 1126, 1128, 1130, and 1132 (western transect). (This figure is also available in an **oversized format.**)

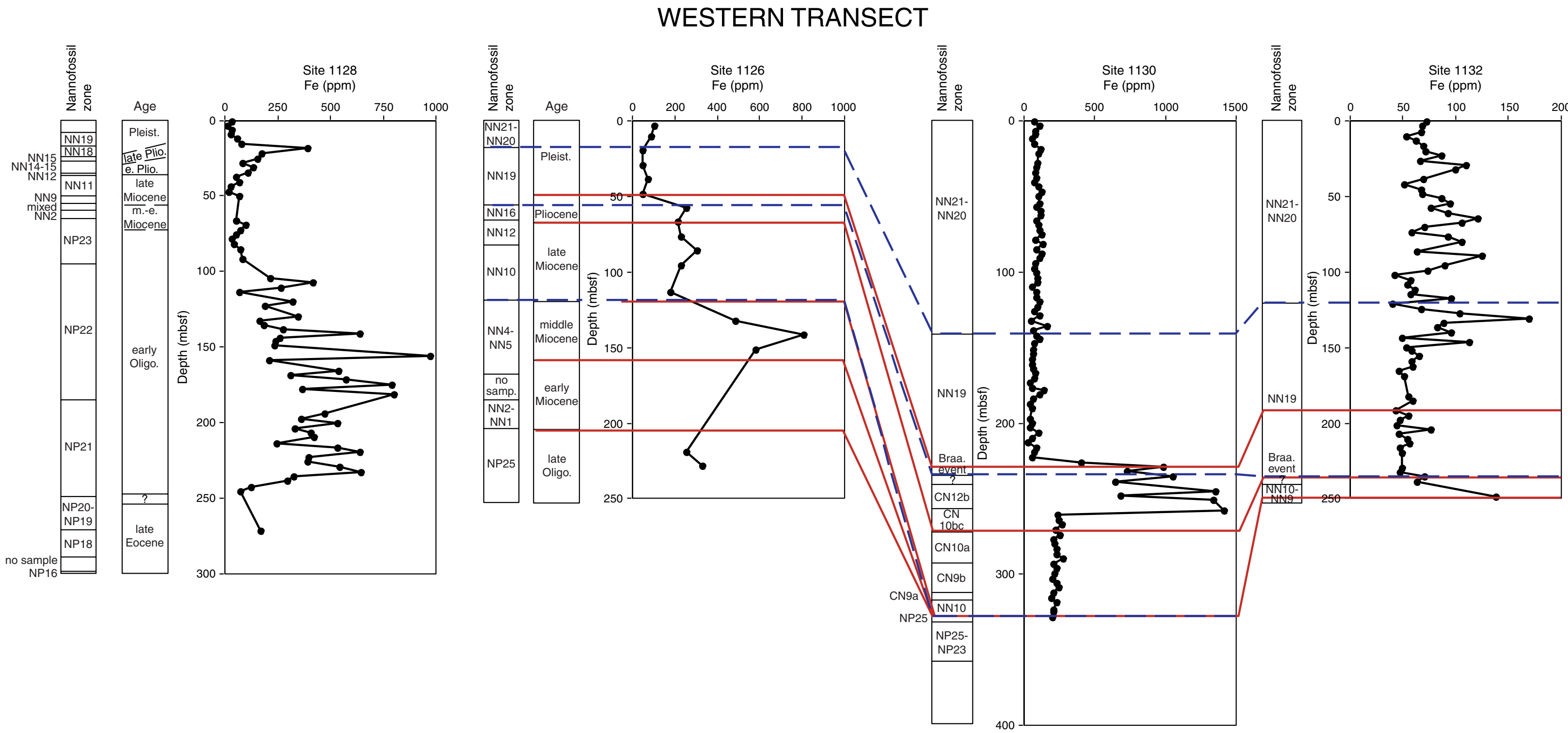

**Figure F9.** Downcore variation in Fe concentration in acetic acid–soluble fraction for Sites 1127, 1129, and 1131 (eastern transect). (This figure is also available in an **oversized format.**)

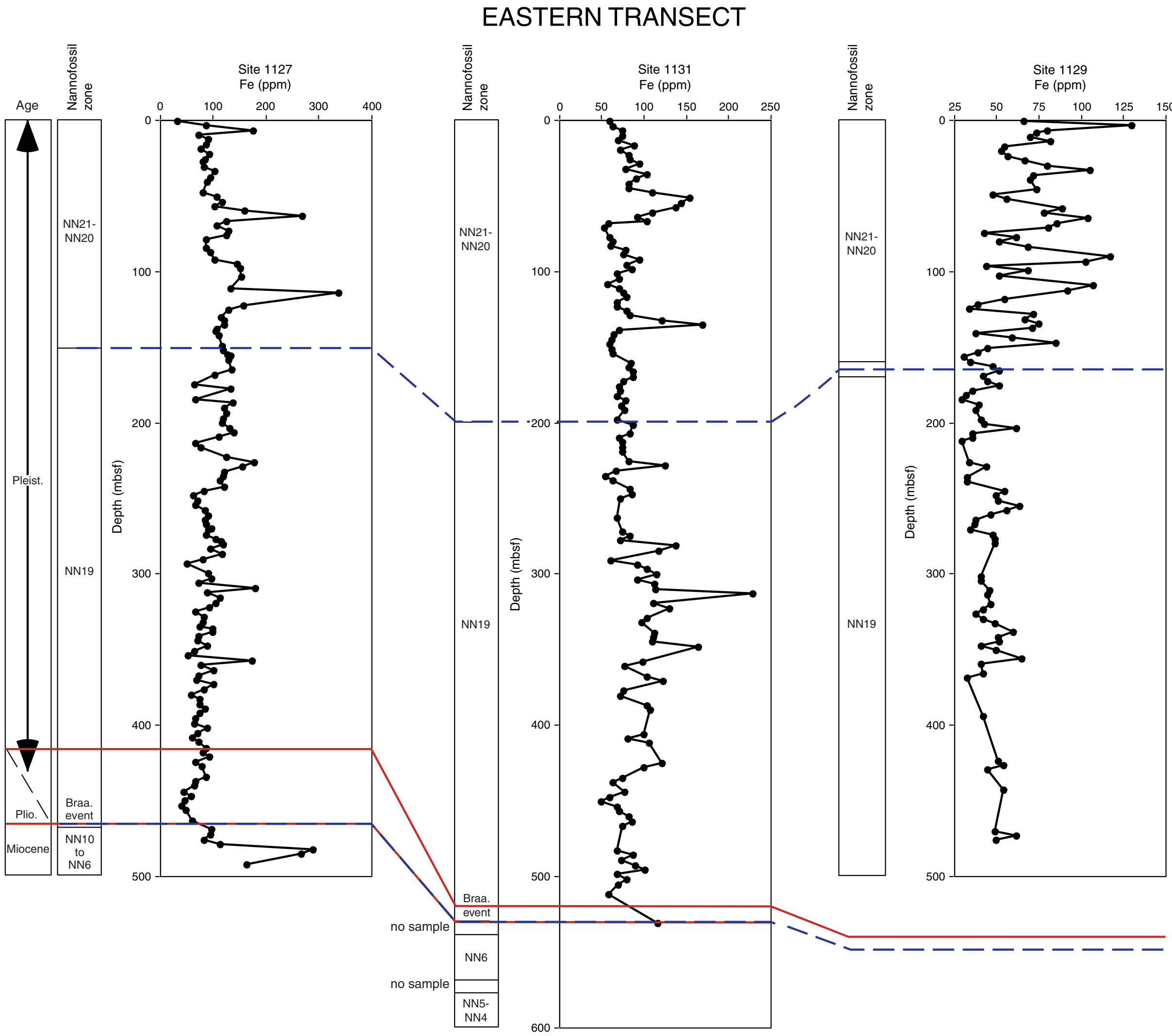

**Table T1.** Geochemical data, Site 1126.

| Core, section, interval (cm) | Depth (mbsf) | $CaCO_3$ (wt%) | Fe (ppm) | Mg (ppm) | Mn (ppm) | Sr (ppm) |
|---|---|---|---|---|---|---|
| 182-1126B- | | | | | | |
| 1H-3, 73–75 | 3.74 | 92.81 | 102 | 13,166 | 21 | 2,918 |
| 2H-3, 73–75 | 10.24 | 91.99 | 87 | 9,530 | 19 | 2,836 |
| 3H-3, 73–75 | 19.74 | 91.51 | 51 | 6,698 | 18 | 2,855 |
| 4H-3, 73–75 | 29.24 | 91.00 | 49 | 4,248 | 30 | 2,808 |
| 5H-3, 73–75 | 38.74 | 92.92 | 75 | 4,596 | 23 | 2,679 |
| 6H-3, 73–75 | 48.24 | 91.06 | 50 | 4,709 | 25 | 2,453 |
| 7H-3, 73–75 | 57.74 | 89.61 | 258 | 3,205 | 30 | 1,734 |
| 8H-3, 74–76 | 67.25 | 91.92 | 217 | 1,337 | 72 | 1,392 |
| 9H-3, 73–75 | 76.74 | 95.16 | 230 | 2,327 | 64 | 1,311 |
| 10H-3, 73–75 | 86.24 | 94.00 | 304 | 4,735 | 93 | 1,040 |
| 11H-3, 73–75 | 95.74 | 88.95 | 228 | 1,824 | 73 | 1,520 |
| 14H-3, 73–75 | 113.24 | 88.66 | 181 | 2,918 | 106 | 1,313 |
| 17H-3, 72–74 | 132.53 | 89.42 | 489 | 3,551 | 125 | 1,136 |
| 18H-3, 73–75 | 142.04 | 91.10 | 808 | 4,713 | 168 | 665 |
| 19H-3, 70–72 | 151.51 | 63.82 | 582 | 2,974 | 161 | 1,041 |
| 27X-3, 73–75 | 219.04 | 76.69 | 256 | 2,602 | 285 | 1,018 |
| 28X-3, 73–75 | 228.64 | 91.21 | 332 | 2,639 | 339 | 1,056 |
| | Minimum: | 63.82 | 49 | 1,337 | 18 | 665 |
| | Maximum: | 95.16 | 808 | 13,166 | 339 | 2,918 |
| | Average: | 88.93 | 253 | 4,457 | 97 | 1,751 |

**Table T2.** Geochemical data, Site 1127. (See table note. Continued on next page.)

| Core, section, interval (cm) | Depth (mbsf) | $CaCO_3$ (wt%) | Fe (ppm) | Mg (ppm) | Mn (ppm) | Sr (ppm) |
|---|---|---|---|---|---|---|
| 182-1127B- | | | | | | |
| 1H-1, 75–77 | 0.76 | 91.06 | 33 | 14,086 | 11 | 2,809 |
| 1H-3, 75–77 | 3.76 | 91.70 | 88 | 17,076 | 12 | 2,460 |
| 2H-1, 75–77 | 6.66 | 89.67 | 177 | 19,453 | 23 | 2,264 |
| 2H-3, 75–77 | 9.66 | 97.78 | 73 | 17,044 | 8 | 2,696 |
| 2H-5, 75–77 | 12.66 | 96.87 | 92 | 17,600 | NA | 2,739 |
| 3H-1, 75–77 | 16.16 | 96.25 | 87 | 17,091 | 8 | 2,882 |
| 3H-3, 75–77 | 19.16 | 94.70 | 78 | 14,617 | 9 | 2,946 |
| 3H-5, 75–77 | 22.16 | 93.94 | 93 | 16,262 | 10 | 3,131 |
| 4H-1, 75–77 | 25.66 | 94.51 | 85 | 16,494 | 9 | 3,047 |
| 4H-3, 75–77 | 27.59 | 94.30 | 81 | 16,718 | 8 | 3,032 |
| 4H-5, 75–77 | 30.59 | 95.33 | 84 | 17,463 | 8 | 2,937 |
| 4H-7, 75–77 | 33.59 | 96.91 | 103 | 18,393 | 8 | 2,851 |
| 5H-3, 75–77 | 38.16 | 94.39 | 96 | 15,481 | 8 | 3,158 |
| 5H-5, 75–78 | 41.16 | 94.47 | 89 | 15,671 | 8 | 3,189 |
| 6H-3, 75–77 | 47.66 | 94.64 | 81 | 16,386 | 12 | 3,043 |
| 6H-5, 75–77 | 50.66 | 93.58 | 107 | 16,698 | 11 | 3,014 |
| 7H-1, 75–77 | 54.16 | 92.13 | 117 | 14,841 | 12 | 3,085 |
| 7H-3, 75–77 | 57.16 | 89.65 | 104 | 13,061 | 15 | 2,882 |
| 7H-5, 75–77 | 60.16 | 87.75 | 161 | 15,140 | 21 | 2,462 |
| 8H-1, 75–77 | 63.66 | 88.31 | 270 | 20,233 | 34 | 2,394 |
| 8H-3, 75–77 | 66.66 | 94.67 | 126 | 14,911 | 14 | 2,535 |
| 8H-5, 75–77 | 69.66 | 95.40 | 107 | 18,130 | 8 | 2,987 |
| 9H-1, 75–77 | 73.16 | 95.26 | 130 | 16,636 | 11 | 2,891 |
| 9H-3, 75–77 | 76.16 | 94.33 | 125 | 16,805 | 11 | 3,071 |
| 9H-5, 75–77 | 79.09 | 93.84 | 88 | 14,656 | 14 | 3,024 |
| 10H-3, 75–77 | 84.55 | 93.41 | 88 | 13,712 | 12 | 2,887 |
| 10H-5, 75–77 | 87.55 | 92.31 | 95 | 12,252 | 12 | 3,055 |
| 11H-1, 75–77 | 92.16 | 90.45 | 103 | 11,565 | 17 | 2,729 |
| 11H-3, 75–77 | 95.16 | 93.75 | 147 | 16,848 | 15 | 2,451 |
| 11H-5, 75–77 | 98.14 | 95.54 | 153 | 19,504 | 12 | 2,590 |
| 12H-3, 74–77 | 103.90 | 93.85 | 155 | 15,966 | 11 | 2,922 |
| 13H-1, 75–77 | 111.16 | 86.37 | 134 | 13,673 | 21 | 2,501 |
| 13H-3, 73–75 | 114.14 | 87.77 | 338 | 17,571 | 32 | 2,261 |
| 14H-3, 75–77 | 122.81 | 94.64 | 158 | 17,598 | 10 | 3,016 |
| 14H-5, 75–77 | 125.81 | 94.62 | 130 | 15,433 | 8 | 3,141 |
| 15H-1, 72–74 | 130.13 | 93.21 | 115 | 16,095 | 8 | 3,173 |
| 15H-3, 75–77 | 132.42 | 93.13 | 122 | 14,109 | 9 | 3,120 |
| 15H-5, 75–77 | 135.42 | 91.59 | 121 | 12,854 | 8 | 2,940 |
| 15H-7, 72–74 | 138.39 | 91.70 | 108 | 11,899 | 10 | 2,895 |
| 16H-1, 75–77 | 139.66 | 93.32 | 106 | 13,443 | 9 | 2,784 |
| 16H-3, 75–77 | 142.66 | 95.28 | 111 | 15,629 | 9 | 2,821 |
| 17X-1, 75–77 | 149.16 | 94.18 | 118 | 17,274 | 9 | 3,015 |
| 17X-3, 75–77 | 152.16 | 94.41 | 119 | 15,873 | 10 | 2,865 |
| 17X-5, 72–74 | 154.96 | 95.13 | 128 | 16,805 | 10 | 2,905 |
| 18X-1, 75–77 | 155.66 | 94.64 | 134 | 15,295 | 10 | 3,011 |
| 18X-3, 75–77 | 158.66 | 93.72 | 130 | 15,598 | 8 | 3,005 |
| 19X-1, 75–77 | 165.26 | 93.27 | 137 | 12,904 | 10 | 2,984 |
| 19X-3, 75–77 | 168.26 | 91.96 | 104 | 10,422 | 10 | 2,990 |
| 20X-1, 75–77 | 174.86 | 90.61 | 66 | 7,462 | 15 | 2,388 |
| 20X-3, 75–77 | 177.86 | 82.49 | 134 | 12,216 | 18 | 2,060 |
| 21X-1, 75–77 | 184.46 | 94.46 | 67 | 9,170 | 12 | 2,409 |
| 21X-3, 75–77 | 187.17 | 94.33 | 138 | 15,056 | 11 | 2,932 |
| 21X-5, 76–78 | 190.18 | 94.24 | 122 | 16,498 | 8 | 3,093 |
| 22X-1, 75–77 | 194.16 | 93.66 | 126 | 17,095 | 9 | 3,178 |
| 22X-3, 75–77 | 197.16 | 92.69 | 120 | 14,943 | 8 | 3,303 |
| 22X-5, 75–77 | 200.16 | 93.19 | 117 | 12,597 | 8 | 3,299 |
| 23X-1, 75–77 | 203.76 | 94.14 | 131 | 16,338 | 9 | 3,275 |
| 23X-3, 75–77 | 206.76 | 92.71 | 140 | 14,322 | 10 | 3,374 |
| 23X-5, 75–77 | 209.76 | 92.19 | 111 | 11,418 | 10 | 3,336 |
| 24X-1, 75–77 | 213.36 | 91.97 | 67 | 8,209 | 13 | 2,865 |
| 24X-3, 75–77 | 216.36 | 88.95 | 77 | 6,002 | 15 | 2,315 |
| 25X-1, 75–79 | 223.08 | 90.35 | 125 | 11,473 | 14 | 2,669 |
| 25X-3, 75–77 | 226.06 | 90.32 | 179 | 15,540 | 20 | 2,665 |
| 25X-5, 75–77 | 229.06 | 89.52 | 157 | 12,960 | 18 | 2,940 |
| 26X-1, 75–77 | 232.66 | 93.92 | 122 | 14,837 | 11 | 3,046 |
| 26X-3, 75–77 | 235.66 | 94.69 | 119 | 17,209 | 9 | 2,965 |
| 26X-5, 75–77 | 238.66 | 92.20 | 113 | 15,757 | 8 | 3,309 |
| 27X-1, 75–77 | 242.26 | 91.94 | 121 | 13,344 | 8 | 3,375 |
| 27X-3, 75–77 | 245.26 | 89.18 | 83 | 8,141 | 11 | 2,947 |
| 27X-5, 75–77 | 248.26 | 74.43 | 64 | 26,541 | 12 | 2,092 |
| 28X-1, 75–77 | 251.86 | 89.18 | 71 | 8,892 | NA | 3,153 |
| 28X-3, 75–77 | 254.86 | 88.07 | 68 | 10,561 | 8 | 2,827 |
| 28X-5, 75–77 | 257.86 | 94.32 | 86 | 15,596 | 8 | 3,369 |
| 29X-1, 75–77 | 261.56 | 92.48 | 92 | 17,719 | NA | 3,189 |
| 29X-3, 75–77 | 264.56 | 92.53 | 85 | 14,237 | NA | 3,187 |
| 29X-5, 75–77 | 267.56 | 92.37 | 88 | 13,611 | NA | 3,058 |
| 29X-7, 75–77 | 269.91 | 91.82 | 97 | 14,384 | NA | 3,141 |
| 30X-1, 75–77 | 271.16 | 90.11 | 91 | 15,194 | NA | 3,111 |
| 30X-3, 75–77 | 274.16 | 93.52 | 88 | 15,857 | NA | 3,118 |
| 30X-5, 75–77 | 277.16 | 91.88 | 105 | 16,468 | 8 | 3,168 |
| 30X-6, 76–78 | 278.67 | 93.41 | 115 | 16,517 | 8 | 2,997 |
| 31X-1, 75–77 | 280.76 | 91.59 | 119 | 17,991 | 8 | 2,941 |
| 31X-3, 72–73 | 283.73 | 93.34 | 95 | 16,339 | 10 | 2,957 |
| 31X-5, 47–76 | 286.75 | 92.17 | 117 | 17,658 | 9 | 3,224 |
| 32X-1, 75–77 | 290.46 | 91.49 | 81 | 13,196 | 10 | 2,862 |
| 32X-3, 73–75 | 293.44 | 87.32 | 52 | 12,153 | 10 | 2,528 |
| 33X-1, 75–77 | 300.06 | 94.28 | 91 | 15,702 | 9 | 2,944 |
| 33X-3, 75–77 | 303.06 | 90.94 | 97 | 11,659 | 12 | 3,073 |
| 33X-5, 74–76 | 306.05 | 83.69 | 74 | 23,357 | 19 | 2,199 |
| 34X-1, 71–73 | 309.62 | 91.31 | 180 | 18,971 | 25 | 2,806 |
| 34X-3, 75–76 | 312.66 | 91.17 | 90 | 12,636 | 27 | 2,567 |
| 34X-5, 75–77 | 315.66 | 91.99 | 113 | 17,092 | 12 | 3,349 |
| 35X-1, 75–77 | 319.26 | 91.84 | 105 | 16,989 | 10 | 3,131 |
| 35X-3, 75–77 | 322.26 | 90.79 | 94 | 15,194 | 8 | 3,103 |
| 35X-5, 75–77 | 325.26 | 88.67 | 68 | 10,524 | 11 | 2,890 |
| 36X-1, 74–76 | 328.85 | 87.80 | 83 | 17,981 | 8 | 2,979 |
| 36X-3, 75–77 | 331.86 | 89.88 | 82 | 14,541 | 10 | 2,916 |
| 36X-5, 75–77 | 334.86 | 91.98 | 75 | 14,956 | 12 | 2,858 |
| 36X-6, 76–78 | 336.37 | 89.79 | 100 | 15,818 | 13 | 3,567 |
| 37X-1, 75–77 | 338.46 | 87.30 | 100 | 13,735 | 11 | 3,224 |
| 37X-3, 75–77 | 341.46 | 82.35 | 73 | 14,514 | 19 | 2,484 |
| 37X-5, 75–77 | 344.46 | 90.79 | 72 | 11,187 | 21 | 2,309 |
| 38X-1, 70–72 | 348.01 | 90.92 | 90 | 12,793 | 11 | 2,846 |
| 38X-3, 70–72 | 351.01 | 88.68 | 65 | 13,185 | 11 | 2,606 |
| 38X-5, 76–78 | 354.07 | 87.67 | 53 | 12,797 | 14 | 2,415 |
| 39X-1, 75–77 | 357.76 | 88.37 | 174 | 17,717 | 32 | 2,899 |
| 39X-3, 75–77 | 360.76 | 89.36 | 78 | 13,527 | 13 | 2,546 |
| 39X-5, 75–77 | 363.76 | 90.81 | 101 | 14,585 | 18 | 2,684 |
| 40X-1, 75–77 | 367.36 | 87.65 | 73 | 10,803 | 15 | 2,318 |
| 40X-3, 75–77 | 370.36 | 89.17 | 69 | 6,534 | 23 | 1,821 |
| 40X-5, 75–77 | 373.36 | 86.07 | 101 | 11,396 | 13 | 3,337 |
| 41X-1, 77–79 | 376.98 | 88.55 | 84 | 9,850 | 11 | 2,397 |
| 41X-3, 77–79 | 379.98 | 91.08 | 59 | 9,776 | 13 | 2,045 |
| 41X-5, 75–77 | 382.96 | 89.20 | 75 | 10,428 | 10 | 2,567 |
| 42X-1, 75–77 | 386.36 | 90.55 | 76 | 9,055 | 13 | 2,223 |
| 42X-3, 75–77 | 389.36 | 88.36 | 86 | 11,323 | 11 | 2,766 |
| 42X-5, 75–77 | 392.36 | 88.53 | 76 | 11,102 | 17 | 2,490 |
| 43X-1, 75–77 | 395.96 | 90.48 | 67 | 10,672 | 13 | 2,184 |
| 43X-3, 75–77 | 398.96 | 91.00 | 66 | 9,848 | 15 | 2,339 |
| 43X-5, 75–77 | 401.96 | 94.40 | 90 | 12,478 | 18 | 2,121 |
| 44X-1, 75–77 | 405.56 | 88.42 | 71 | 8,715 | 19 | 2,551 |
| 44X-3, 75–77 | 408.56 | 88.24 | 61 | 7,248 | 23 | 1,748 |
| 44X-5, 75–77 | 411.56 | 89.88 | 74 | 8,816 | 14 | 2,701 |
| 45X-1, 75–77 | 415.16 | 89.61 | 87 | 8,729 | 22 | 2,563 |
| 45X-3, 75–77 | 418.16 | 86.87 | 81 | 8,233 | 23 | 2,124 |
| 45X-5, 75–77 | 421.16 | 83.30 | 93 | 6,534 | 34 | 2,132 |
| 46X-1, 75–77 | 424.76 | 89.15 | 68 | 6,586 | 21 | 1,663 |
| 46X-3, 75–77 | 427.76 | 90.58 | 80 | 8,310 | 20 | 2,152 |
| 47X-1, 75–77 | 434.46 | 87.72 | 88 | 7,368 | 21 | 2,833 |
| 47X-3, 75–77 | 437.46 | 85.54 | 68 | 4,952 | 25 | 1,783 |
| 47X-5, 75–77 | 440.46 | 91.75 | 66 | 7,207 | 16 | 1,930 |
| 48X-1, 75–77 | 444.06 | 90.79 | 46 | 4,878 | 21 | 1,463 |
| 48X-3, 75–77 | 447.06 | 92.83 | 59 | 7,024 | 17 | 1,686 |
| 48X-5, 75–77 | 450.06 | 92.39 | 48 | 5,735 | 23 | 1,516 |
| 49X-1, 75–77 | 453.66 | 91.65 | 42 | 4,178 | 32 | 1,446 |
| 49X-3, 75–77 | 456.66 | 94.95 | 50 | 8,135 | 16 | 1,375 |
| 50X-1, 75–77 | 463.26 | 98.78 | 62 | 6,006 | 18 | 1,269 |

**Table T2 (continued).**

| Core, section, interval (cm) | Depth (mbsf) | $CaCO_3$ (wt%) | Fe (ppm) | Mg (ppm) | Mn (ppm) | Sr (ppm) |
|---|---|---|---|---|---|---|
| 50X-5, 75–77 | 469.26 | 82.66 | 98 | 4,094 | 47 | 1,228 |
| 51X-1, 75–77 | 472.86 | 86.34 | 96 | 8,398 | 18 | 1,033 |
| 51X-3, 73–75 | 475.84 | 84.94 | 84 | 5,627 | 16 | 1,013 |
| 51X-5, 75–77 | 478.86 | 82.19 | 114 | 5,713 | 15 | 1,134 |
| 52X-1, 75–77 | 482.46 | 85.97 | 290 | 9,025 | 21 | 927 |
| 52X-3, 73–75 | 485.44 | 90.34 | 268 | 5,800 | 63 | 737 |
| 53X-1, 75–77 | 492.16 | 92.14 | 165 | 6,815 | 14 | 835 |
| | Minimum: | 74.43 | 33 | 4,094 | 8 | 737 |
| | Maximum: | 98.78 | 338 | 26,541 | 63 | 3,567 |
| | Average: | 91.18 | 104 | 13,220 | 14 | 2,647 |

Note: NA = data not available.

**Table T3.** Geochemical data, Site 1128.

| Core, section, interval (cm) | Depth (mbsf) | $CaCO_3$ (wt%) | Fe (ppm) | Mg (ppm) | Mn (ppm) | Sr (ppm) |
|---|---|---|---|---|---|---|
| 182-1128B- | | | | | | |
| 1H-1, 73–75 | 0.74 | 86.53 | 33 | 952 | 40 | 1,682 |
| 1H-3, 73–75 | 3.74 | 95.07 | 17 | 456 | 155 | 1,845 |
| 2H-1, 75–77 | 6.46 | 79.56 | 35 | 1,070 | 196 | 1,636 |
| 2H-3, 73–75 | 9.44 | 91.41 | 32 | 693 | 265 | 1,763 |
| 2H-5, 73–75 | 12.44 | 59.58 | 61 | 2,412 | 105 | 1,725 |
| 3H-1, 73–76 | 15.95 | 89.42 | 80 | 834 | 112 | 1,630 |
| 3H-3, 73–76 | 18.95 | 87.26 | 395 | 4,220 | 142 | 1,108 |
| 3H-5, 73–76 | 21.95 | 90.94 | 176 | 1,909 | 282 | 1,336 |
| 4H-1, 73–75 | 25.44 | 89.01 | 155 | 776 | 90 | 1,769 |
| 4H-3, 73–75 | 28.44 | 78.65 | 85 | 1,231 | 315 | 1,585 |
| 4H-5, 73–75 | 31.44 | 94.27 | 136 | 674 | 315 | 1,708 |
| 5H-1, 63–65 | 34.84 | 88.44 | 111 | 3,225 | 407 | 998 |
| 5H-3, 68–70 | 37.89 | 77.13 | 54 | 1,866 | 463 | 1,522 |
| 5H-5, 73–75 | 40.94 | 90.03 | 69 | 3,954 | 328 | 1,044 |
| 6H-1, 73–75 | 44.44 | 76.79 | 32 | 1,107 | 280 | 1,572 |
| 6H-3, 73–75 | 47.44 | 83.64 | 18 | 897 | 329 | 1,578 |
| 6H-5, 73–75 | 50.44 | 92.15 | 70 | 4,441 | 320 | 786 |
| 8H-3, 73–75 | 66.44 | 61.91 | 53 | 1,570 | 580 | 2,017 |
| 8H-5, 73–75 | 69.44 | 34.12 | 99 | 4,043 | 606 | 1,999 |
| 9H-1, 73–75 | 72.94 | 48.00 | 75 | 2,421 | 660 | 2,076 |
| 9H-3, 73–75 | 75.94 | 55.00 | 53 | 1,833 | 726 | 2,133 |
| 9H-5, 73–75 | 78.94 | 68.85 | 36 | 1,155 | 859 | 2,202 |
| 10H-1, 73–75 | 82.44 | 53.41 | 45 | 1,758 | 725 | 2,146 |
| 10H-3, 73–75 | 85.44 | 39.49 | 76 | 2,528 | 1,278 | 2,121 |
| 10H-5, 73–75 | 88.44 | 9.44 | NA | NA | NA | NA |
| 11H-1, 73–75 | 91.94 | 28.22 | 87 | 5,027 | 6,827 | 2,151 |
| 12H-1, 73–75 | 101.44 | 12.37 | NA | NA | NA | NA |
| 12H-3, 73–75 | 104.44 | 24.08 | 215 | 5,141 | 8,973 | 1,904 |
| 12H-5, 73–75 | 107.44 | 15.83 | 417 | 9,470 | 12,311 | 1,926 |
| 13H-1, 73–75 | 110.94 | 29.49 | 265 | 4,500 | 7,005 | 2,165 |
| 13H-3, 73–75 | 113.94 | 40.39 | 72 | 2,522 | 2,048 | 2,101 |
| 13H-5, 73–75 | 116.94 | 10.26 | NA | NA | NA | NA |
| 14H-1, 73–75 | 120.44 | 21.79 | 325 | 6,525 | 13,965 | 2,015 |
| 14H-3, 73–75 | 123.44 | 28.06 | 193 | 3,860 | 8,153 | 2,123 |
| 14H-5, 73–75 | 126.44 | 8.52 | NA | NA | NA | NA |
| 15H-1, 73–75 | 129.94 | 19.33 | 347 | 7,446 | 10,391 | 1,936 |
| 15H-3, 73–75 | 132.94 | 39.66 | 166 | 3,209 | 4,989 | 1,743 |
| 15H-5, 73–75 | 135.50 | 92.38 | 184 | 4,381 | 394 | 1,012 |
| 16X-1, 73–75 | 138.54 | 20.19 | 275 | 6,022 | 5,712 | 2,013 |
| 16X-3, 73–75 | 141.54 | 16.17 | 642 | 7,813 | 18,229 | 1,875 |
| 16X-5, 69–71 | 144.50 | 32.16 | 264 | 3,668 | 6,113 | 2,164 |
| 17X-1, 73–75 | 146.54 | 35.87 | 243 | 2,711 | 3,893 | 1,933 |
| 17X-3, 73–75 | 149.54 | 82.42 | 237 | 3,881 | 359 | 1,088 |
| 18X-1, 73–75 | 156.14 | 20.16 | 972 | 6,516 | 10,284 | 2,113 |
| 18X-3, 73–75 | 159.14 | 31.67 | 210 | 3,499 | 570 | 2,187 |
| 19X-1, 73–75 | 165.84 | 30.01 | 541 | 3,228 | 3,576 | 2,148 |
| 19X-3, 73–75 | 168.84 | 44.49 | 312 | 1,893 | 2,559 | 1,984 |
| 19X-5, 73–75 | 171.84 | 44.27 | 573 | 2,297 | 3,798 | 2,060 |
| 20X-1, 73–75 | 175.44 | 34.10 | 790 | 2,927 | 8,343 | 1,895 |
| 20X-3, 73–75 | 178.44 | 21.36 | 370 | 5,290 | 287 | 2,229 |
| 20X-5, 73–75 | 181.44 | 21.91 | 800 | 4,863 | 6,160 | 2,035 |
| 22X-1, 73–75 | 194.64 | 36.18 | 474 | 3,030 | 2,758 | 1,932 |
| 22X-3, 73–75 | 197.64 | 24.38 | 364 | 4,104 | 472 | 2,193 |
| 22X-5, 73–75 | 200.64 | 43.61 | 534 | 1,968 | 3,557 | 1,900 |
| 23X-1, 73–75 | 204.24 | 35.78 | 332 | 2,095 | 331 | 1,990 |
| 23X-3, 73–75 | 207.24 | 39.50 | 407 | 1,993 | 3,085 | 1,897 |
| 23X-5, 73–75 | 210.24 | 41.24 | 421 | 2,083 | 2,961 | 1,912 |
| 24X-1, 73–75 | 213.84 | 35.99 | 245 | 2,767 | 357 | 1,884 |
| 24X-3, 73–75 | 216.84 | 42.65 | 536 | 2,115 | 2,493 | 1,911 |
| 24X-5, 76–78 | 219.87 | 51.87 | 641 | 1,386 | 4,003 | 1,940 |
| 25X-1, 73–75 | 223.44 | 49.57 | 396 | 1,542 | 333 | 2,020 |
| 25X-3, 73–75 | 226.44 | 48.27 | 395 | 1,725 | 344 | 1,883 |
| 25X-5, 73–75 | 229.44 | 64.49 | 542 | 1,006 | 410 | 1,888 |
| 26X-1, 73–75 | 233.14 | 50.34 | 644 | 1,465 | 2,652 | 1,781 |
| 26X-3, 73–75 | 236.14 | 52.00 | 330 | 1,507 | 342 | 1,839 |
| 26X-5, 73–75 | 239.14 | 53.23 | 295 | 1,823 | 365 | 1,800 |
| 27X-1, 73–75 | 242.84 | 43.45 | 128 | 2,828 | 391 | 1,890 |
| 27X-3, 73–75 | 245.84 | 35.74 | 74 | 4,045 | 244 | 1,980 |
| 30X-1, 73–75 | 271.84 | 16.54 | 173 | 3,909 | 710 | 1,751 |
| | Minimum: | 8.52 | 17 | 456 | 40 | 786 |
| | Maximum: | 95.07 | 972 | 9,470 | 18,229 | 2,229 |
| | Average: | 49.13 | 268 | 2,986 | 2,774 | 1,833 |

Note: NA = data not available.

**Table T4.** Geochemical data, Site 1129.

| Core, section, interval (cm) | Depth (mbsf) | $CaCO_3$ (wt%) | Fe (ppm) | Mg (ppm) | Mn (ppm) | Sr (ppm) |
|---|---|---|---|---|---|---|
| 182-1129C- | | | | | | |
| 1H-1, 73–75 | 0.74 | 96.27 | 66 | 25,364 | 9 | 2,698 |
| 1H-3, 73–75 | 3.74 | 94.51 | 130 | 25,179 | 13 | 2,303 |
| 1H-5, 73–75 | 6.74 | 98.46 | 80 | 23,978 | 9 | 3,008 |
| 2H-1, 73–75 | 8.04 | 97.26 | 74 | 21,347 | NA | 3,327 |
| 2H-3, 73–75 | 11.04 | 97.36 | 70 | 24,689 | NA | 3,067 |
| 2H-5, 73–75 | 14.04 | 98.05 | 82 | 26,657 | 8 | 2,993 |
| 3H-1, 73–75 | 17.54 | 98.19 | 55 | 23,062 | NA | 3,147 |
| 3H-3, 73–75 | 20.54 | 98.03 | 53 | 22,872 | NA | 3,047 |
| 3H-5, 73–75 | 23.54 | 97.77 | 57 | 24,847 | 8 | 2,951 |
| 4H-1, 73–75 | 27.04 | 98.07 | 67 | 24,443 | 9 | 2,807 |
| 4H-3, 73–75 | 30.04 | 96.67 | 80 | 25,586 | 9 | 2,950 |
| 4H-5, 73–75 | 33.04 | 95.98 | 105 | 26,296 | 11 | 2,795 |
| 5H-1, 73–75 | 36.54 | 95.60 | 72 | 23,019 | 11 | 2,839 |
| 5H-3, 73–75 | 39.54 | 96.37 | 70 | 21,315 | 11 | 2,611 |
| 6H-1, 73–75 | 46.04 | 98.87 | 74 | 24,490 | NA | 2,724 |
| 6H-3, 73–75 | 49.04 | 97.85 | 48 | 21,159 | 8 | 3,227 |
| 6H-5, 73–75 | 52.04 | 97.37 | 56 | 23,537 | 10 | 3,008 |
| 7H-3, 73–75 | 58.54 | 96.48 | 89 | 25,223 | NA | 3,108 |
| 7H-5, 73–75 | 61.54 | 96.58 | 78 | 25,064 | 10 | 3,384 |
| 8H-1, 73–75 | 65.04 | 94.58 | 104 | 22,546 | 9 | 3,562 |
| 8H-3, 73–75 | 68.04 | 94.31 | 86 | 23,824 | 11 | 2,867 |
| 8H-5, 73–75 | 71.04 | 93.40 | 81 | 22,460 | 11 | 2,997 |
| 9H-1, 72–74 | 74.53 | 95.80 | 43 | 24,443 | 8 | 2,878 |
| 9H-3, 72–74 | 77.53 | 97.25 | 62 | 23,287 | 8 | 3,042 |
| 9H-5, 72–74 | 80.53 | 96.51 | 52 | 24,421 | 8 | 2,946 |
| 10H-1, 73–75 | 84.04 | 96.25 | 69 | 26,831 | 16 | 2,533 |
| 10H-5, 73–75 | 90.04 | 96.80 | 117 | 24,645 | 9 | 3,010 |
| 11H-1, 73–75 | 93.54 | 95.87 | 103 | 21,655 | 10 | 3,008 |
| 11H-3, 73–75 | 96.54 | 95.09 | 44 | 21,771 | 9 | 2,838 |
| 11H-5, 73–75 | 99.54 | 97.79 | 69 | 21,613 | 9 | 3,003 |
| 12H-1, 74–76 | 103.05 | 95.91 | 52 | 19,798 | 14 | 2,732 |
| 12H-5, 73–75 | 109.04 | 94.74 | 107 | 26,012 | 11 | 3,121 |
| 13H-1, 73–75 | 112.54 | 95.55 | 92 | 22,679 | 9 | 3,159 |
| 13H-5, 73–75 | 118.54 | 92.23 | 55 | 25,228 | 11 | 2,893 |
| 14H-1, 73–75 | 122.04 | 93.27 | 39 | 17,156 | 11 | 2,116 |
| 14H-3, 73–75 | 125.04 | 93.14 | 34 | 25,917 | NA | 3,209 |
| 14H-5, 73–75 | 128.04 | 98.69 | 72 | 26,627 | NA | 3,347 |
| 15H-1, 73–75 | 131.54 | 97.03 | 67 | 23,591 | 8 | 2,808 |
| 15H-3, 73–75 | 134.54 | 96.92 | 75 | 22,496 | 9 | 3,329 |
| 15H-5, 73–75 | 137.54 | 94.36 | 71 | 24,260 | 10 | 2,879 |
| 16H-1, 73–75 | 141.04 | 95.04 | 38 | 18,969 | 8 | 3,005 |
| 16H-3, 73–75 | 144.04 | 94.48 | 59 | 19,514 | 8 | 3,197 |
| 16H-5, 73–75 | 147.04 | 95.31 | 85 | 25,052 | 8 | 3,439 |
| 17H-1, 73–75 | 150.54 | 91.09 | 45 | 22,271 | 10 | 2,657 |
| 17H-3, 73–75 | 153.54 | 92.42 | 39 | 20,171 | 10 | 2,598 |
| 17H-5, 73–75 | 156.54 | 89.56 | 31 | 20,627 | 10 | 2,483 |
| 18H-1, 73–75 | 160.04 | 93.26 | 35 | 17,647 | 8 | 2,791 |
| 18H-3, 73–75 | 163.04 | 93.20 | 48 | 19,275 | NA | 3,413 |
| 18H-5, 73–75 | 166.04 | 93.04 | 52 | 21,744 | NA | 3,310 |
| 19H-1, 73–77 | 169.55 | 92.06 | 42 | 18,008 | 8 | 2,975 |
| 19H-3, 73–77 | 172.55 | 93.52 | 45 | 17,791 | 10 | 3,356 |
| 19H-5, 73–77 | 175.55 | 92.50 | 52 | 17,368 | 11 | 3,458 |
| 20H-1, 73–77 | 179.05 | 91.38 | 36 | 21,881 | 8 | 2,780 |
| 20H-3, 73–77 | 182.05 | 91.55 | 32 | 17,691 | 10 | 2,694 |
| 20H-5, 73–77 | 185.05 | 90.53 | 30 | 17,378 | 9 | 2,796 |
| 21H-1, 73–75 | 188.54 | 91.62 | 40 | 20,943 | 11 | 3,061 |
| 21H-3, 75–77 | 191.56 | 89.37 | 38 | 18,276 | 10 | 3,035 |
| 22H-1, 73–75 | 198.04 | 90.08 | 41 | 16,380 | 14 | 2,714 |
| 22H-3, 73–75 | 201.04 | 90.46 | 43 | 17,407 | 17 | 2,651 |
| 22H-5, 73–75 | 204.04 | 86.53 | 62 | 25,618 | 18 | 2,735 |
| 23H-1, 73–75 | 207.54 | 92.71 | 36 | 17,837 | 25 | 3,125 |
| 23H-3, 73–75 | 210.24 | 89.94 | 36 | 19,536 | 9 | 2,766 |
| 23H-5, 73–75 | 212.22 | 91.75 | 30 | 16,471 | 11 | 2,737 |
| 25X-1, 73–75 | 226.44 | 89.50 | 34 | 16,933 | 11 | 2,540 |
| 25X-3, 73–75 | 229.44 | 88.18 | 44 | 17,169 | 14 | 2,692 |
| 26X-1, 73–75 | 235.94 | 87.62 | 33 | 19,895 | 10 | 2,801 |
| 26X-3, 73–75 | 238.94 | 90.79 | 33 | 19,683 | 8 | 2,960 |
| 27X-1, 74–76 | 245.45 | 86.85 | 55 | 18,906 | 13 | 2,726 |
| 27X-3, 72–74 | 248.43 | 88.34 | 50 | 17,066 | 12 | 3,002 |
| 27X-5, 72–74 | 251.43 | 86.51 | 51 | 17,456 | 16 | 2,428 |
| 28X-1, 73–75 | 255.14 | 87.93 | 64 | 11,943 | 24 | 3,463 |
| 28X-3, 73–75 | 258.14 | 90.76 | 56 | 24,102 | 33 | 2,814 |
| 28X-5, 73–75 | 261.14 | 92.56 | 47 | 13,392 | 16 | 4,277 |
| 29X-1, 73–75 | 264.64 | 90.77 | 38 | 19,003 | 10 | 3,009 |
| 29X-3, 73–75 | 267.64 | 90.29 | 37 | 16,924 | 10 | 2,845 |
| 29X-5, 73–75 | 270.64 | 89.84 | 35 | 14,430 | 10 | 2,798 |
| 30X-1, 73–75 | 274.04 | 86.99 | 48 | 15,080 | 11 | 2,603 |
| 30X-3, 73–75 | 277.04 | 84.23 | 49 | 15,877 | 13 | 2,382 |
| 30X-5, 73–75 | 280.04 | 89.28 | 49 | 13,362 | 16 | 2,900 |
| 33X-1, 73–75 | 301.74 | 88.19 | 41 | 15,012 | 9 | 3,121 |
| 33X-3, 73–75 | 304.74 | 88.94 | 41 | 17,252 | 8 | 3,176 |
| 34X-1, 73–75 | 311.14 | 88.98 | 46 | 17,376 | 9 | 2,693 |
| 34X-3, 73–75 | 314.14 | 87.67 | 45 | 16,788 | 10 | 2,702 |
| 35X-1, 73–75 | 320.54 | 90.06 | 47 | 13,957 | 9 | 2,722 |
| 35X-3, 73–75 | 323.54 | 90.35 | 42 | 18,064 | 9 | 2,859 |
| 35X-5, 73–75 | 326.54 | 88.76 | 38 | 20,351 | 9 | 2,623 |
| 36X-1, 73–75 | 329.84 | 90.80 | 42 | 14,036 | 9 | 3,236 |
| 36X-3, 73–75 | 332.84 | 88.59 | 49 | 19,084 | 11 | 3,212 |
| 37X-1, 73–75 | 338.74 | 82.58 | 60 | 15,855 | 16 | 2,331 |
| 37X-3, 73–75 | 341.74 | 83.16 | 51 | 13,212 | 16 | 3,155 |
| 37X-5, 73–75 | 344.74 | 86.12 | 52 | 17,647 | 14 | 2,049 |
| 38X-1, 73–75 | 347.64 | 90.03 | 41 | 16,735 | 8 | 2,741 |
| 38X-3, 73–75 | 350.64 | 87.67 | 50 | 20,905 | NA | 2,862 |
| 39X-1, 73–75 | 356.44 | 87.28 | 65 | 11,048 | 9 | 3,969 |
| 39X-3, 73–75 | 359.44 | 87.86 | 41 | 17,352 | 8 | 2,319 |
| 40X-1, 73–75 | 365.74 | 89.31 | 42 | 15,884 | 9 | 2,715 |
| 40X-3, 73–75 | 368.74 | 93.38 | 33 | 13,407 | 9 | 3,099 |
| 43X-1, 73–75 | 394.64 | 89.74 | 42 | 18,854 | 13 | 2,066 |
| 46X-1, 75–77 | 423.66 | 88.06 | 51 | 16,870 | 13 | 2,603 |
| 46X-3, 75–77 | 426.66 | 86.20 | 54 | 17,314 | 14 | 2,038 |
| 46X-5, 75–77 | 429.66 | 83.38 | 45 | 21,599 | 13 | 1,720 |
| 48X-1, 73–75 | 442.74 | 88.71 | 54 | 17,829 | 11 | 2,256 |
| 182-1129D- | | | | | | |
| 13R-1, 73–75 | 470.24 | 92.35 | 49 | 14,171 | 13 | 1,984 |
| 13R-3, 73–75 | 473.24 | 88.91 | 62 | 14,831 | 12 | 2,154 |
| 13R-5, 73–75 | 476.24 | 81.99 | 50 | 15,327 | 18 | 1,767 |
| | Minimum: | 81.99 | 30 | 11,048 | 8 | 1,720 |
| | Maximum: | 98.87 | 130 | 26,831 | 33 | 4,277 |
| | Average: | 92.12 | 56 | 19,993 | 11 | 2,862 |

Note: NA = data not available.

**Table T5.** Geochemical data, Site 1130.

| Core, section, interval (cm) | Depth (mbsf) | $CaCO_3$ (wt%) | Fe (ppm) | Mg (ppm) | Mn (ppm) | Sr (ppm) |
|---|---|---|---|---|---|---|
| 182-1130A- | | | | | | |
| 1H-1, 73–75 | 0.74 | 93.15 | 75 | 14,702 | 11 | 2,489 |
| 1H-3, 73–75 | 3.74 | 94.52 | 112 | 17,213 | 12 | 2,476 |
| 1H-5, 73–75 | 6.74 | 98.81 | 83 | 15,406 | 9 | 2,658 |
| 2H-1, 72–75 | 9.24 | 97.83 | 78 | 15,380 | 9 | 2,645 |
| 2H-3, 72–75 | 12.24 | 96.29 | 61 | 17,345 | 6 | 2,800 |
| 2H-5, 72–75 | 15.24 | 95.98 | 75 | 16,162 | 6 | 2,898 |
| 3H-1, 73–75 | 18.74 | 94.86 | 118 | 18,263 | 8 | 2,747 |
| 3H-3, 73–75 | 21.74 | 96.21 | 102 | 18,563 | 8 | 2,739 |
| 4H-1, 73–75 | 28.24 | 95.72 | 98 | 16,505 | 9 | 3,053 |
| 4H-3, 73–75 | 31.24 | 94.82 | 90 | 14,203 | 12 | 3,296 |
| 4H-5, 73–75 | 34.24 | 95.60 | 84 | 16,480 | 9 | 3,044 |
| 5H-1, 73–75 | 37.74 | 94.94 | 88 | 14,407 | 9 | 3,523 |
| 5H-3, 73–75 | 40.74 | 94.33 | 74 | 13,039 | 12 | 3,222 |
| 5H-5, 73–75 | 43.74 | 96.14 | 101 | 15,740 | 12 | 3,170 |
| 6H-1, 74–76 | 47.25 | 95.22 | 130 | 17,601 | 14 | 2,716 |
| 6H-3, 74–76 | 50.25 | 96.65 | 107 | 16,694 | 9 | 2,914 |
| 6H-6, 74–76 | 54.75 | 96.34 | 110 | 15,075 | 9 | 3,030 |
| 7H-1, 72–74 | 56.73 | 96.24 | 89 | 16,561 | 8 | 3,086 |
| 7H-3, 72–74 | 59.73 | 95.72 | 116 | 14,816 | 9 | 2,956 |
| 7H-5, 72–74 | 62.73 | 93.54 | 118 | 14,284 | 10 | 3,244 |
| 8H-1, 73–75 | 66.24 | 94.03 | 86 | 13,714 | 13 | 2,832 |
| 8H-3, 73–75 | 69.24 | 95.22 | 104 | 17,674 | 9 | 2,804 |
| 8H-5, 73–75 | 72.24 | 94.21 | 108 | 16,432 | 11 | 2,967 |
| 9H-1, 71–73 | 75.72 | 93.50 | 129 | 15,040 | 11 | 3,062 |
| 9H-3, 73–75 | 78.74 | 91.13 | 80 | 9,712 | 22 | 2,834 |
| 9H-5, 72–75 | 81.74 | 93.82 | 131 | 15,918 | 13 | 2,722 |
| 10H-1, 76–78 | 85.27 | 96.14 | 85 | 15,852 | 9 | 2,759 |
| 10H-3, 73–75 | 88.24 | 93.98 | 126 | 15,294 | 10 | 2,900 |
| 10H-5, 73–75 | 91.24 | 93.17 | 113 | 14,605 | 8 | 3,207 |
| 11H-1, 73–75 | 94.74 | 92.89 | 84 | 12,518 | 9 | 3,325 |
| 11H-3, 73–75 | 97.74 | 93.24 | 75 | 12,477 | 9 | 3,010 |
| 11H-5, 73–75 | 100.74 | 93.76 | 85 | 13,469 | 9 | 3,090 |
| 12H-1, 73–75 | 104.24 | 93.03 | 98 | 14,263 | 9 | 3,008 |
| 12H-3, 73–75 | 107.24 | 94.08 | 94 | 12,427 | 8 | 3,076 |
| 12H-5, 73–75 | 110.24 | 92.94 | 62 | 7,001 | 12 | 2,777 |
| 13H-1, 73–75 | 113.74 | 95.40 | 91 | 14,285 | 12 | 2,644 |
| 13H-3, 73–75 | 116.74 | 95.65 | 85 | 13,089 | 11 | 2,641 |
| 13H-5, 73–75 | 119.74 | 92.97 | 113 | 13,706 | 9 | 3,145 |
| 14H-1, 73–75 | 123.24 | 93.26 | 99 | 12,481 | 9 | 3,227 |
| 14H-3, 73–75 | 125.94 | 92.43 | 75 | 9,744 | 9 | 3,182 |
| 14H-5, 73–75 | 128.94 | 92.61 | 110 | 10,840 | 11 | 3,061 |
| 15H-1, 73–75 | 132.74 | 92.05 | 51 | 4,653 | 19 | 2,094 |
| 15H-3, 73–75 | 135.74 | 88.81 | 161 | 13,431 | 19 | 2,624 |
| 15H-5, 73–75 | 138.74 | 95.21 | 67 | 11,436 | 11 | 2,621 |
| 16H-1, 73–75 | 142.24 | 92.29 | 92 | 14,880 | 8 | 3,063 |
| 16H-3, 73–75 | 144.22 | 92.83 | 108 | 13,983 | 9 | 2,964 |
| 16H-5, 73–75 | 147.22 | 93.48 | 75 | 9,418 | 9 | 3,186 |
| 17H-1, 73–75 | 151.74 | 94.64 | 67 | 12,816 | 6 | 3,228 |
| 17H-3, 73–75 | 154.74 | 94.77 | 64 | 11,652 | 8 | 3,074 |
| 17H-5, 73–75 | 157.74 | 93.48 | 60 | 8,933 | 6 | 2,821 |
| 18H-1, 73–75 | 161.24 | 91.71 | 62 | 9,852 | 8 | 3,051 |
| 18H-3, 73–75 | 164.24 | 94.23 | 65 | 10,751 | 9 | 2,818 |
| 18H-5, 73–75 | 167.24 | 93.31 | 80 | 13,297 | 11 | 2,803 |
| 19X-1, 73–75 | 170.74 | 91.44 | 70 | 8,814 | 9 | 2,807 |
| 19X-3, 73–75 | 173.74 | 92.32 | 41 | 5,093 | 16 | 2,053 |
| 19X-5, 73–75 | 176.74 | 94.59 | 55 | 9,747 | 9 | 2,649 |
| 20X-1, 73–75 | 178.14 | 89.48 | 144 | 14,121 | 23 | 2,939 |
| 20X-3, 73–75 | 181.14 | 90.21 | 111 | 12,963 | 14 | 2,656 |
| 20X-5, 73–75 | 184.14 | 94.42 | 63 | 9,070 | 9 | 2,529 |
| 21X-1, 73–75 | 187.74 | 89.56 | 44 | 4,036 | 18 | 2,325 |
| 21X-3, 73–75 | 190.74 | 93.76 | 62 | 7,758 | 11 | 2,153 |
| 22X-1, 73–75 | 197.34 | 92.57 | 41 | 6,017 | 10 | 2,256 |
| 22X-3, 73–75 | 200.34 | 94.00 | 61 | 7,876 | 11 | 2,065 |
| 22X-5, 73–75 | 203.34 | 93.04 | 43 | 4,969 | 10 | 1,980 |
| 23X-1, 73–75 | 206.94 | 90.45 | 106 | 12,025 | 20 | 2,336 |
| 23X-3, 73–75 | 209.94 | 91.29 | 58 | 5,591 | 13 | 2,029 |
| 23X-5, 73–75 | 212.94 | 92.40 | 31 | 3,306 | 21 | 1,339 |
| 24X-1, 73–75 | 216.54 | 91.48 | 86 | 5,013 | 11 | 1,552 |
| 24X-3, 73–75 | 219.54 | 92.74 | 70 | 5,055 | 11 | 1,619 |
| 24X-5, 73–75 | 222.54 | 92.41 | 58 | 5,362 | 13 | 1,829 |
| 25X-1, 73–75 | 226.14 | 90.04 | 408 | 4,908 | 17 | 1,860 |
| 25X-3, 73–75 | 229.14 | 91.84 | 986 | 4,452 | 33 | 1,296 |
| 25X-5, 73–75 | 232.14 | 90.81 | 731 | 3,954 | 22 | 1,518 |
| 26X-1, 73–75 | 235.74 | 90.36 | 1,053 | 5,302 | 33 | 1,879 |
| 26X-3, 73–75 | 238.74 | 87.30 | 647 | 5,111 | 30 | 1,589 |
| 27X-1, 73–75 | 245.34 | 84.32 | 1,361 | 5,877 | 36 | 1,632 |
| 27X-3, 73–75 | 248.34 | 92.51 | 683 | 5,922 | 33 | 1,574 |
| 27X-5, 73–75 | 251.34 | 93.34 | 1,341 | 5,995 | 38 | 1,491 |
| 28X-3, 72–74 | 258.03 | 93.15 | 1,416 | 5,726 | 80 | 1,551 |
| 28X-5, 72–74 | 261.03 | 94.33 | 241 | 1,445 | 58 | 1,670 |
| 29X-1, 73–75 | 264.64 | 90.97 | 244 | 1,329 | 53 | 1,645 |
| 29X-3, 73–75 | 267.64 | 92.32 | 269 | 1,502 | 67 | 1,719 |
| 29X-5, 73–75 | 270.64 | 92.84 | 224 | 1,171 | 60 | 1,657 |
| 30X-1, 73–75 | 274.24 | 91.79 | 258 | 1,148 | 67 | 1,583 |
| 30X-3, 73–75 | 277.24 | 93.23 | 206 | 1,173 | 50 | 1,558 |
| 30X-5, 73–75 | 280.24 | 92.89 | 215 | 1,477 | 59 | 1,494 |
| 31X-1, 73–75 | 283.84 | 87.48 | 233 | 1,679 | 47 | 1,260 |
| 31X-3, 73–75 | 286.84 | 92.22 | 232 | 1,334 | 62 | 1,425 |
| 31X-5, 73–75 | 289.84 | 92.06 | 276 | 1,945 | 55 | 1,329 |
| 32X-1, 73–75 | 293.54 | 93.35 | 206 | 2,129 | 49 | 1,236 |
| 32X-3, 73–75 | 296.54 | 92.00 | 229 | 1,813 | 49 | 1,302 |
| 32X-5, 73–75 | 299.54 | 93.99 | 219 | 1,317 | 56 | 1,375 |
| 33X-1, 73–75 | 303.14 | 94.76 | 203 | 1,277 | 48 | 1,557 |
| 33X-3, 73–75 | 306.14 | 93.05 | 229 | 1,143 | 51 | 1,641 |
| 33X-5, 73–75 | 309.14 | 95.54 | 249 | 1,329 | 56 | 1,628 |
| 34X-1, 73–75 | 312.74 | 91.20 | 210 | 1,139 | 59 | 1,521 |
| 34X-3, 73–75 | 315.74 | 90.68 | 194 | 996 | 56 | 1,577 |
| 34X-5, 73–75 | 318.74 | 89.32 | 231 | 1,183 | 88 | 1,639 |
| 35X-2, 73–75 | 323.94 | 87.50 | 213 | 1,830 | 60 | 1,423 |
| 35X-3, 73–75 | 325.44 | 88.83 | 212 | 1,653 | 69 | 1,578 |
| 35X-5, 73–75 | 328.44 | 94.41 | 202 | 1,466 | 77 | 1,564 |
| | Minimum: | 84.32 | 31 | 996 | 6 | 1,236 |
| | Maximum: | 98.81 | 1,416 | 18,563 | 88 | 3,523 |
| | Average: | 93.09 | 195 | 9,303 | 24 | 2,378 |

**Table T6.** Geochemical data, Site 1131.

| Core, section, interval (cm) | Depth (mbsf) | $CaCO_3$ (wt%) | Fe (ppm) | Mg (ppm) | Mn (ppm) | Sr (ppm) |
|---|---|---|---|---|---|---|
| 182-1131A- | | | | | | |
| 1H-1, 73–75 | 0.74 | 94.07 | 60 | 15,263 | 12 | 2,277 |
| 2H-1, 73–75 | 4.14 | 93.31 | 63 | 13,915 | 11 | 2,217 |
| 2H-3, 73–75 | 7.14 | 91.82 | 75 | 17,778 | 10 | 2,786 |
| 2H-5, 73–75 | 10.19 | 97.04 | 75 | 17,142 | 12 | 2,547 |
| 3H-1, 73–75 | 13.64 | 96.23 | 70 | 15,219 | 11 | 2,596 |
| 3H-3, 73–75 | 16.64 | 96.09 | 89 | 17,542 | 14 | 2,234 |
| 3H-5, 71–73 | 19.62 | 96.37 | 73 | 15,289 | 9 | 2,433 |
| 4H-1, 73–75 | 23.14 | 96.49 | 82 | 14,644 | 11 | 2,331 |
| 4H-3, 73–75 | 26.14 | 98.31 | 84 | 14,906 | 9 | 2,446 |
| 4H-5, 73–75 | 29.14 | 96.03 | 95 | 15,855 | 11 | 2,522 |
| 5H-1, 73–75 | 32.64 | 94.74 | 79 | 11,064 | 12 | 2,220 |
| 5H-3, 73–75 | 35.64 | 93.21 | 104 | 14,252 | 10 | 2,387 |
| 5H-5, 73–75 | 38.64 | 94.10 | 91 | 13,174 | 10 | 2,255 |
| 6H-1, 73–75 | 42.14 | 94.26 | 83 | 12,351 | 10 | 2,130 |
| 6H-3, 73–75 | 45.14 | 92.55 | 82 | 12,026 | 11 | 2,025 |
| 6H-5, 73–75 | 48.14 | 93.51 | 110 | 14,197 | 11 | 1,978 |
| 7H-1, 73–75 | 51.64 | 95.35 | 154 | 16,238 | 11 | 2,313 |
| 7H-3, 73–75 | 54.64 | 94.98 | 144 | 15,928 | 12 | 2,283 |
| 7H-5, 73–75 | 57.64 | 92.12 | 138 | 14,893 | 13 | 2,343 |
| 8X-1, 73–75 | 61.14 | 90.22 | 110 | 14,246 | 13 | 2,410 |
| 8X-3, 73–75 | 64.14 | 90.90 | 93 | 12,124 | 13 | 2,260 |
| 8X-5, 73–75 | 66.64 | 89.04 | 104 | 10,212 | 16 | 2,314 |
| 9X-1, 73–75 | 68.34 | 89.13 | 59 | 10,180 | 11 | 2,289 |
| 9X-3, 73–75 | 71.34 | 90.94 | 54 | 9,088 | 10 | 2,798 |
| 10X-1, 73–75 | 77.34 | 91.84 | 60 | 9,348 | 11 | 2,172 |
| 10X-3, 73–75 | 80.34 | 91.44 | 64 | 7,422 | 11 | 2,239 |
| 10X-5, 73–75 | 83.34 | 87.94 | 61 | 6,910 | 10 | 2,064 |
| 11X-1, 73–75 | 86.14 | 86.03 | 79 | 7,169 | 12 | 2,107 |
| 11X-3, 73–75 | 89.14 | 87.50 | 76 | 9,584 | 16 | 2,013 |
| 11X-5, 73–75 | 92.14 | 91.26 | 95 | 13,862 | 10 | 2,556 |
| 12X-1, 73–75 | 95.74 | 89.32 | 80 | 13,329 | 11 | 2,467 |
| 12X-3, 73–75 | 98.74 | 89.32 | 86 | 10,801 | 10 | 2,528 |
| 12X-5, 73–75 | 101.74 | 90.35 | 68 | 9,506 | 11 | 2,729 |
| 13X-1, 73–75 | 105.34 | 89.17 | 71 | 10,344 | 10 | 2,475 |
| 13X-3, 73–75 | 108.34 | 88.78 | 57 | 10,323 | 12 | 2,687 |
| 13X-5, 73–75 | 111.34 | 87.31 | 71 | 8,706 | 12 | 2,563 |
| 14X-1, 72–74 | 114.33 | 87.27 | 76 | 7,784 | 12 | 2,381 |
| 14X-3, 73–75 | 117.34 | 84.35 | 80 | 10,663 | 15 | 2,051 |
| 14X-5, 73–75 | 120.34 | 85.65 | 69 | 8,353 | 13 | 1,934 |
| 15X-1, 75–77 | 123.36 | 85.21 | 69 | 8,762 | 14 | 1,937 |
| 15X-3, 73–77 | 126.35 | 87.17 | 80 | 8,224 | 16 | 1,973 |
| 15X-5, 73–77 | 129.35 | 89.32 | 84 | 10,819 | 12 | 2,353 |
| 16X-1, 73–75 | 132.64 | 89.12 | 121 | 13,225 | 13 | 2,230 |
| 16X-3, 72–74 | 135.63 | 91.26 | 169 | 14,265 | 18 | 2,228 |
| 16X-5, 73–75 | 138.64 | 90.30 | 71 | 14,376 | 10 | 2,357 |
| 17X-1, 73–75 | 142.04 | 91.40 | 65 | 8,501 | 11 | 2,271 |
| 17X-3, 73–77 | 145.05 | 88.73 | 62 | 10,434 | 10 | 2,183 |
| 17X-5, 73–77 | 148.05 | 90.38 | 60 | 9,729 | 10 | 2,296 |
| 18X-1, 78–80 | 151.39 | 90.21 | 62 | 9,754 | 8 | 2,481 |
| 18X-3, 73–75 | 154.34 | 88.31 | 64 | 11,183 | 8 | 2,390 |
| 19X-1, 73–75 | 160.74 | 86.64 | 85 | 11,840 | 8 | 2,368 |
| 19X-3, 73–77 | 163.75 | 88.66 | 82 | 10,793 | 9 | 2,535 |
| 19X-5, 73–75 | 166.74 | 90.20 | 88 | 12,887 | 10 | 2,576 |
| 20X-1, 73–75 | 170.04 | 92.11 | 87 | 11,998 | 10 | 2,688 |
| 20X-3, 70–72 | 173.01 | 89.75 | 76 | 12,957 | 8 | 2,364 |
| 20X-5, 73–75 | 176.04 | 89.26 | 71 | 13,431 | 8 | 2,325 |
| 21X-1, 73–75 | 179.34 | 90.93 | 72 | 10,844 | 9 | 2,396 |
| 21X-3, 73–75 | 182.34 | 92.67 | 69 | 10,315 | 9 | 2,516 |
| 21X-5, 73–75 | 185.34 | 90.15 | 79 | 11,286 | 9 | 2,537 |
| 22X-1, 73–75 | 188.94 | 88.43 | 74 | 11,110 | 10 | 2,626 |
| 22X-3, 73–75 | 191.94 | 88.47 | 77 | 11,173 | 11 | 2,709 |
| 23X-1, 73–75 | 198.34 | 87.62 | 68 | 11,363 | 11 | 2,430 |
| 23X-3, 73–75 | 201.34 | 83.38 | 87 | 11,216 | 13 | 2,162 |
| 24X-1, 73–75 | 207.34 | 94.23 | 84 | 9,970 | 11 | 3,162 |
| 24X-3, 73–75 | 210.34 | 89.35 | 71 | 14,254 | 11 | 2,672 |
| 24X-5, 71–73 | 213.32 | 89.23 | 75 | 11,828 | 10 | 2,635 |
| 25X-1, 73–77 | 216.35 | 89.25 | 75 | 9,790 | 12 | 2,642 |
| 25X-3, 73–75 | 219.34 | 88.11 | 75 | 12,002 | 14 | 2,441 |
| 26X-1, 76–78 | 225.77 | 84.24 | 82 | 11,720 | 15 | 2,093 |
| 26X-3, 73–75 | 228.74 | 89.77 | 125 | 11,104 | 23 | 2,491 |
| 26X-5, 73–75 | 231.74 | 92.73 | 67 | 10,689 | 14 | 2,463 |
| 27X-1, 73–75 | 235.24 | 92.76 | 55 | 9,692 | 10 | 3,009 |
| 27X-3, 73–75 | 238.24 | 89.47 | 64 | 12,977 | 10 | 2,849 |
| 28X-1, 73–75 | 244.24 | 86.26 | 84 | 11,498 | 13 | 3,219 |
| 28X-3, 73–75 | 247.24 | 85.45 | 86 | 9,817 | 16 | 2,636 |
| 28X-5, 73–75 | 250.24 | 88.67 | 73 | 13,916 | 8 | 2,955 |
| 30X-1, 73–75 | 262.74 | 90.59 | 68 | 10,344 | 13 | 3,212 |
| 31X-1, 73–75 | 272.14 | 86.48 | 75 | 13,639 | 12 | 2,883 |
| 31X-3, 73–75 | 275.14 | 85.10 | 84 | 15,201 | 13 | 2,829 |
| 31X-5, 73–75 | 278.14 | 85.25 | 73 | 13,858 | 13 | 2,846 |
| 32X-1, 73–75 | 281.64 | 90.07 | 138 | 10,223 | 23 | 3,524 |
| 32X-3, 73–75 | 284.64 | 89.11 | 118 | 8,721 | 15 | 4,331 |
| 33X-1, 73–75 | 291.14 | 90.69 | 61 | 11,701 | 10 | 3,220 |
| 33X-3, 73–75 | 294.14 | 89.61 | 92 | 13,633 | 10 | 2,945 |
| 33X-5, 73–75 | 297.14 | 90.94 | 104 | 8,551 | 12 | 3,061 |
| 34X-1, 73–75 | 300.64 | 88.50 | 115 | 12,089 | 14 | 3,018 |
| 34X-3, 73–75 | 303.64 | 91.09 | 93 | 9,776 | 13 | 3,004 |
| 34X-5, 73–75 | 306.64 | 83.03 | 113 | 22,663 | 15 | 2,423 |
| 35X-1, 72–74 | 310.23 | 89.02 | 114 | 9,638 | 24 | 2,858 |
| 35X-3, 72–74 | 313.23 | 88.60 | 229 | 16,107 | 32 | 3,849 |
| 36X-1, 73–75 | 319.84 | 92.75 | 112 | 11,233 | 13 | 2,818 |
| 36X-3, 73–75 | 322.84 | 92.33 | 130 | 9,134 | 16 | 3,378 |
| 37X-1, 73–75 | 329.44 | 94.67 | 104 | 8,898 | 14 | 3,109 |
| 37X-3, 73–75 | 332.44 | 92.27 | 98 | 18,083 | 12 | 2,974 |
| 38X-1, 73–75 | 339.04 | 89.93 | 113 | 9,981 | 14 | 2,349 |
| 38X-3, 73–75 | 342.04 | 87.75 | 112 | 16,219 | 15 | 2,549 |
| 38X-5, 73–75 | 345.04 | 90.97 | 110 | 10,384 | 14 | 1,930 |
| 39X-1, 72–74 | 348.73 | 87.04 | 165 | 10,345 | 27 | 3,032 |
| 40X-1, 73–75 | 358.34 | 90.16 | 99 | 12,766 | 13 | 2,825 |
| 40X-3, 73–75 | 361.34 | 89.57 | 77 | 14,270 | 11 | 2,283 |
| 41X-1, 73–75 | 367.94 | 89.22 | 104 | 13,802 | 11 | 2,395 |
| 41X-3, 73–75 | 370.94 | 86.67 | 123 | 10,334 | 14 | 2,239 |
| 42X-1, 73–75 | 377.54 | 92.48 | 76 | 8,842 | 11 | 2,349 |
| 42X-3, 73–75 | 380.54 | 88.55 | 73 | 15,619 | 11 | 2,370 |
| 43X-1, 73–75 | 387.14 | 89.19 | 104 | 11,236 | 12 | 5,138 |
| 43X-3, 73–75 | 390.14 | 87.82 | 108 | 13,432 | 12 | 2,252 |
| 45X-1, 73–75 | 406.24 | 89.10 | 100 | 12,581 | 13 | 2,972 |
| 45X-3, 73–75 | 409.24 | 89.06 | 81 | 12,917 | 13 | 2,599 |
| 45X-5, 73–75 | 412.24 | 87.91 | 107 | 13,837 | 16 | 2,561 |
| 47X-1, 73–75 | 425.44 | 85.85 | 122 | 16,744 | 11 | 3,124 |
| 47X-3, 73–75 | 428.44 | 90.34 | 100 | 16,143 | 12 | 2,849 |
| 48X-1, 73–75 | 435.04 | 87.54 | 75 | 12,323 | 14 | 4,020 |
| 48X-3, 73–75 | 438.04 | 90.26 | 63 | 12,725 | 14 | 1,929 |
| 49X-1, 73–75 | 444.74 | 91.46 | 78 | 12,049 | 11 | 1,714 |
| 49X-3, 73–75 | 447.74 | 89.58 | 60 | 15,574 | 10 | 1,658 |
| 49X-5, 73–75 | 450.74 | 89.87 | 50 | 12,065 | 12 | 3,434 |
| 50X-1, 73–75 | 454.34 | 90.79 | 68 | 11,226 | 14 | 1,615 |
| 50X-3, 73–75 | 457.34 | 91.47 | 71 | 13,029 | 12 | 1,617 |
| 50X-5, 73–75 | 460.34 | 89.66 | 83 | 12,698 | 12 | 1,798 |
| 51X-1, 72–74 | 463.93 | 88.19 | 86 | 8,634 | 17 | 4,052 |
| 51X-3, 74–76 | 466.95 | 86.56 | 75 | 14,496 | 17 | 1,609 |
| 53X-1, 73–75 | 483.24 | 93.12 | 69 | 10,345 | 16 | 1,477 |
| 53X-3, 25–27 | 485.76 | 88.00 | 87 | 14,629 | 15 | 2,760 |
| 53X-5, 73–75 | 489.24 | 88.63 | 74 | 15,230 | 16 | 1,674 |
| 54X-1, 73–75 | 492.84 | 88.78 | 90 | 10,412 | 15 | 3,786 |
| 54X-3, 73–75 | 495.84 | 85.97 | 102 | 11,440 | 18 | 3,325 |
| 54X-5, 73–75 | 498.84 | 90.44 | 69 | 20,478 | 14 | 1,468 |
| 55X-1, 73–75 | 502.44 | 90.14 | 80 | 12,677 | 16 | 2,339 |
| 55X-3, 73–75 | 505.44 | 91.05 | 70 | 9,901 | 20 | 4,906 |
| 56X-1, 72–74 | 512.03 | 90.04 | 59 | 7,587 | 19 | 1,631 |
| 58X-1, 73–75 | 531.34 | 82.78 | 117 | 6,407 | 21 | 2,761 |
| | Minimum: | 82.78 | 50 | 6,407 | 8 | 1,468 |
| | Maximum: | 98.31 | 229 | 22,663 | 32 | 5,138 |
| | Average: | 89.95 | 87 | 12,124 | 13 | 2,559 |

**Table T7.** Geochemical data, Site 1132.

| Core, section, interval (cm) | Depth (mbsf) | $CaCO_3$ (wt%) | Fe (ppm) | Mg (ppm) | Mn (ppm) | Sr (ppm) |
|---|---|---|---|---|---|---|
| 182-1132B- | | | | | | |
| 1H-1, 73–75 | 0.74 | 97.78 | 73 | 19,055 | 6 | 2,776 |
| 1H-3, 73–75 | 3.74 | 97.60 | 69 | 16,733 | 4 | 3,071 |
| 2H-1, 73–75 | 7.54 | 98.43 | 68 | 19,428 | 6 | 2,703 |
| 2H-3, 73–75 | 10.54 | 96.99 | 54 | 17,014 | 6 | 3,268 |
| 2H-5, 73–75 | 13.54 | 96.47 | 63 | 17,578 | 6 | 3,209 |
| 3H-1, 73–75 | 17.04 | 96.95 | 70 | 17,317 | 6 | 2,911 |
| 3H-3, 73–75 | 20.04 | 95.99 | 72 | 17,341 | 6 | 2,930 |
| 3H-5, 73–75 | 23.04 | 97.13 | 87 | 17,289 | 5 | 2,933 |
| 4H-1, 73–75 | 26.54 | 96.00 | 67 | 13,199 | 7 | 4,126 |
| 4H-3, 73–75 | 29.54 | 95.31 | 110 | 15,218 | 6 | 3,522 |
| 4H-5, 73–75 | 32.54 | 94.78 | 100 | 16,755 | 6 | 2,946 |
| 5H-3, 73–75 | 39.04 | 96.63 | 70 | 15,069 | 6 | 3,093 |
| 5H-5, 73–75 | 42.04 | 97.40 | 52 | 14,751 | 7 | 3,824 |
| 6H-1, 73–76 | 45.55 | 96.70 | 68 | 15,047 | 7 | 3,541 |
| 6H-3, 73–76 | 48.55 | 96.30 | 69 | 17,430 | 11 | 2,580 |
| 6H-5, 77–79 | 51.58 | 98.38 | 87 | 17,563 | 10 | 2,741 |
| 7H-1, 73–75 | 55.04 | 96.65 | 95 | 19,700 | 8 | 2,741 |
| 7H-3, 73–75 | 58.04 | 95.81 | 77 | 16,171 | 8 | 3,375 |
| 7H-5, 73–75 | 61.04 | 95.06 | 93 | 15,981 | 7 | 3,317 |
| 8H-1, 73–75 | 64.54 | 92.83 | 121 | 16,802 | 9 | 3,084 |
| 8H-3, 73–75 | 67.54 | 92.79 | 106 | 14,311 | 9 | 3,138 |
| 8H-5, 73–75 | 70.54 | 95.43 | 71 | 16,174 | 11 | 2,916 |
| 9H-1, 71–73 | 74.02 | 98.07 | 59 | 21,095 | 6 | 2,621 |
| 9H-3, 73–75 | 77.04 | 93.89 | 93 | 14,613 | 18 | 2,882 |
| 9H-5, 73–75 | 80.04 | 92.45 | 106 | 16,145 | 7 | 3,317 |
| 10H-3, 75–77 | 86.56 | 95.65 | 64 | 12,763 | 8 | 2,736 |
| 10H-5, 75–77 | 89.56 | 93.90 | 125 | 16,371 | 8 | 3,265 |
| 11H-3, 75–77 | 96.06 | 92.94 | 90 | 12,900 | 8 | 2,917 |
| 11H-5, 75–77 | 99.06 | 92.84 | 74 | 11,192 | 9 | 2,633 |
| 12H-1, 73–75 | 102.54 | 90.42 | 43 | 8,434 | 11 | 2,100 |
| 12H-3, 73–75 | 105.54 | 90.30 | 58 | 10,295 | 11 | 2,151 |
| 12H-5, 73–75 | 108.54 | 94.78 | 55 | 11,730 | 8 | 3,095 |
| 13H-1, 73–75 | 112.04 | 93.83 | 62 | 10,671 | 13 | 2,556 |
| 13H-3, 73–75 | 115.04 | 94.78 | 58 | 11,961 | 10 | 3,079 |
| 13H-5, 73–75 | 118.04 | 93.49 | 96 | 14,647 | 7 | 3,558 |
| 14H-1, 73–75 | 121.54 | 91.15 | 41 | 13,498 | 7 | 2,267 |
| 14H-3, 73–75 | 124.54 | 90.43 | 68 | 13,541 | 6 | 2,893 |
| 14H-5, 73–75 | 127.54 | 92.42 | 104 | 15,116 | 9 | 3,096 |
| 15H-1, 73–75 | 131.04 | 93.55 | 170 | 14,512 | 12 | 2,678 |
| 15H-3, 73–75 | 134.04 | 86.87 | 89 | 15,289 | 17 | 3,274 |
| 15H-5, 73–75 | 137.04 | 93.18 | 83 | 14,236 | 30 | 2,217 |
| 16H-1, 73–75 | 140.54 | 91.00 | 96 | 15,159 | 15 | 2,543 |
| 16H-3, 73–75 | 143.54 | 92.15 | 50 | 2,309 | 12 | 11,859 |
| 16H-5, 73–75 | 146.54 | 91.57 | 113 | 13,541 | 12 | 2,825 |
| 17H-1, 73–75 | 150.04 | 94.28 | 54 | 13,180 | 10 | 2,495 |
| 17H-3, 73–75 | 152.54 | 92.33 | 59 | 10,680 | 40 | 2,083 |
| 17H-5, 73–75 | 155.54 | 89.82 | 66 | 11,960 | 17 | 2,386 |
| 18H-1, 73–75 | 159.54 | 90.21 | 59 | 13,656 | 10 | 1,958 |
| 18H-3, 73–75 | 162.54 | 89.52 | 60 | 12,122 | 11 | 1,689 |
| 18H-5, 73–75 | 165.54 | 91.22 | 47 | 10,470 | 7 | 1,665 |
| 19X-1, 75–77 | 169.06 | 89.16 | 52 | 12,723 | 8 | 1,875 |
| 21X-1, 73–75 | 182.54 | 92.26 | 56 | 7,091 | 10 | 1,335 |
| 21X-3, 73–75 | 185.54 | 89.94 | 60 | 11,134 | 8 | 1,848 |
| 22X-1, 73–75 | 192.04 | 90.92 | 44 | 6,695 | 13 | 1,276 |
| 22X-3, 73–75 | 195.04 | 90.51 | 56 | 9,392 | 7 | 1,504 |
| 22X-5, 73–75 | 198.04 | 90.13 | 48 | 9,172 | 8 | 1,616 |
| 23X-1, 73–75 | 201.44 | 91.87 | 45 | 7,923 | 10 | 1,312 |
| 23X-3, 73–75 | 204.44 | 88.72 | 77 | 11,213 | 9 | 1,810 |
| 23X-5, 73–75 | 207.44 | 88.90 | 47 | 7,837 | 9 | 1,491 |
| 24X-1, 73–75 | 210.84 | 89.29 | 55 | 9,864 | 6 | 2,212 |
| 24X-3, 73–75 | 213.84 | 89.55 | 57 | 3,242 | 8 | 9,386 |
| 24X-5, 73–75 | 216.84 | 88.89 | 48 | 1,668 | 9 | 9,673 |
| 25X-1, 74–76 | 220.25 | 90.40 | 50 | 11,126 | 6 | 1,675 |
| 26X-1, 73–75 | 229.64 | 86.27 | 50 | 11,636 | 7 | 5,369 |
| 26X-3, 73–75 | 232.64 | 90.58 | 48 | 10,687 | 6 | 1,571 |
| 26X-5, 73–75 | 235.64 | 87.79 | 71 | 11,076 | 6 | 1,827 |
| 27X-1, 73–75 | 239.24 | 88.84 | 64 | 7,276 | 7 | 1,480 |
| 28X-1, 73–75 | 248.64 | 91.90 | 139 | 2,932 | 20 | 1,095 |
| Minimum: | | 86.27 | 41 | 1,668 | 4 | 1,095 |
| Maximum: | | 98.43 | 170 | 21,095 | 40 | 11,859 |
| Average: | | 92.25 | 73 | 12,951 | 10 | 2,940 |