

## IX. CARBON AND NITROGEN ANALYSES, LEG 42A

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Samples were dried at 40°C, ground and mixed to a homogeneous powder. Subsequently, samples were divided in several parts for different determinations.

One part was analyzed for its total carbon content. A second one was treated with hydrochloric acid and analyzed for residual "organic" carbon. The difference between total and organic carbon, called here "inorganic" carbon, was used for carbonate calculation (Müller, this volume).

Carbon determinations were made using a LECO Carbon Analyzer. Procedure and precision of this method is described in detail by Boyce and Bode (1972). Relative error of own measurements is calculated to about  $\pm 1\%$ .

Nitrogen was determined by the standard micro-Kjeldahl method. Mostly sapropel(ic) sediments were analyzed (Sigl et al., this volume). Due to the small amounts of sample material available, the values reported here have a precision of  $\pm 3\%$  only. In sediments with low nitrogen content ( $< 0.1\%$ ), the relative analytical error may increase to  $\pm 6\%$ . By the Kjeldahl method, the content of *total* nitrogen is measured. This includes organic nitrogen and so-called fixed and ex-

changeable ammonia nitrogen (Bremner, 1965). Data are presented in Table 1.

### ACKNOWLEDGMENT

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### REFERENCES

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TABLE 1  
Carbon and Nitrogen Analysis

Sample (Interval in cm)	Inorganic Carbon (%)	Organic Carbon (%)	Total Nitrogen (%)
<b>Site 371</b>			
1-1, 100-150	3.40	0.32	Not determined
4-2, 13	3.59	0.41	
4-2, 15	4.03	0.17	
4-2, 130	3.81	1.52	
8-2, 116-118	2.35	0.26	
8, CC	2.56	0.19	
<b>Site 372</b>			
3-3, 78-80	5.17	6.19	Not determined
4-2, 70-72	4.99	0.20	
5-1, 140	4.28	0.09	
6-1, 140-141	2.55	0.09	
9-1, 112-113A	3.27	0.11	
9-1, 112-113B	4.73	0.12	
9-3, 10-12	5.02	0.12	
12-4, 134-135	6.32	0.35	
44, CC	6.86	0.25	
<b>Hole 373A</b>			
1-2, 5-6	2.59	1.73	Not determined
1-2, 12-14A	2.38	2.10	
1-2, 12-14B	3.33	0.17	
1-2, 24-25	3.80	0.13	
<b>Site 374</b>			
1-1, 65-66	5.83	0.39	—
1-1, 123-124	4.75	0.20	—
1-1, 136-138	3.45	0.31	—
1-1, 144-146	5.20	0.32	—
1-2, 17-19	5.56	0.12	—
1-2, 145-147	5.57	0.30	—
1, CC	5.35	0.28	—
2-1, 57-59	1.54	0.31	—
2-1, 121-123	1.56	0.43	—
2-2, 3-4	1.75	0.48	—
2-2, 22-23	1.98	0.60	—
2-3, 21-22	2.34	0.48	—
2-3, 123-124	3.34	2.96	0.25
2-3, 124-125	—	0.42	0.09
2, CC (A)	5.41	0.13	—
2, CC (B)	4.59	1.62	0.14
2, CC (C)	2.70	0.21	0.06
3-1, 103-104	3.98	3.21	—
3-1, 104-105	5.43	4.21	0.35
3-1, 105-106	—	0.52	0.08
3-1, 122-123	4.14	2.62	0.25
3-1, 126-127	4.48	2.52	0.27
3-1, 127-128	4.65	4.96	0.35
3-1, 129-130	—	0.38	0.10
3-1, 141-142	0.47	7.47	0.50
3-1, 143-144	0.55	8.72	0.61
3, CC	2.78	0.67	0.08
4-2, 55-56	1.86	0.51	0.10
4-2, 56-57	4.54	2.39	0.23
4-2, 57-58	4.89	2.48	0.24
4-2, 58-59	5.88	2.46	0.25
4-2, 595-605	3.65	0.32	—
4-3, 2-4	2.66	0.25	—
4-3, 77-79	3.74	0.18	—
4-3, 79-81	3.48	0.27	—
4-3, 95-97	2.75	0.19	—
4-3, 115-116	2.53	0.17	—
4-4, 75-76	3.01	0.14	—
4-4, 85-86	3.57	0.13	—
4, CC (A)	4.13	0.20	—
4, CC (B)	3.85	0.33	—

TABLE 1 - Continued

Sample (Interval in cm)	Inorganic Carbon (%)	Organic Carbon (%)	Total Nitrogen (%)
4, CC (C)	4.66	2.03	0.14
4, CC (D)	2.50	0.30	0.09
5-1, 96-97	6.40	0.34	—
5-1, 138-139	6.15	0.23	—
5-2, 31-32	—	0.33	0.07
5-2, 32-34	4.08	1.66	0.28
5-2, 35-36	5.86	0.43	0.11
5-2, 39-40	4.30	2.08	—
5-2, 42-43	—	0.8	0.10
5-2, 47-48	4.82	8.99	0.54
5-2, 83-84	7.32	0.13	—
5-2, 121-122	5.94	1.43	0.16
5-2, 124.5-125.5	7.37	0.47	0.09
5-3, 9-10	3.51	9.87	0.61
5-3, 10-11	5.03	4.37	0.28
5-3, 48-49	3.70	0.28	—
5-3, 49-50	0.68	16.74	—
5-3, 50-51	0.28	13.16	1.0
5-3, 51-52	3.06	8.5	0.54
5-3, 52-53	3.66	4.92	—
5-3, 53-54	5.26	0.21	—
5-3, 64-66	5.11	0.32	—
5-4, 24-25	4.19	0.14	—
5-4, 25.7-26.5	5.57	0.15	—
5-4, 28.3-29	7.0	0.13	—
5-4, 87-89	6.21	0.14	—
5-5, 76-78	7.07	0.09	—
5, CC	6.71	0.07	—
5, CC (A)	5.94	0.10	—
5, CC (B)	6.03	0.09	—
6-1, 4-5	6.29	0.08	—
6-1, 29-30	6.91	0.09	—
6-1, 40-41	5.16	0.12	—
6-1, 99-101	6.85	0.14	—
6-2, 40-41	4.30	0.14	0.06
6-2, 41-42	3.16	4.07	0.31
6-2, 42-43	—	9.56	0.62
6-2, 82-83	7.91	0.09	—
6-2, 97-98	5.13	1.82	0.17
6-2, 130-131	6.04	0.14	—
6-3, 7-8	5.50	3.85	—
6-3, 9-9.8	7.12	0.16	—
6-3, 10.9-11.7	7.49	0.13	—
6-3, 12.5-13.3	7.69	0.13	—
6-3, 62.5-63.2	4.30	0.21	—
6-3, 63.5-64.6	3.99	2.88	—
6-3, 64.6-65.8	5.48	2.64	0.17
6-3, 65.8-66.7	—	0.12	1.70
6-3, 67-68	—	0.19	0.05
6-3, 124-125A	5.16	3.83	0.29
6-3, 124-125B	3.54	0.67	0.14
6-3, 125-126	—	2.77	0.23
6-4, 99-100	7.16	0.10	—
6-5, 40-42	6.72	0.16	—
6-5, 46-48	7.04	0.06	—
6-5, 57-59	6.72	0.44	—
6-5, 63-65	7.20	0.09	—
6-5, 67-68	6.83	0.13	—
6-5, 68-69	6.74	0.07	—
6-5, 69-70	6.62	0.11	—
6-5, 70-71	7.52	0.08	—
6-5, 110-111	—	2.13	0.21
6-6, 10.7-11.3	7.04	0.07	—
6-6, 11.3-12.4	5.32	0.04	—
6-6, 14-15.2	8.36	0.14	—
6-6, 15.2-16	7.86	0.06	—
6-6, 84-86	7.07	0.05	—
6, CC (A)	7.42	0.04	—
6, CC (B)	7.14	0.06	—

TABLE 1 - Continued

Sample (Interval in cm)	Inorganic Carbon (%)	Organic Carbon (%)	Total Nitrogen (%)
7-1, 83-88	5.55	0.09	—
7-2, 68-73	5.54	0.12	—
7-3, 13-18	7.07	0.08	—
7-3, 72-77	5.23	0.24	—
7-4, 83-88	4.90	—	—
7-5, 53-58	7.19	0.06	—
7-5, 71-76	6.22	0.19	—
7-6, 52-57	6.53	0.12	—
8-1, 115-116	8.12	0.07	—
8-2, 24-26	6.28	0.03	—
8-2, 63-64	7.53	0.06	—
8-3, 98-99	7.52	0.07	—
9-1, 150-151	6.35	1.33	—
9-2, 1-2	—	1.93	0.17
9-3, 13-14	—	2.31	0.19
9-3, 15-16	7.61	1.17	—
9-3, 72-77	8.08	0.15	—
11-2, 112	10.34	0.13	—
11-2, 120-121	9.35	0.09	—
11-2, 147-149	9.0	0.72	0.09
11, CC (A)	8.21	1.44	—
11, CC (B)	9.21	1.73	0.18
11, CC (C)	8.31	0.57	—
12-2, 99-100	2.48	0.37	—
13-1, 133-135	2.35	0.37	—
14-1, 40-42	—	0.75	0.08
14-1, TOP	2.49	0.65	—
14-1, 100-102	2.28	0.43	—
14-2, 35-37	—	0.51	0.11
15-1, 69-70	2.99	0.55	—
15-1, 100-102	2.90	0.41	—
15-2, 79-81	2.77	0.30	—
16-1, 84-87	4.80	2.47	—
17-1, 62-63	1.89	2.16	—
17-1, 67-68	4.76	4.76	—
17-1, 72-75	—	4.80	0.18
17-1, 80-81	4.44	2.03	—
19-1, 28-29	6.14	0.22	—
19-1, 52-53	3.34	0.41	—
20-1, 24-25	1.31	5.32	0.25
21-1, 105-108	2.68	0.88	—
25, CC	8.56	0.18	—
26, CC	7.63	0.09	—
<b>Site 375</b>			
1-1, 50-51	4.45	0.12	—
1-1, 123-125	3.02	0.05	—
2-2, 39-40	2.70	0.09	—
2-3, 65-66	1.67	0.09	—
2-3, 96-100	1.76	0.08	—
2-3, 144-150	5.24	0.10	—
2-4, 23-24	3.50	0.05	—
4-1, 26-27	4.08	0.16	—
4-2, 70-71	4.88	0.17	—
4-3, 79-80	3.26	0.14	—
4-4, 37-38	4.40	0.31	—
4-4, 39-40	4.21	0.30	—
4-4, 40-40.5	1.42	1.01	—
4-4, 40.5-42	2.43	4.47	0.26
4-4, 42-43	3.80	5.57	—
4-4, 43-44	4.20	6.37	0.29
4-4, 44-45	6.26	3.65	—
4-4, 45-46	1.08	3.65	—
4-4, 46-47	4.13	5.74	0.27
4-4, 47-48	5.42	5.79	—
4-4, 48-49	6.03	7.02	—
4-4, 49-50	4.34	4.70	—
4-4, 50-51	4.98	5.40	0.26

TABLE 1 - Continued

Sample (Interval in cm)	Inorganic Carbon (%)	Organic Carbon (%)	Total Nitrogen (%)
4-4, 51-52	5.47	6.29	—
4-4, 52-52.5	5.59	6.15	—
4-4, 53-54	4.11	6.77	—
4-4, 54-55	4.30	6.81	—
4-4, 55-56	5.79	6.15	—
4-4, 56-57	5.90	6.20	0.31
4-4, 57-58	6.83	4.15	—
4-4, 58-58.5	8.22	3.40	—
4-4, 59-61	5.03	4.72	—
4-4, 61-62	0.83	3.87	—
4-4, 62-63	3.58	0.93	—
4-4, 63-64	3.61	0.92	0.06
4-5, 88-89	3.31	0.28	—
4, CC	5.52	0.29	—
5-1, 74-75	5.65	0.16	—
5-1, 81-83	6.62	0.39	—
5-3, 96-97	1.44	0.17	—
5-5, 36-38	4.69	0.34	—
5-5, 47-48	4.20	0.46	—
5-5, 139-141	2.09	3.72	0.23
5, CC	0.61	3.35	—
6-2, 105-106	2.71	0.16	—
6-3, 53-55	2.60	2.18	—
6-3, 91-92	3.08	0.33	—
6-5, 48-50	3.12	0.54	—
6, CC	2.67	0.51	—
7-1, 51-52	5.11	0.32	—
7-3, 46-47	2.70	0.26	—
7-5, 51-52	3.53	0.51	—
7, CC	4.88	0.16	—
8-1, 83-84	5.91	0.15	—
8-1, 103-104	5.71	0.12	—
8-3, 39-40	1.52	0.21	—
8-3, 90-91	5.32	0.11	—
8-4, 109-110	5.41	0.09	—
8-6, 93-94	1.13	0.13	—
8, CC	4.95	0.13	—
9-1, 36-37	2.82	0.27	—
9-3, 41-42	1.07	0.68	—
9-6, 63-69	2.74	0.14	—
9, CC	4.51	0.16	—
10-2, 22-24	5.16	0.07	—
10-2, 24-25	6.35	0.07	—
11-1, 132-134	7.31	0.04	—
11-2, 55-57	5.49	0.07	—
11-2, 157-158	6.29	0.09	—
12, CC	6.49	0.09	—
13, CC	0.96	0.41	—
<b>Site 376</b>			
1-1, 38-39	4.88	0.14	—
1-1, 124-125	3.82	0.13	—
1-2, 115-116	4.22	2.78	—
1-3, 10-12	3.47	0.48	—
1-3, 13-15	4.37	1.36	6.11
1-3, 18-20	4.21	2.09	—
1-3, 24-26	4.63	2.09	0.17
1-3, 31-33	4.27	2.21	—
1-4, 65-66	3.59	5.55	0.42
1-4, 88-89	3.72	2.64	—
1-5, 119-120	3.62	0.13	—
1, CC	2.82	0.09	—
2-1, 87-88	4.70	0.15	—
2-2, 144-145	4.60	5.28	0.3
2-3, 0-1	3.73	1.04	—
2-3, 8-9	4.48	2.70	—
2-3, 147-148	5.27	1.90	—
2-4, 30-31	6.70	2.32	—
2-4, 54-55	5.02	0.23	—

TABLE 1 - Continued

Sample (Interval in cm)	Inorganic Carbon (%)	Organic Carbon (%)	Total Nitrogen (%)
2, CC	4.11	0.13	—
3-1, 135-136	3.65	0.20	—
3-2, 38-39	5.12	3.44	—
3-2, 89-90	5.71	0.40	—
3-2, 115-116	5.17	0.37	—
3-3, 79	4.32	0.15	—
3-5, 137-138	6.51	0.10	—
3, CC	5.29	0.07	—
4-1, 80-81	4.59	0.13	—
4, CC	4.49	0.09	—
5-1, 103-104	4.35	0.19	—
5-2, 72-73	4.48	0.10	—
5-2, 115-116	3.79	4.56	0.22
5-3, 60-61	6.17	0.11	—
5-4, 38-39	5.73	0.09	—
5-4, 64-65	5.13	0.53	—
5-4, 105-106	3.31	8.92	—
5-5, 95-96	3.35	0.21	—
5, CC	4.52	0.11	—
6-1, 133-134	4.34	0.11	—
6-2, 83-84	5.09	0.08	—
6-3, 94-95	1.06	1.23	0.09
6-4, 50-51	7.73	0.12	—
6-4, 56-57	6.90	0.28	—
6-4, 57-58	7.04	0.33	—
6-4, 58-59	7.68	0.74	—
6-4, 60-61	7.64	0.99	0.09
6-4, 61-62	8.27	1.18	—
6-4, 63-64	6.18	3.75	0.17
6-4, 64-65	6.86	2.11	—
6-4, 66-67	6.14	2.16	0.11
6-4, 68-69	6.05	3.44	—
6-4, 70-71	7.22	1.60	—
6-4, 72-73	7.44	1.33	—
6-4, 74-75	9.18	1.27	0.09
6-4, 75-76	8.16	0.80	—
6-4, 77-78	7.65	0.83	—
6-4, 78-79	7.14	0.68	—
6-4, 81-82	7.45	0.21	—
7-1, 59-60	3.66	0.11	—
7-2, 51-52	3.70	0.16	—
7, CC	4.31	0.17	—
8-1, 140-141	3.77	0.25	—
8-2, 69-70	5.09	0.17	—
8-3, 17-18	4.04	0.24	—
8-3, 31-32	3.96	0.15	—
8-3, 36-37	3.52	0.11	—
8, CC	4.42	0.12	—
9-1, 50-51	4.25	0.18	—
9-1, 81-83	4.32	0.60	—
9-2, 70-71	3.55	0.29	—
9-3, 70-71	3.54	0.24	—
9-3, 39-40	—	0.60	—
9-4, 4-5	4.48	0.14	—
9-4, 80-81	4.79	0.07	—
9, CC	3.44	0.19	—
10-1, 101-102	4.82	0.13	—
10-3, 100-101	4.27	0.24	—
10, CC	4.49	0.16	—
11-1, 139-140	4.76	0.19	—
11-2, 130-131	8.56	0.75	—
11-2, 133-136	5.37	1.22	—
11, CC	8.38	0.14	—
12-1, 22-28	7.17	0.64	—
12-1, 40-42	4.49	0.55	—
12-2, 49-51	4.33	0.77	—
12-2, 70-71	2.77	0.26	—
12-2, 90-91	4.47	0.42	—

TABLE 1 - Continued

Sample (Interval in cm)	Inorganic Carbon (%)	Organic Carbon (%)	Total Nitrogen (%)
12-3, 130-131	6.72	0.38	—
12-4, 70-71	3.28	0.30	—
12-5, 130-131	4.52	0.24	—
12, CC	4.70	0.11	—
13-1, 114-115	7.90	0.15	—
13-2, 71-72	3.79	0.23	—
13-4, 101-102	3.00	0.28	—
13, CC	2.47	0.22	—
14, CC	2.85	0.24	—
15-1, 137-138	5.43	0.11	—
15-2, 35-36	5.61	0.17	—
15-2, 125-126	4.34	0.21	—
15-3, 2-3	5.34	0.15	—
15, CC	4.89	0.12	—
17-1, 45-47	4.43	0.13	—
<b>Site 377</b>			
1-1, 65-67	6.10	0.29	—
1-1, 104-106	8.21	0.16	—
1-1, 149-150	5.99	2.91	—
1-2, 10-11	4.02	4.06	—
1-2, 28-29	4.48	3.47	—
1-2, 97-98	5.47	3.47	—
1-2, 109-111	5.98	0.32	—
2-1, 105-106	6.21	0.42	—
3-2, 19-23	2.81	0.41	—
4-3, 140-142	1.50	1.04	—
<b>Hole 378</b>			
1-1, 133-134	6.59	7.15	—
1-2, 64-65A	5.49	3.11	—
1-2, 64-65B	4.93	5.88	—
1-2, 65-66	5.22	6.98	—
1-2, 66-67	3.97	6.93	—
1-2, 67-68	5.85	6.35	—
1-2, 69-70	5.75	6.98	—
1-2, 71-72	7.43	0.40	—
3-3, 122-123	4.21	4.08	—
6-2, 18-19	4.43	5.16	—
6-3, 84-85	5.70	4.63	—
6-3, 95-96	6.36	5.50	—
7-4, 71-72	4.51	3.22	—
8-1, 124-125	6.00	3.76	—
8-2, 2-3	4.11	0.75	—
8-2, 13-14	4.11	3.32	—
8-2, 31-35	3.94	3.96	—
8-2, 45-46	3.27	5.17	—
8-2, 47-48	4.22	3.05	—
8-2, 59-60	2.86	0.29	—
8-2, 70-71	5.21	0.36	—
11-1, 148-149	4.97	1.52	—
11-2, 1-2	4.56	4.16	—
11-2, 28-29	4.84	1.69	—
11-2, 73-74	6.43	0.34	—
11-2, 98-99	5.01	1.13	—
11-2, 136-137	5.45	1.51	—
11-4, 9-10	2.91	1.64	—
11-4, 22-23	4.06	1.83	—
11-4, 37-38	3.76	1.75	—
11-4, 48-49	3.28	1.66	—
11-4, 64-65	3.95	2.10	—
11-4, 130-131	3.56	1.95	—
<b>Hole 378A</b>			
1-2, 20-21	4.20	2.43	—
1-3, 14-15	5.20	1.72	—
1-3, 143-145	5.94	0.42	—
1-5, 85-86	6.53	2.39	—