

APPENDIX II. CARBON AND CARBONATE ANALYSES, LEG 23

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Leg 23 sediments were analyzed for total carbon and acid-insoluble (organic) carbon using a LECO 70 Second Analyzer. The 3-cc sediment samples were first dried at 105° to 110°C and then ground to a homogeneous powder. The ground sediment was redried and two samples, a 0.1-g and a 0.5-g sample, were then weighed into LECO clay crucibles. The 0.5-g sample was acidified with dilute hydrochloric acid and washed with distilled water. The sample was then dried and analyzed for acid-insoluble carbon which is labeled in the table as "organic" carbon. The 0.1-g sample was analyzed for total carbon without further treatment. If the result showed less than 10% CaCO₃, and additional 0.5-g sample was analyzed for greater accuracy. The calcium carbonate percentages were calculated as follows: (% total C - % organic C) × 8.33 = % CaCO₃. Although other carbonates may be present, all acid-soluble carbon was calculated as calcium carbonate. All results in the following tables are given in weight percent. Precisions for the analyses are as follows:

Total Carbon:

(1.2 to 12%): ±0.2% (absolute variation)

(0 to 1.2%): ±0.04% (absolute variation)

Organic Carbon: ±0.04% (absolute variation)

Calcium Carbonate:

(10 to 100%): ±2% (absolute variation)

(0 to 10%): ±0.6% (absolute variation)

Detailed descriptions of the technique and theory may be found in Bader, Gerard, et al. (1970) and Boyce and Bode (1972).

Carbon and carbonate data presented in the following table is in two parts. Part 1 contains data from the DSDP Shore-Based Laboratory and Part 2, data from other sources, as indicated.

REFERENCES

- Bader, R. G., Gerard, R. D., et al., 1970. Initial Reports of the Deep Sea Drilling Project, Volume IV. Washington (U. S. Government Printing Office), 745 p.
- Boyce, R. E. and Bode, G. W., 1972. Carbon and carbonate analyses, Leg 9, Deep Sea Drilling Project: Initial Reports of the Deep Sea Drilling Project, Volume IX. Washington (U. S. Government Printing Office), p. 797.

Part 1—DSDP Shore-Based Laboratory Carbon-Carbonate Results

Core, Section Top of Interval (cm)	Sub- bottom Depth (m)	Total Carbon (%)	Organic Carbon (%)	CaCO ₃ (%)
Hole 219				
1-1,38	0.38	8.5	0.3	68
1-1,139	1.39	6.5	0.3	52
1-2,38	1.88	7.3	0.3	58
1-3,40	3.40	7.5	0.3	60
1-4,30	4.80	8.8	0.3	71
2-1,10	6.10	9.1	0.3	73
2-2,20	7.70	8.7	0.3	70
2-3,40	9.40	7.3	0.3	58
2-4,90	11.40	9.2	0.2	75
2-5,40	12.40	8.7	0.3	70
3-1,40	15.40	7.0	0.3	56
3-2,40	16.90	7.4	0.3	59
3-3,40	18.40	8.1	0.3	65
3-4,40	19.9	8.8	0.3	71
4-2,40	25.90	8.3	0.3	67
4-3,40	27.40	7.6	0.3	61
4-4,40	28.90	7.9	0.3	64
5-1,40	33.40	7.8	0.3	62
6-1,40	42.40	8.0	0.3	64
7-2,40	52.90	8.2	0.3	66
8-2,40	61.90	8.8	0.2	71
9-1,40	69.40	9.2	0.3	74
10-1,40	78.40	9.1	0.2	74
11-1,40	82.40	9.3	0.2	76
12-2,40	92.90	9.3	0.2	75
13-1,40	119.40	10.4	0.1	86
14-1,100	129.00	11.2	0.0	93
15-1,60	156.60	11.1	0.1	92
16-1,60	165.60	11.0	0.0	92
17-2,75	176.25	10.5	0.1	87
18-1,18	183.18	10.2	0.0	85
19-1,35	192.35	10.1	0.1	84
20-2,40	202.90	8.8	0.1	72
21-2,40	211.90	8.6	0.1	71
Hole 219A				
4-3,34	311.34	10.5	0.2	86
5-2,75	319.25	9.1	0.1	75
6-1,80	326.80	9.0	0.2	73
7-2,40	336.90	7.1	0.2	58
8-3,43	347.43	2.8	0.1	22
11-2,47	372.97	0.3	0.1	2
13-2,62	389.12	0.2	0.0	1
14-3,60	405.60	4.8	0.3	37

Core, Section, Top of Interval (cm)	Subbottom Depth (m)	Total Carbon (%)	Organic Carbon (%)	CaCO ₃ (%)
Site 220				
1-1,73	0.73	6.4	0.2	52
1-2,40	1.90	8.2	0.2	67
1-3,39	3.39	6.8	0.1	55
2-1,40	9.40	5.2	0.2	42
4-1,69	27.69	4.2	0.2	34
5-2,39	37.89	8.0	0.1	66
5,CC	45.0	1.4	0.1	11
6-1,39	93.39	10.9	0.1	91
7-1,40	102.40	11.0	0.1	91
8-3,40	114.40	11.0	0.1	91
9-2,40	151.90	10.9	0.0	90
10-2,40	160.90	10.6	0.1	88
11-1,35	198.35	10.5	0.0	87
12-2,40	233.90	8.8	0.0	73
13-1,58	241.58	8.3	0.0	69
14-1,59	250.59	8.3	0.0	69
14-2,132	252.82	8.5	0.0	71
15-2,129	261.79	8.4	0.0	70
16-2,14	289.64	8.2	0.1	68
17-1,63	297.63	9.9	0.1	82
18-3,140	330.40	7.8	0.1	64
Site 221				
5-3,133	59.33	7.6	0.7	58
5-4,31	59.81	8.1	0.4	64
5-4,46	59.96	7.6	0.3	60
6-1,40	64.40	5.6	0.8	40
8-2,47	83.97	2.0	0.4	13
8-2,67	84.17	1.8	0.3	13
8-2,83	84.33	1.6	0.2	11
9-2,39	92.89	4.7	0.7	33
9-5,76	97.76	1.7	0.3	11
10-2,15	101.65	7.6	1.0	54
10-3,135	104.35	8.9	0.5	70
10-5,115	107.15	9.2	0.5	73
10-5,149	107.49	9.3	0.3	75
10-6,4	107.54	9.7	0.2	79
11-1,120	110.20	6.7	0.8	50
12-2,20	119.70	2.0	0.4	13
12-2,45	119.95	2.2	0.4	15
12-3,60	121.60	2.3	1.0	11
16-1,136	168.36	0.3	0.1	1
16-2,35	168.85	0.1	0.1	0
16-2,60	169.10	9.1	0.0	75
16-4,55	172.05	8.6	0.0	71
16-5,60	173.60	10.8	0.0	90
17-2,82	217.32	10.1	0.1	83
18-1,45	252.45	9.5	0.1	78
Site 222				
1-1,40	0.40	6.0	0.3	47
2-1,49	53.49	8.7	1.7	58
3-2,49	102.99	3.7	0.9	23
4-1,70	119.70	1.9	0.4	13
5-2,40	129.90	2.1	0.4	14

Core, Section, Top of Interval (cm)	Subbottom Depth (m)	Carbon (%)	Organic Carbon (%)	CaCO ₃ (%)
Site 222—Continued				
6-3,40	140.40	2.1	0.3	15
6-4,118	142.68	2.0	0.3	14
6-4,122	142.72	2.0	0.3	15
6-4,135	142.85	1.5	0.2	11
7-2,40	147.90	1.9	0.3	13
8-2,40	185.90	1.9	0.4	13
8-4,62	189.12	1.9	0.4	12
8-4,80	189.30	1.9	0.1	14
9-2,40	214.90	1.6	0.2	12
9-3,81	216.81	2.1	0.3	15
9-3,144	217.44	2.1	0.2	16
9-4,29	217.79	1.7	0.1	13
11-2,40	308.90	2.0	0.3	15
12-1,90	353.90	1.8	0.3	12
13-2,40	400.90	1.9	0.3	13
14-2,40	409.90	2.3	0.2	17
15-2,40	428.90	2.1	0.3	15
16-1,40	445.40	2.1	0.3	16
18-2,40	493.90	1.6	0.4	10
19-2,40	541.90	2.5	0.4	18
20-2,50	589.00	3.2	0.4	24
20-2,139	589.89	2.0	0.4	14
21-3,40	637.40	2.5	0.3	18
22-1,74	690.74	2.2	0.3	16
22-5,91	696.91	7.0	0.4	55
23-2,40	748.90	6.7	0.3	53
23-4,147	752.97	2.2	0.3	16
24-2,40	805.90	2.2	0.3	16
25-1,45	861.45	2.2	0.3	16
27-2,40	926.90	2.1	0.4	14
28-2,40	983.90	2.4	0.3	18
28-5,76	988.76	1.9	0.3	13
28-5,86	988.86	2.0	0.3	14
28-5,92	988.92	2.1	0.3	15
29-2,40	1042.90	2.3	0.4	16
31-1,25	1126.25	1.8	0.3	13
32-2,40	1161.90	1.8	0.4	12
32-4,128	1165.78	1.9	0.3	14
33-2,38	1212.88	2.0	0.3	14
34-1,40	1258.40	2.3	3	16
35-1,49	1286.49	1.3	0.2	9
36-2,36	1296.86	2.2	0.3	16
Site 223				
1-2,40	1.90	7.7	0.3	61
2-2,39	29.89	7.6	0.3	60
2-2,100	30.50	6.2	0.2	50
2-3,13	31.13	7.1	0.5	55
4-2,40	142.90	4.7	2.2	21
5-2,40	151.90	4.5	1.4	26
6-2,40	169.90	3.4	0.4	25
7-2,40	225.90	8.5	0.4	68
9-2,70	273.20	7.1	0.5	55
10-2,110	292.60	6.7	0.4	52
11-1,40	309.40	4.7	0.7	34
12-2,40	329.90	6.0	0.3	47
13-2,37	348.87	2.9	0.7	19
14-1,73	366.73	4.6	0.4	35
14-1,89	366.89	5.2	0.6	38

Core, Section, Top of Interval (cm)	Subbottom Depth (m)	Total Carbon (%)	Organic Carbon (%)	CaCO ₃ (%)	Core, Section, Top of Interval (cm)	Subbottom Depth (m)	Total Carbon (%)	Organic Carbon (%)	CaCO ₃ (%)
Site 223—Continued					Site 225				
14-1,101	367.01	1.9	0.7	9	1-2,40	1.9	8.1	0.1	67
14-1,104	367.04	2.3	1.0	10	3-2,90	20.4	8.5	0.1	70
14-1,120	367.20	4.0	3.4	5	4-2,40	24.9	8.7	0.1	72
14-1,133	367.33	7.5	0.5	58	5-2,30	28.8	8.5	0.2	69
14-2,40	367.90	3.7	0.6	26	6-3,60	39.6	11.2	4.1	60
14-3-88	369.88	2.6	1.4	10	6-4,52	41.0	8.0	0.2	65
14-3,103	370.03	10.0	0.1	83	6-6,82	44.3	8.4	0.1	69
14-4,69	371.19	3.6	0.1	29	8-3,62	48.6	6.8	0.1	55
15-1,40	376.90	3.0	1.0	17	9-3,79	57.8	6.2	0.1	51
16-2,40	385.90	7.2	0.3	58	9-5,82	60.8	12.2	6.3	49
17-2,40	394.90	3.6	0.5	26	9-6,136	62.9	7.8	0.1	64
19-2,21	412.71	2.0	0.4	13	10-2,103	65.5	7.0	1.0	50
19-2,40	412.90	2.0	0.3	14	12-1,105	78.1	8.4	1.3	59
19-2,100	413.50	2.2	0.2	17	13-5,35	83.4	8.0	1.4	55
19-2,135	413.85	3.7	0.3	28	13-6,33	84.8	7.7	0.1	63
20-2,40	421.90	1.6	0.3	11	14-2,35	87.9	8.3	0.2	67
21-1,50	429.50	2.3	0.1	18	14-2,133	88.8	10.3	6.2	34
22-2,40	439.90	4.7	0.1	38	17-2,54	115.00	8.7	0.1	71
23-2,40	452.90	5.9	0.1	49	18-1,75	122.8	4.2	0.4	32
24-1,40	470.90	8.7	0.1	72	18-4,40	126.9	3.9	0.2	30
25-2,40	470.90	8.7	0.1	72	18-4,75	127.3	10.8	6.8	33
26-2,40	479.90	10.0	0.0	83	22-3,77	161.8	3.2	0.4	24
27-1,86	487.86	7.5	0.0	62	Site 227				
27-1,95	487.95	4.0	0.1	33	3-1,119	28.2	8.3	0.1	68
27-1,102	488.02	10.4	0.0	86	3-1,144	28.4	8.1	0.9	59
27-1,135	488.35	5.7	0.1	47	5-1,115	37.2	8.3	1.4	57
27-1,147	488.47	6.6	0.1	54	6-2,108	47.6	7.5	0.1	61
27-2,39	488.89	9.1	0.0	75	8-1,124	64.2	3.8	0.5	27
28-1,21	496.21	10.6	0.0	88	12-2,22	82.7	2.8	0.2	21
28-1,71	496.71	10.7	0.1	89	12-2,76	83.3	8.6	2.3	52
28-1,80	496.80	10.6	0.0	88	12-2,100	83.5	4.7	0.2	38
29-1,29	515.29	10.5	0.0	87	13-1,27	90.3	8.4	1.6	57
30-1,61	524.61	8.0	0.1	66	13-2,32	91.8	8.7	2.6	50
31-1,18	544.18	8.6	0.1	71	13-2,50	92.0	3.6	0.2	28
32-2,40	564.90	7.1	0.1	59	15-1,93	108.9	5.8	1.1	39
33-2,40	582.90	3.5	0.1	28	16-1,109	114.1	6.8	0.1	55
34-2,95	592.45	2.5	0.1	20	16-2,22	114.7	8.9	1.4	63
35-2,40	610.90	2.4	0.0	20	16-2,110	115.6	7.7	0.1	63
Site 224					17-1,85	122.9	8.6	1.0	64
2-2,37	95.87	8.2	0.6	64	18-2,122	133.7	4.1	0.5	30
2-2,61	96.11	8.6	0.2	70	19-2,16	141.7	4.5	0.2	37
4-1,64	259.64	0.4	0.1	2	20-2,82	151.3	8.5	3.1	45
5-2,75	352.25	1.8	0.1	14	20-3,143	153.4	2.6	0.3	19
6-1,9	453.09	1.6	0.3	11	20-5,36	155.4	7.2	6.0	10
6-4,42	457.92	0.4	0.1	2	22-2,101	160.5	8.0	2.5	46
7-1,48	571.48	1.3	0.2	9	22-4,69	163.2	2.8	0.3	20
8-1,70	632.70	1.7	0.3	12	24-6,51	184.0	9.9	3.6	52
8-5,18	638.18	1.6	0.2	12	25-2,39	186.9	5.1	1.3	32
8-5,32	638.32	1.8	0.2	13	26-2,114	196.6	1.8	0.9	7
8-5,45	638.45	1.6	0.2	12	28-2,46	214.0	4.0	1.6	20
8-5,52	638.52	1.4	0.1	10	31-1,120	236.2	3.9	2.3	14
9-1,44	698.44	7.1	0.0	59	36-2,105	282.6	1.8	1.4	3
10-2,75	756.25	0.2	0.1	1	36-3,3	283.0	1.6	1.2	4
11-1,30	783.30	2.8	0.1	23	44-7,0	350.0	1.4	1.3	0
11-1,80	783.80	2.0	0.1	16					

Core, Section, Top of Interval (cm)	Subbottom Depth (m)	Total Carbon (%)	Organic Carbon (%)	CaCO ₃ (%)
Site 228				
1-3,46	3.5	1.1	0.1	8
4-5,62	30.6	3.1	0.2	24
5-3,50	36.5	4.2	0.1	34
5-3,110	37.1	5.9	0.2	48
5-4,143	38.9	2.5	0.1	20
6-5,90	48.9	2.0	0.5	12
6-6,20	49.7	4.6	0.2	37
10-6,84	77.3	6.6	0.1	54
13-2,140	98.9	9.8	2.3	62
14-1,28	105.3	2.8	0.2	22
14-2,41	106.9	6.8	0.1	55
15-6,115	122.7	10.4	3.2	60
16-1,125	124.3	6.3	0.2	51
16-3,20	126.2	2.7	0.3	20
16-5,75	129.8	2.6	0.3	20
18-1,119	142.2	2.0	0.1	16
20-4,127	160.8	5.8	0.5	44
21-4,61	169.1	12.7	7.2	46
22-3,75	176.8	4.1	0.3	32
22-4,75	178.3	9.7	2.8	57
23-2,3	183.5	5.7	0.5	44
24-2,140	193.9	15.2	8.3	57
26-1,130	210.3	3.6	0.1	29
27-3,110	222.1	4.1	0.4	30
28-2-101	229.5	2.2	0.2	17
28-4,104	232.5	4.3	0.3	33
30-1,120	246.2	5.3	0.3	42
30-5,37	251.4	7.4	2.9	37
31-1,110	255.1	5.8	1.2	38
32-2,8	264.6	5.4	1.9	29
32-1,120	265.7	1.0	0.2	6
33-3,100	272.0	8.2	0.2	67
34-1,69	277.7	4.4	0.2	34
34-3,50	280.5	0.6	0.7	0
35-1,110	287.1	1.2	1.1	1
35-1,122	287.2	0.3	0.3	0
35-2,81	288.3	0.3	0.3	0

Core, Section, Top of Interval (cm)	Subbottom Depth (m)	Total Carbon (%)	Organic Carbon (%)	CaCO ₃ (%)
Site 228—Continued				
37-1,125	305.3	2.2	2.1	1
37-2,114	306.6	0.7	0.2	4
39-1,114	323.1	3.7	1.8	16
Hole 229				
1-1,115	1.2	5.6	0.3	44
2-1,5	47.1	6.5	1.4	42
2-1,100	48.0	7.9	0.6	61
2-2,16	48.7	10.6	0.5	84
3-1,40	93.4	8.8	1.5	61
Hole 229A				
1-1,130	20.3	9.7	1.6	68
2-2,120	30.7	9.8	1.3	70
3-2,35	38.9	9.1	1.4	64
4-1,70	56.7	6.8	0.7	51
5-2,30	66.8	6.3	0.6	47
6-1,105	75.1	4.9	0.5	36
7-2,41	84.9	8.6	1.2	61
8-1,64	113.6	6.2	0.8	45
9-2,15	123.7	9.5	1.2	70
10-1,90	131.9	9.2	1.2	67
12-1,12	149.1	7.4	1.0	53
13-1,110	159.1	9.5	0.8	73
14-2,20	168.7	5.3	0.7	38
15-2,90	178.4	9.7	0.5	77
16-2,75	187.3	8.6	1.2	61
17-1,142	195.4	7.2	1.2	50
18-1,67	203.7	7.5	0.6	58
Site 230				
1-3,145	4.5	10.2	0.6	80

Part 2 – Additional Carbonate Analyses

Core, Section, Sample Interval (cm)	Total Carbonate (%)
Site 223^a	
1-2, 60	50
2-2, 60	51
2-3, 40	50
3-1, 123	53
3-1, 145	49
4-2, 61	18
5-5, 63	39
5-5, 70	42
6-2, 7	23
6-2, 29	13
6-4, 110	15
6-4, 115	13
7-3, 18	17
7-3, 20	20
8-1, 127	57
9-2, 87	38
10-2, 77	69
11-6, 80	29
12-6, 61	16
13-2, 50	14
15-2, 73	14
16-2, 60	28
17-2, 50	16
18-2, 87	9
19-2, 138	24
19-6, 38	26
20-4, 102	30
21-1, 105	80
22-2, 131	67
23-2, 100	91
24-3, 10	86
25-2, 100	80
26-4, 56	88
27-2, 74	45
28-5, 108	85
29-1, 56	76
31-1, 21	67
32-4, 118	56
33-2, 38	26
34-2, 105	21
35-2, 138	15
36-1, 141	10
37-1, 133	0
Site 225^a	
4-6, 32-34	65
9-6, 132	67
11-5, 73-75	58
1 -3, 81-83	7
14-4, 110-112	47
16-3, 99-101	67
18-3, 53-55	63
18-4, 36-38	32
21-1, 125	72
23-1, 100	50
24-1, 60	50
25-1, 61	22
25-1, 88-102	58
26-1, 110	60
18-1, IW	28
29-1, 63	30
29-2, 86	2

Core, Section, Sample Interval (cm)	Total Carbonate (%)
Site 228^b	
1-1, 95-97	19
1-2, 45-47	3
1-3, 85-87	58
5-4, 145-147	11
6-4, 10-11	70
14-1, 30-32	15
16-5, 72-74	15
19-2, 72-74	38
23-2, 3-5	44
24-3, 28-29	31
25-3, 4-6	45
29-3, 70-80	5
33-1, IW	7
35-1, 120-122	<5
35-1, 110-112	<5
37-1, 124-126	<5
37-2, 122	45
38-1, 95-97	<5
Site 229A^a	
2-1, 30	62
2-5, 75	72
3-3, 54	60
4-3, 110	58
5-6, 110	43
5-1, 95-96	45
6-3, 80-81	48
7-5, 120-121	62
8-1, 25-30	15
8-1, 30-35	17
8-2, 59-60	13
8-3, 56-60	17
8-3, 70-74	14
9-1, 69-70	58
10-6, 135-136	27
12-2, 90-91	51
13-3, 90-91	58
14-3, 104-105	46
15-1, 38-40	53
16-3, 80-82	63
17-2, 40-42	49
17-2, 129-139	7
18-2, 140-142	69

Conducted by Laboratorium für Sedimentforschung, Universität Heidelberg, Heidelberg, Germany.

^aTotal carbonate was determined by the gasometric method using a Scheibler apparatus.

^bCarbonate Analyses conducted by University of Bern, Switzerland.