

## 23. CARBON CARBONATE RESULTS

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### INTRODUCTION

The complete carbon carbonate results from all samples recovered on Leg 6 are given in Table 1. Down-hole plots of carbonate content and grain size (for some holes with high carbonate values only) are given as Figure 1. Results of an independent analysis, using a wet combustion method, are given in Chapter 27. By comparing these results with those in Table 1 it can be

seen that there is good agreement between the two methods.

Methods used in the carbon carbonate analysis discussed here are outlined in the shore based laboratory handbook, and were summarized in the appendix to Volume 4 of the Initial Core Descriptions. All of the analyses were made on a LECO 70 Carbon Analyzer.

TABLE 1  
Leg 6, Carbon Carbonate Results

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
44.0	1	1	145.0	11.5	0.2	94.4
44.0	1	2	145.0	11.5	0.2	93.8
44.0	1	3	150.0	11.3	0.1	93.4
44.0	1	4	145.0	11.1	0.2	90.9
44.0	2	1	145.0	11.4	0.1	94.0
44.0	2	2	145.0	11.5	0.1	94.6
44.0	2	3	145.0	11.0	0.1	90.8
44.0	2	4	145.0	10.9	0.1	89.4
44.0	2	5	145.0	11.1	0.1	92.1
44.0	2	6	145.0	11.0	0.1	90.7
44.0	2	CC	0.0	11.6	0.1	96.2
44.0	3	2	145.0	11.6	0.0	96.6
44.0	3	3	145.0	11.3	0.0	94.1
44.0	3	4	145.0	11.6	0.0	96.3
44.0	3	5	145.0	10.2	0.1	84.1
44.0	3	CC	0.0	10.4	0.2	85.0
44.0	4	0	0.0	11.1	0.0	92.8
44.0	4	2	145.0	10.9	0.0	90.6
44.0	4	3	145.0	11.4	0.0	95.3
44.0	4	4	145.0	11.4	0.0	95.0
44.0	4	5	145.0	11.3	0.0	94.1
44.0	4	6	145.0	11.2	0.0	93.5
44.0	4	CC	0.0	11.5	0.0	95.6
44.0	5	CC	0.0	11.7	0.1	96.8
45.1	1	1	60.0	0.1	0.1	0.0
45.1	1	2	70.0	0.0	0.1	0.0

TABLE 1 – Continued

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
45.1	1	3	30.0	0.0	0.1	0.0
45.1	1	4	140.0	1.7	0.1	13.6
45.1	1	5	10.0	1.4	0.2	9.9
46.0	1	1	145.0	0.2	0.2	0.0
46.0	1	2	145.0	0.1	0.2	0.0
46.0	1	3	145.0	0.1	0.1	0.0
46.0	1	4	145.0	0.1	0.2	0.0
46.0	1	5	145.0	0.2	0.1	0.4
46.0	1	6	145.0	0.1	0.2	0.0
47.0	1	1	70.0	6.3	0.2	50.8
47.0	1	2	9.0	5.1	0.2	40.7
47.0	1	2	69.0	8.2	0.2	66.8
47.0	1	3	70.0	8.3	0.0	69.3
47.0	1	4	80.0	7.6	0.4	59.8
47.0	1	5	70.0	8.1	0.3	65.3
47.0	1	6	10.0	8.2	0.1	67.5
47.1	1	1	145.0	9.6	0.1	79.4
47.1	1	2	71.0	11.6	0.1	96.4
47.2	1	2	10.0	9.0	0.2	73.5
47.2	1	3	10.0	8.9	0.1	72.9
47.2	1	4	10.0	9.2	0.1	75.1
47.2	2	2	10.0	8.8	0.1	72.6
47.2	2	3	10.0	10.2	0.0	84.8
47.2	2	4	10.0	9.2	0.1	75.9
47.2	2	5	10.0	10.3	0.1	85.3
47.2	2	6	10.0	9.8	0.2	80.2
47.2	3	1	125.0	9.9	0.2	81.0
47.2	3	2	10.0	9.4	0.2	76.4
47.2	3	3	10.0	9.9	0.1	81.5
47.2	3	4	9.0	10.2	0.1	84.6
47.2	4	1	10.0	11.0	0.1	90.4
47.2	4	2	10.0	9.2	0.1	75.5
47.2	4	3	10.0	10.6	0.1	87.3
47.2	4	4	10.0	10.4	0.1	86.3
47.2	4	5	10.0	6.5	0.0	54.0
47.2	4	6	10.0	11.0	0.1	91.2
47.2	5	1	10.0	10.5	0.1	86.6
47.2	5	2	10.0	10.7	0.3	87.0
47.2	5	3	10.0	10.5	0.1	86.4
47.2	5	4	10.0	9.8	0.1	81.2
47.2	5	5	10.0	10.3	0.1	85.0
47.2	5	6	10.0	10.4	0.1	85.7
47.2	6	2	10.0	9.8	0.2	80.4
47.2	6	3	22.0	10.2	0.1	84.7

TABLE 1 – Continued

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
47.2	6	3	120.0	9.7	0.1	80.6
47.2	7	1	10.0	10.1	0.1	83.4
47.2	7	1	82.0	10.5	0.0	87.2
47.2	7	2	70.0	11.5	0.0	95.4
47.2	7	3	50.0	11.5	0.1	95.5
47.2	7	4	10.0	11.6	0.0	96.0
47.2	7	5	20.0	11.7	0.1	96.5
47.2	7	6	118.0	11.6	0.1	95.8
47.2	8	1	20.0	11.7	0.1	96.6
47.2	8	2	10.0	12.0	0.1	99.0
47.2	8	3	10.0	11.4	0.2	93.0
47.2	8	4	9.0	11.4	0.0	94.7
47.2	8	5	10.0	11.6	0.1	96.5
47.2	8	6	9.0	11.8	0.0	98.2
47.2	9	1	80.0	11.5	0.0	95.5
47.2	9	2	10.0	11.7	0.0	97.4
47.2	9	3	10.0	11.4	0.2	93.9
47.2	9	4	0.0	11.7	0.1	97.0
47.2	9	5	10.0	11.2	0.1	93.0
47.2	9	6	0.0	11.1	0.0	92.8
47.2	10	1	10.0	11.7	0.0	97.6
47.2	10	2	10.0	11.6	0.0	96.3
47.2	10	3	10.0	11.6	0.1	96.1
47.2	10	4	10.0	11.5	0.0	95.1
47.2	10	5	10.0	11.4	0.0	94.9
47.2	10	6	20.0	11.7	0.1	97.1
47.2	11	1	145.0	11.6	0.1	95.6
47.2	11	2	145.0	11.8	0.0	97.8
47.2	11	3	145.0	11.6	0.1	96.1
47.2	11	4	145.0	12.3	0.0	100.0
47.2	11	5	145.0	11.7	0.1	97.3
47.2	11	6	145.0	11.7	0.1	97.2
47.2	12	1	145.0	11.7	0.1	97.2
47.2	12	2	10.0	DISCARD DATA		
47.2	12	3	145.0	12.2	0.0	100.0
47.2	12	4	145.0	11.7	0.1	96.6
47.2	13	1	145.0	12.4	0.0	100.0
47.2	13	2	145.0	11.9	0.1	98.6
47.2	13	3	20.0	11.7	0.0	97.6
47.2	13	4	145.0	11.6	0.0	96.5
47.2	13	5	145.0	11.9	0.0	99.3
47.2	13	6	145.0	12.0	0.0	100.0
47.2	14	1	145.0	11.7	0.0	97.7
47.2	14	2	145.0	11.8	0.0	98.3
47.2	14	3	145.0	11.9	0.0	98.8

TABLE 1 – *Continued*

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
47.2	14	4	145.0	12.2	0.0	100.0
47.2	14	5	145.0	12.4	0.0	100.0
47.2	14	6	145.0	12.0	0.0	100.0
48.1	1	1	10.0	9.6	0.2	78.7
48.2	1	1	50.0	11.2	0.0	92.9
48.2	1	2	40.0	11.1	0.3	89.7
48.2	1	3	20.0	9.7	0.0	80.8
48.2	1	4	8.0	10.5	0.1	86.8
48.2	1	5	20.0	10.5	0.0	87.2
48.2	1	6	15.0	11.4	0.0	94.8
48.2	2	1	145.0	11.9	0.1	98.2
48.2	2	2	10.0	11.3	0.0	94.2
48.2	2	3	145.0	11.7	0.0	97.5
48.2	2	4	10.0	11.5	0.0	95.6
48.2	2	5	20.0	11.7	0.0	97.1
48.2	2	6	20.0	11.5	0.0	95.5
48.2	3	1	112.0	11.5	0.0	95.5
48.2	3	2	20.0	11.2	0.0	93.5
48.2	3	3	6.0	11.3	0.0	94.0
48.2	3	4	9.0	11.4	0.0	94.6
48.2	3	5	8.0	11.2	0.0	93.6
49.0	1	1	80.0	3.0	0.1	24.8
49.0	1	2	20.0	1.2	0.0	10.3
49.0	1	3	20.0	0.2	0.0	1.1
49.0	1	4	20.0	3.4	0.0	28.0
49.0	1	5	10.0	0.1	0.0	0.9
49.0	1	6	10.0	0.1	0.0	0.7
49.0	2	1	76.0	10.8	0.1	89.2
49.1	1	1	80.0	1.0	0.1	7.6
49.1	1	2	20.0	0.2	0.0	1.0
49.1	1	3	15.0	0.2	0.1	0.7
49.1	1	4	10.0	0.2	0.1	1.2
49.1	1	5	82.0	0.3	0.1	2.0
49.1	2	1	145.0	10.5	0.2	86.1
49.1	2	2	145.0	10.3	0.1	84.2
49.1	2	3	145.0	10.1	0.1	83.1
50.0	2	1	145.0	10.1	0.2	82.5
50.0	2	2	150.0	9.4	0.3	76.4
50.0	2	3	145.0	9.6	0.1	79.6
50.0	2	4	15.0	9.2	0.2	75.0
50.0	2	6	150.0	9.6	0.1	79.8
50.1	1	1	60.0	0.3	0.1	1.4
50.1	1	2	10.0	0.2	0.1	0.7

TABLE 1 – Continued

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
50.1	1	3	30.0	7.1	0.0	58.8
50.1	1	4	22.0	2.2	0.1	17.3
50.1	1	5	20.0	3.2	0.2	25.5
50.1	1	6	19.0	1.8	0.0	14.3
50.1	2	1	124.0	2.3	0.0	19.0
50.1	2	2	30.0	0.1	0.0	0.8
50.1	2	3	10.0	0.1	0.0	0.8
50.1	2	4	25.0	0.2	0.0	1.4
50.1	2	5	13.0	0.0	0.1	0.0
50.1	3	1	145.0	0.1	0.1	0.0
50.1	3	2	68.0	0.1	0.1	0.1
50.1	3	3	19.0	0.1	0.0	0.4
50.1	3	4	19.0	0.1	0.0	0.3
50.1	3	5	32.0	0.0	0.0	0.0
50.1	3	6	20.0	0.1	0.0	0.3
50.1	4	1	75.0	0.0	0.0	0.0
51.0	1	1	70.0	0.0	0.1	0.0
51.0	1	2	12.0	0.0	0.0	0.0
51.0	1	3	10.0	0.0	0.0	0.0
51.0	1	4	10.0	0.0	0.0	0.0
51.0	1	5	20.0	0.0	0.1	0.0
51.0	1	6	20.0	0.0	0.0	0.0
51.1	1	2	20.0	0.2	0.1	0.7
51.1	1	2	20.0	0.1	0.1	0.0
51.1	1	3	20.0	0.1	0.1	0.1
51.1	1	4	19.0	0.1	0.2	0.0
51.1	1	5	20.0	0.1	0.1	0.2
51.1	1	6	20.0	0.2	0.1	0.9
51.1	2	1	131.0	0.1	0.0	0.5
52.0	1	1	20.0	0.1	0.1	0.2
52.0	1	2	20.0	0.1	0.2	0.0
52.0	1	3	13.0	0.1	0.1	0.0
52.0	1	4	20.0	0.1	0.1	0.0
52.0	1	5	14.0	0.1	0.1	0.0
52.0	1	6	20.0	0.1	0.1	0.2
52.0	2	1	114.0	0.1	0.2	0.0
52.0	2	2	12.0	0.1	0.1	0.0
52.0	2	3	10.0	0.1	0.1	0.4
52.0	2	4	12.0	0.1	0.1	0.2
52.0	2	5	10.0	0.1	0.1	0.1
52.0	2	6	145.0	0.8	0.8	0.2
52.0	3	1	20.0	0.1	0.1	0.3
52.0	3	2	10.0	0.1	0.0	0.9
52.0	3	3	21.0	0.1	0.0	0.7

TABLE 1 – Continued

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
52.0	3	4	8.0	0.1	0.0	0.8
52.0	3	5	10.0	0.1	0.0	0.8
52.0	3	6	90.0	0.1	0.0	0.7
52.0	4	2	15.0	0.1	0.0	0.5
52.0	4	3	15.0	0.1	0.0	1.0
52.0	4	4	10.0	0.1	0.0	0.9
52.0	4	5	10.0	0.1	0.0	0.9
52.0	4	6	0.0	0.1	0.0	0.9
52.0	5	1	120.0	0.1	0.0	0.7
52.0	5	2	10.0	0.1	0.0	1.0
52.0	5	3	10.0	0.3	0.0	2.1
52.0	5	4	10.0	0.2	0.0	1.3
52.0	5	5	10.0	0.1	0.0	1.0
52.0	6	1	30.0	0.1	0.0	0.9
52.0	7	2	30.0	0.2	0.0	1.5
52.0	8	1	145.0	0.3	0.0	2.7
52.0	8	2	145.0	0.3	0.0	2.6
52.0	8	3	25.0	0.0	0.0	0.0
52.0	8	4	145.0	0.1	0.0	0.9
52.0	8	5	145.0	0.1	0.0	0.7
52.0	8	6	145.0	0.1	0.1	0.2
53.0	1	1	77.0	0.6	0.1	4.6
53.0	1	2	142.0	0.3	0.1	1.6
53.0	1	3	10.0	0.7	0.1	4.5
53.0	2	1	0.0	0.1	0.1	0.2
53.0	3	1	75.0	1.1	0.2	7.9
53.0	4	1	135.0	0.1	0.1	0.0
53.0	4	2	11.0	0.1	0.1	0.1
53.0	6	2	110.0	8.0	0.1	66.1
53.0	7	1	150.0	1.5	0.1	12.1
53.1	1	1	10.0	0.2	0.1	0.4
53.1	1	2	10.0	0.2	0.1	0.5
53.1	1	3	10.0	0.2	0.1	1.0
53.1	1	3	139.0	0.3	0.1	1.4
53.1	1	4	10.0	0.2	0.1	1.0
53.1	1	5	10.0	0.2	0.1	1.1
53.1	1	6	10.0	0.3	0.1	1.1
53.1	2	1	145.0	0.3	0.1	2.0
53.1	2	2	145.0	0.3	0.1	2.3
53.1	2	3	19.0	0.3	0.1	2.0
53.1	2	3	100.0	0.1	0.0	0.1
53.1	2	4	15.0	0.1	0.1	0.2
53.1	2	5	10.0	0.1	0.0	0.3
53.1	2	6	15.0	0.2	0.0	1.3
53.1	3	1	150.0	0.1	0.1	0.5

TABLE 1 – Continued

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
53.1	3	2	30.0	0.0	0.1	0.0
53.1	3	3	28.0	0.5	0.1	3.9
53.1	3	4	16.0	0.4	0.0	3.2
53.1	3	5	27.0	0.0	0.0	0.0
53.2	1	1	25.0	0.2	0.1	0.5
53.2	1	2	20.0	0.8	0.0	6.9
53.2	1	3	25.0	0.2	0.0	1.8
53.2	1	4	20.0	0.3	0.0	1.8
53.2	1	5	20.0	0.2	0.0	1.9
53.2	1	6	20.0	0.1	0.0	0.6
54.0	1	1	80.0	0.5	0.0	3.9
54.0	1	2	12.0	0.7	0.0	6.0
54.0	1	3	70.0	0.4	0.0	2.9
54.0	2	1	22.0	0.3	0.0	2.4
54.0	2	2	30.0	1.4	0.0	11.7
54.0	2	3	20.0	0.7	0.0	5.4
54.0	2	4	20.0	1.1	0.0	8.7
54.0	3	1	140.0	1.5	0.1	12.0
54.0	4	1	124.0	0.9	0.0	7.8
54.0	4	2	0.0	1.5	0.1	11.5
54.0	6	1	145.0	0.3	0.0	2.8
54.0	6	2	60.0	0.2	0.1	1.1
54.0	6	3	40.0	1.7	0.0	13.9
54.0	6	4	7.0	1.3	0.0	10.9
54.0	6	5	10.0	0.8	0.0	6.6
54.0	7	1	143.0	0.4	0.0	2.9
54.0	7	2	40.0	0.4	0.0	3.2
54.0	7	3	21.0	0.2	0.0	1.2
55.0	1	1	12.0	11.3	0.1	93.5
55.0	1	2	12.0	11.1	0.2	90.9
55.0	1	3	110.0	11.0	0.1	90.6
55.0	1	4	70.0	11.0	0.2	90.2
55.0	1	5	10.0	11.2	0.1	91.9
55.0	1	6	10.0	11.4	0.1	93.7
55.0	2	2	10.0	11.4	0.1	94.2
55.0	2	3	20.0	11.2	0.2	92.3
55.0	2	4	20.0	11.7	0.1	96.6
55.0	2	5	10.0	11.5	0.2	93.9
55.0	2	6	20.0	11.2	0.1	92.6
55.0	3	1	20.0	11.2	0.1	91.7
55.0	3	3	20.0	11.4	0.2	93.2
55.0	3	4	145.0	11.1	0.1	91.6
55.0	3	5	20.0	10.8	0.2	88.9
55.0	4	1	20.0	10.6	0.1	87.2

TABLE 1 – *Continued*

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
55.0	4	2	145.0	10.9	0.1	90.0
55.0	4	3	22.0	11.2	0.2	92.2
55.0	4	4	145.0	11.1	0.1	91.5
55.0	4	5	20.0	10.7	0.2	87.7
55.0	5	6	145.0	10.9	0.1	90.1
55.0	5	1	12.0	10.2	0.2	83.5
55.0	5	3	20.0	10.5	0.1	87.0
55.0	6	1	10.0	10.8	0.1	88.9
55.0	6	3	10.0	11.5	0.1	95.3
55.0	6	5	8.0	11.1	0.2	91.0
55.0	7	1	84.0	11.6	0.1	95.6
55.0	7	3	10.0	11.1	0.1	92.0
55.0	7	5	10.0	11.5	0.1	95.2
55.0	8	1	20.0	11.3	0.1	93.8
55.0	8	3	20.0	11.3	0.1	93.3
55.0	8	5	10.0	11.1	0.1	91.9
55.0	9	0	0.0	10.8	0.1	89.4
55.0	10	2	20.0	10.1	0.1	83.7
55.0	10	3	20.0	9.8	0.0	81.6
55.0	10	5	20.0	10.6	0.1	86.7
55.0	11	1	51.0	10.9	0.1	89.5
55.0	11	3	22.0	11.5	0.1	94.5
55.0	11	5	12.0	11.0	0.1	90.1
55.0	12	1	19.0	11.0	0.1	90.6
55.0	12	2	8.0	10.9	0.1	90.1
55.0	12	3	12.0	11.5	0.1	94.3
55.0	12	5	20.0	11.0	0.1	91.0
55.0	13	1	12.0	11.1	0.1	91.8
55.0	13	3	20.0	11.0	0.1	91.2
55.0	13	5	20.0	11.6	0.1	96.0
55.0	14	1	145.0	11.2	0.1	93.0
55.0	14	2	145.0	10.4	1.1	77.4
55.0	14	3	145.0	10.3	0.9	78.6
55.0	14	4	145.0	10.3	0.5	81.6
55.0	14	5	145.0	10.7	0.0	89.0
55.0	14	6	145.0	10.6	0.0	88.4
56.2	1	2	17.0	8.2	0.0	68.6
56.2	1	2	150.0	11.5	0.0	95.3
56.2	1	4	30.0	11.3	0.0	94.1
56.2	1	6	10.0	11.4	0.0	95.0
56.2	2	4	40.0	11.2	0.0	93.3
56.2	2	6	9.0	11.4	0.0	94.6
56.2	3	2	150.0	11.2	0.0	93.0
56.2	3	6	150.0	11.2	0.0	93.6



TABLE 1 – Continued

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
56.2	4	2	3.0	10.8	0.0	90.0
56.2	4	4	20.0	11.4	0.0	95.3
56.2	4	6	20.0	11.4	0.0	94.6
56.2	5	2	20.0	11.1	0.0	92.6
56.2	5	4	25.0	10.2	0.0	84.6
56.2	5	6	10.0	7.8	0.0	65.3
56.2	6	2	12.0	10.6	0.0	88.1
56.2	6	4	15.0	5.7	0.0	47.6
56.2	6	6	20.0	8.1	0.0	67.6
56.2	7	2	40.0	8.5	0.0	70.5
56.2	7	6	10.0	5.6	0.0	47.0
56.2	8	2	10.0	8.6	0.0	72.0
56.2	8	4	10.0	9.7	0.0	80.8
56.2	9	2	20.0	8.6	0.0	71.5
56.2	9	4	88.0	9.7	0.0	81.0
56.2	9	6	85.0	0.4	0.0	3.6
56.2	10	2	20.0	7.9	0.0	66.1
56.2	10	4	50.0	3.1	0.1	25.4
56.2	10	6	77.0	6.3	0.0	52.1
57.0	1	1	25.0	8.0	0.2	65.5
57.0	1	2	4.0	8.5	0.1	70.1
57.1	1	1	20.0	11.4	0.1	94.4
57.1	1	2	1.0	10.1	0.1	83.6
57.1	1	2	20.0	11.3	0.1	93.4
57.1	1	3	12.0	11.0	0.0	91.6
57.1	1	4	12.0	11.4	0.0	94.9
57.1	1	5	12.0	0.5	0.0	4.3
57.1	1	6	3.0	11.5	0.0	96.0
57.1	2	1	33.0	9.3	1.2	67.5
57.1	2	2	110.0	8.4	0.1	68.5
57.1	3	1	20.0	11.5	0.1	94.5
57.1	3	2	25.0	3.7	0.0	30.6
57.1	4	1	77.0	9.4	0.0	78.0
57.1	4	2	20.0	10.4	0.0	86.7
57.1	4	3	8.0	8.6	0.1	71.5
57.1	4	4	145.0	9.3	0.0	77.6
57.1	4	5	145.0	6.2	0.1	51.2
57.2	1	1	25.0	11.2	0.0	93.1
58.1	1	2	16.0	8.4	0.2	68.4
58.1	1	3	145.0	11.2	0.0	93.0
58.2	1	1	100.0	8.5	0.0	71.0
58.2	1	2	20.0	7.5	0.0	62.6
58.2	1	3	78.0	6.7	0.1	54.9

TABLE 1 – *Continued*

Hole	Core	Section	Sampled at (cm)	Total Carbon Per Cent	Organic Carbon Per Cent	Calcium Carbonate Per Cent
58.2	1	4	5.0	7.1	0.2	57.5
58.2	1	5	35.0	8.8	0.1	72.8
58.2	1	6	10.0	1.7	0.1	13.1
59.1	3	1	136.0	0.2	0.2	0.2
59.1	3	2	2.0	0.2	0.1	0.4
59.1	3	3	10.0	0.2	0.1	0.9
59.2	1	1	49.0	0.1	0.0	0.5
59.2	1	2	10.0	0.1	0.1	0.1
59.2	1	3	10.0	0.1	0.0	0.2
59.2	2	2	145.0	0.2	0.1	0.2
59.2	2	3	20.0	0.1	0.1	0.7
59.2	2	4	20.0	0.1	0.1	0.3
59.2	2	5	8.0	0.1	0.1	0.1
59.2	2	6	20.0	0.1	0.1	0.2
59.2	3	1	145.0	0.3	0.2	0.4
59.2	3	2	145.0	0.1	0.1	0.0
59.2	4	1	12.0	0.2	0.1	0.3
59.2	5	1	80.0	0.1	0.1	0.0
59.2	6	2	0.0	0.4	0.1	2.6
60.0	1	1	11.0	3.0	0.2	24.1
60.0	1	2	12.0	7.2	0.1	58.8
60.0	1	3	14.0	5.9	0.1	48.2
60.0	2	1	78.0	4.1	0.1	33.3
60.0	2	2	15.0	1.9	0.0	15.6
60.0	3	1	121.0	0.1	0.0	1.0
60.0	4	1	145.0	1.0	0.1	7.8
60.0	4	2	145.0	0.4	0.0	3.5
60.0	5	1	54.0	0.5	0.0	4.0
60.0	5	3	42.0	0.3	0.0	2.0
60.0	6	1	77.0	0.7	0.1	5.3
60.0	6	2	80.0	0.8	0.1	6.0
60.0	6	3	4.0	0.3	0.0	2.1
60.0	6	4	16.0	0.8	0.1	6.2
60.0	6	5	21.0	1.5	0.1	12.0
60.0	6	6	17.0	0.3	0.0	2.3
60.0	6	7	83.0	4.3	0.0	35.9
60.0	7	1	71.0	0.3	0.0	2.6
60.0	7	2	10.0	0.5	0.0	4.0
60.0	8	1	145.0	0.1	0.1	0.1
60.0	8	2	48.0	0.2	0.1	0.3
60.0	8	3	145.0	0.0	0.0	0.0
60.0	9	1	145.0	0.1	0.1	0.0
60.0	9	2	60.0	0.1	0.0	0.5
60.0	9	3	2.0	0.1	0.0	0.5

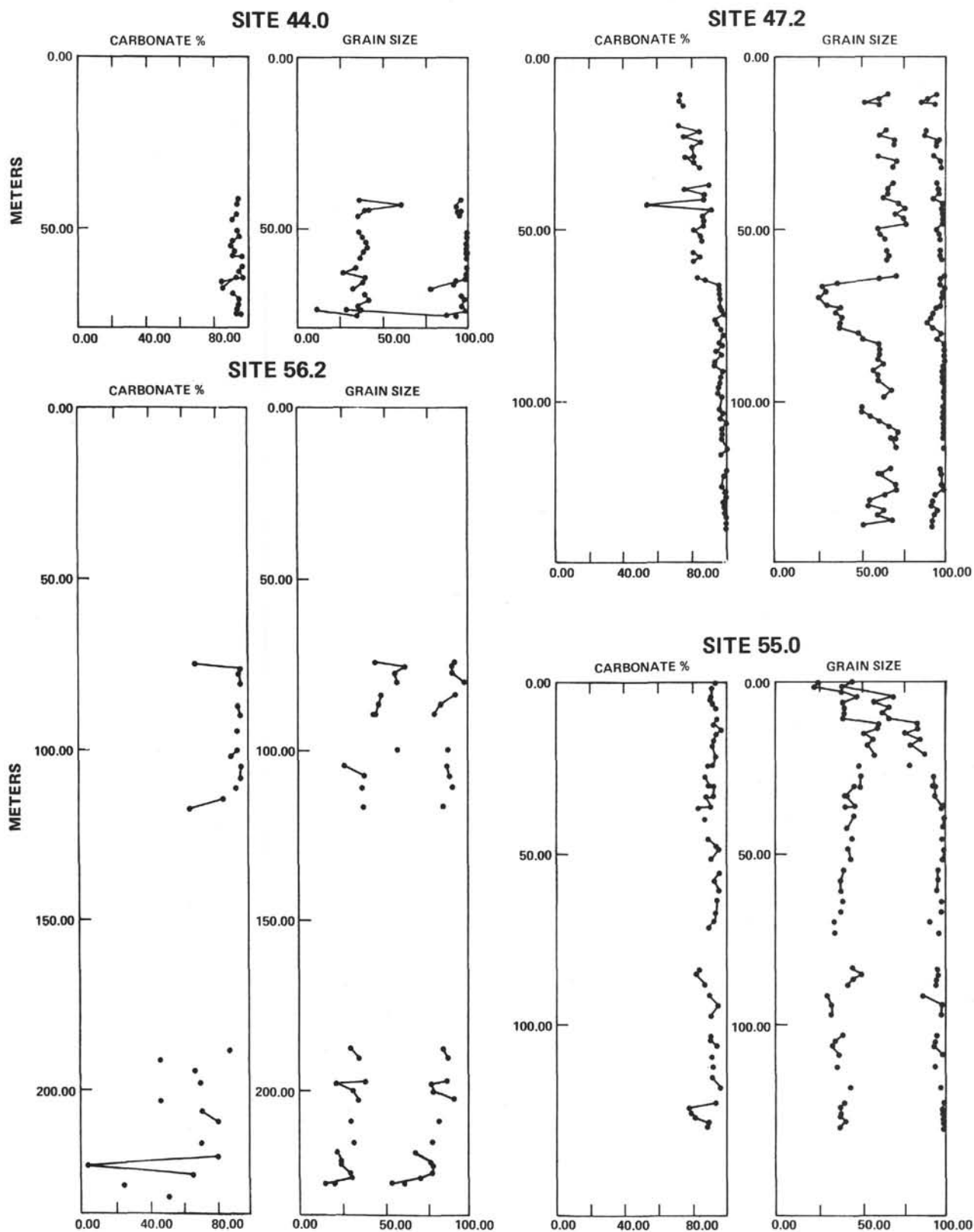


Figure 1. Comparison downhole of carbonate content per cent and grain size (latter plotted at sand/silt and silt/clay boundaries).

## CALCIUM CARBONATE RESULTS

### Site 44

Calcium carbonate mostly ranges from 90 to 96 per cent in foraminiferal-nannoplankton chalk oozes of Eocene-Oligocene age from Hole 44.0. Core 3, however, had slightly lower values of 84 per cent. The average carbonate content in sediments throughout this hole is 93 per cent.

### Site 45

The calcium carbonate content in a surface core (0 to 8 meters depth) recovered from Hole 45.1 was nil in the upper part, the sediment being mainly brown clay, and ranged from 9 to 13 per cent in the lower part where the sediment is predominantly volcanic ash with some clay. The ash beds contain nannoplankton and some anhedral calcite (?diagenetic origin).

### Site 46

Pelagic brown clay from Hole 46 had either no carbonate, or less than 1 per cent.

### Site 47

Hole 47.2 penetrated a thick sequence of nannoplankton chalk ooze which showed a progressive increase in carbonate content with depth, particularly across the major Tertiary unconformity. A summary of the results is given in Table 2.

TABLE 2

Depth (Meters)	Core	Average Carbonate Content (%)	Age
9-18	1	74.1	Pleistocene
18-27	2	79.6	Pliocene- Pleistocene
27-37	3	81.2	Late Pliocene
37-46	4	81.6	Early-late Pliocene
46-55	5	85.3	Late-Miocene- Early Pliocene
55-64	6	81.3	Late Miocene
64-65.5	7	86.6	Late Miocene Major unconformity
65.5-73	7	95.6	Early Eocene
73-82	8	96.3	Paleocene-Eocene
82-91	9	95.1	Paleocene
91-101	10	96.1	Paleocene
101-110	11	97.1	Late Cretaceous- Paleocene
110-119	12	98.5	Late Cretaceous
119-128	13	98.8	Late Cretaceous
128-129	14	99.1	Late Cretaceous

The main reason for the rapid increase in carbonate content below the major unconformity is that on all of the rises drilled on Leg 6 well-preserved siliceous fossils only occur in late Oligocene and younger rocks. Presumably they have been dissolved in older rocks. Therefore, in Hole 47.2 the absence of siliceous microfossils in the Eocene and older sediments increases the total carbonate present in the chalk ooze. There is also a decrease in the content of volcanic glass below the unconformity, thereby emphasizing this increase in carbonate in Eocene and older sediments in Hole 47.2.

Results of carbonate content from Hole 47.0 (0 to 9 meters depth) ranged from 40 to 67 per cent in this foraminiferal-nannoplankton chalk or marl ooze.

In Hole 47.1 values of 79 and 96 per cent carbonate were obtained in nannoplankton chalk ooze from 96 to 105 meter depth.

### Site 48

In Hole 48.2 the carbonate values are high and show a noticeable increase from an average of 89 per cent carbonate in Core 1 to 95 per cent carbonate in Cores 2 and 3. This increase in carbonate at a depth of 60 meters coincides with the Late Miocene/Cretaceous unconformity.

### Site 49

In Hole 49.0 Core 1 (0 to 9 meters depth) had a range of carbonate values from 1 to 28 per cent. The lowest values are in zeolitic brown clay. Values of 10, 25 and 28 per cent were recorded in clay with ash and in calcareous clay, both containing nannoplankton. In Core 2 (17 to 18 meters depth) the one sample tested had a carbonate content of 89 per cent, the sediment being a nannoplankton chalk ooze. Hole 49.1 gave generally similar results to 49.0, that is, low values in Core 1 (5 to 12 meters) and high values in Core 2 (12 to 20 meters); the former being brown clay, the latter chalk ooze. However, interlayers of chalk ooze up to 40 centimeters thick occur in Sections 4 and 5 of Core 1; but no samples were taken for carbonate analysis. The brown clay is Pleistocene in age, but the chalk oozes are mainly of early Cretaceous age.

### Site 50

Mesozoic chalk ooze at a depth of 42 to 45 meters below mud line averaged 79 per cent carbonate in Hole 50.0.

Pleistocene sediments from Hole 50.1 in Core 1 consisted of interbedded diatom-radiolarian ooze and calcareous clay-marl ooze; in the former carbonate values are about 1 per cent and in the latter range

from 14 to 58 per cent. In Core 2, Pleistocene brown clays with volcanic ash contain about 1 per cent carbonate. The age of the sediment is unknown in Core 3, but in Core 4 it is probably Cretaceous.

#### Site 51

Miocene to Pleistocene brown clay recovered from Holes 51.0 and 51.1 contain less than 1 per cent carbonate.

#### Site 52

Pelagic brown clay with volcanic ash was recovered down to 69 meters below the sea floor in Hole 52.0. The carbonate content is very low throughout the hole. From 0 to 37 meters the carbonate content is less than 1 per cent, but from 37 to 69 meters it generally ranges from 1 to 3 per cent.

#### Site 53

In Hole 53.0 Middle Miocene ash from Core 1 (99 to 104 meters) contained an average of over 3 per cent carbonate, probably all in the form of calcareous nannoplankton. Cores 2 to 4 also contain ash with practically no carbonate; rarely (Core 3, Section 1) a local abundance of nannoplankton raises the carbonate to 8 per cent. Limestone in Core 6 contained 66 per cent carbonate. An altered ? volcanic rock in Core 7 contained 12 per cent carbonate.

In Hole 53.1 interbedded ash and clay in Cores 1 to 3 from 0 to 63 meters depth had a low carbonate content ranging from 0 to 4 per cent; the carbonate is all in the form of foraminifera and nannoplankton skeletons.

A radiolarian ooze recovered from the one core in Hole 53.2 had a carbonate content ranging from less than 1 to 7 per cent.

#### Site 54

Miocene volcanic ash, in places calcareous, was cored between 83 and 294 meters below mud line in Hole 54.0 and contains an average of 6 per cent carbonate with a range from 1 to 14 per cent. The carbonate occurs mainly as nannoplankton, but smaller amounts of foraminifera and non-skeletal (? authigenic) calcite as well.

#### Site 55

Foraminiferal-nannoplankton chalk ooze in Hole 55.0 from 0 to 131 meters depth (Pleistocene to Oligocene) contains a high carbonate content averaging 90 per cent. The only slight variation was seen in part of Core 14 where the carbonate content was a little lower (77 to 81 per cent).

#### Site 56

Hole 56.2 recovered Miocene to Oligocene chalk ooze from 73 to 234 meters below mud line. In most places the carbonate content is high, particularly in the upper part of the hole (Cores 1 to 4 average 92 per cent carbonate, despite a lower value of 69 per cent in the top part of Section 2, Core 1). From Core 5 down the carbonate content decreases due to dilution by volcanic constituents; this becomes very marked near the bottom of the hole in Cores 9 and 10.

#### Site 57

Late Miocene chalk ooze in Core 1 of Hole 57.1 (44 to 53 meters depth) has a very high carbonate content, usually more than 90 per cent. From 298 to 329 meters (57.0 Core 1, 57.1 Cores 2 to 4) late Oligocene sediments comprise a cyclic sequence of chalk and marl ooze interbedded with calcareous ash. In these sediments the carbonate content ranges from 30 to 95 per cent, but averages 69 per cent. Pliocene chalk ooze in Hole 57.2 (35 to 44 meters depth) has a carbonate content of 93 per cent.

#### Site 58

Carbonate ooze and skeletal carbonate sand occurring just below (0 to 9 meters) the mud line in Hole 58.1 contained 68 and 93 per cent carbonate, respectively.

In Hole 58.2 late Oligocene sediments were recovered in Core 1 (137 to 143 meters depth). They comprise nannoplankton chalk or marl ooze, with a carbonate content ranging from 54 to 72 per cent, mixed and interbedded with siliceous ooze with a low carbonate content, for example 13 per cent in Section 6.

#### Site 59

Brown clay and siliceous ooze from Pleistocene to Cretaceous age contain less than 1 per cent carbonate. At the bottom of Hole 59.2 a few slightly calcareous clay granules in the brown clay raise the carbonate content to nearly 3 per cent.

#### Site 60

Middle Miocene nannoplankton marl ooze is interbedded with smaller amounts of volcanic ash from 52 to 70 meters (Cores 1 and 2) below mud line in Hole 60.0. The marl ooze has a carbonate content averaging 41 per cent. One measurement on the ash yielded 16 per cent carbonate in the form of calcareous nannoplankton.

Volcanic ash in Cores 3 to 7 (129 to 297 meters depth) generally had a carbonate content ranging from 2 to 6 per cent, this being made up of calcareous nannoplankton. In Core 6 towards the base, a few thin beds of more calcareous ash and marl ooze occur; two

samples analyzed contain 12 and 36 per cent carbonate, respectively.

In Cores 8 to 9 (343 to 348 meters depth), the volcanic ash cored contains less than 1 per cent carbonate.

### DISCUSSION

Sites 45, 46, 49, 50, 51, 52 and 59 were all situated below, or in one case (49) close to the calcium carbonate compensation depth in the Tertiary. Their present water depths range from 4282 to 5981 meters and non calcareous sediments are being deposited at these sites today (Figure 2, Chapter 38). In the Cretaceous however, evidence from drilling indicates that Sites 45, 49, 50 and 51 were above the carbonate compensation depth and received calcareous sediments. This would indicate then that there has been a progressive deepening of the water over these four sites since the Cretaceous.

Drilling at Sites 46, 52 and 59 did not reach a depth at which Cretaceous carbonates are presumed to exist, so no conclusions can be drawn.

Site 58 is anomalous in that it contains carbonate sediments at the surface, despite the fact that its present water depth is 4500 meters (that is, about 500 meters below the compensation depth for the Pacific). The probable reason for this is that most of the carbonate material is abraded skeletal debris, probably derived from shallow water carbonate deposits in the Caroline Ridge area. Their preservation at this site could be attributed to rapid burial below the compensation depth.

Sites 44, 47, 48, 55, 56, 57 and 58 appear to have been above the compensation depth for calcium carbonate throughout the time span penetrated by the drill, that is, Cretaceous to Quaternary.

Site 49 contains brown clay with interlayers of calcareous clay and chalk ooze in Pleistocene sediments close to the sea floor. The present water depth here is 4282 meters, and this may be close to the actual carbonate compensation depth in the Pleistocene as relatively minor fluctuations in water depth could account for this interbedding of calcareous and non-calcareous sediments.