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=   DEEP SEA DRILLING PROJECT  =
=  CARBON/CARBONATE DATA BASE   =
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I. INTRODUCTION

A. BACKGROUND AND METHODS

The Deep Sea Drilling Project (DSDP) Carbon/Carbonate data
base contains the results of chemical analyses designed to
determine the weight percentage of total carbon, organic
carbon, and calcium carbonate in deep sea sediments.
Although other carbonates may be present, all acid-soluble
carbon is calculated as calcium carbonate. Included in the
data set is carbonate bomb data collected independently by
Drs. T.C. Moore, B. Simoneit, R. Kidd, D.S. Cronan,
A.P. Lisitzen and Tj. van Andel. Below is a list of methods
and the legs on which they were used.

Method	Legs
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LECO 70-Second Analysis	1-9,15-23,28-31,33-34
LECO WR-12 Analysis	35-79
LECO Acid-Base Analysis	7,9-16,24-28,32
LECO (type unknown)	75
Wet Combustion	6
Gravimetric	16
Gasometric Technique	75
CHN Analysis	75,93
Carbonate Bomb Analysis	3,8,9,12,16,18-21,24,29-32,
	41,42,47,49,50,63,64,68,
	70-82,84-87,89,90,93-96

A short description of each method appears below, for a more
extensive explanation consult the reference section of this
document.

LECO METHODS:

The total carbon content of a sediment sample is determined
by measuring the thermal conductivty of the gaseous products
of pyrolysis of the sample. The analysis may also be
conducted on an acidified sample to determine the organic
carbon content. The weight percentages of total carbon
(TC), organic carbon (OC), and calcium carbonate (CaCO3) are
related by the equation: $(TC - OC) * 8.33 = CaCO_3$. The
actual file value for CaCO3 may vary from this formula by as
much as 1.67 percent (0.2 * 8.33) due to an early procedural
error which truncated rather than rounded the values
reported for total carbon and organic carbon.

LECO 70-Second Analyzer:
Measures the thermal conductivity of a set volume of
all the gaseous products liberated from the sample.

LECO WR-12 Analyzer:
Separates the liberated CO2 from the other combustion
products then measures it using a gas chromatograph
equipped with a thermal conductivity detector.

LECO Acid-Base Semi Automatic Carbon Determinator:
The liberated gas of carbon dioxide and oxygen is
volumetrically measured (corrected for STP) and then
passed through a potassium hydroxide solution which
preferentially absorbs carbon dioxide. The volume of
gas is measured a second time. The volume of the
carbon dioxide gas is the difference of the two
volumetric measurements.

Note: "LECO" is an abbreviation for Laboratory Equipment
Corporation of St. Joseph, Michigan.

CARBONATE BOMB METHOD:

The calcium carbonate content of a sample is determined by
measuring the increase in gas pressure caused by acidifying
a dried sediment sample in a closed vessel. The percent
carbonate is then read from a pressure-concentration curve
constructed from standard runs.

GASOMETRIC METHOD:

This method of measuring the percent calcium carbonate was
used only on leg 75 sediments. It employed a volumetric
technique outline by Hulsemann(1966).

GRAVIMETRIC METHOD:

This method of measuring the percent calcium carbonate was
used only on on leg 16 sediments. It employed a technique
outlined by Cronan and Bode(1973).

CHN METHOD:

A Carbon-Hydrogen-Nitrogen (CHN) analyzer was used only on
legs 75 and 93 to measure the percent organic carbon in a
sample.

WET COMBUSTION METHOD:

The technique as mentioned in Lisitzin(1971) uses a
Knopp-Frezenius device to measure calcium carbonate and
organic carbon by the wet combustion method. This method
was used only on leg 6 sediments.

B. LEGS IN DATA SET

The data base contains data for legs 1-96 with the exception
of legs 46, 83, 88, 91 and 92.

C. REFERENCES

Appendix III: Shore-based Laboratory Procedures. In:
Bader, R.G. et al., 1970. Initial Reports of the Deep Sea
Drilling Project, Volume IV. Washington (U.S. Government
Printing Office) pp. 745-753.

Boyce, R.E. and Bode, G.W., 1972, Carbon and Carbonate
Analyses, Leg 9, Deep Sea Drilling Project. In: Hays, J.D.
et al., 1972, Initial Reports of the Deep Sea Drilling
Project, Volume IX. Washington (U.S. Government Printing
Office) pp. 797-816.

Cronan, D.S. and Bode, G.W., 1973. Carbon and Carbonate
Analyses, Leg 16. In: van Andel, T.H., Heath, G.R., et
al., 1973, Initial Reports of the Deep Sea Drilling Project,
Volume XVI. Washington (U.S. Government Printing Office)
pp. 521-528.

Hulsemann, J., 1966. On the Routine Analysis of Carbonates
in Unconsolidated Sediments. J. Sediment. Petrol., Volume
36, pp. 622-625.

Lisitzin, A.P., et al., 1971. Geochemical, Mineralogical,
and Paleontological Studies. In: Fischer, A.G., et al.,
1971, Initial Reports of the Deep Sea Drilling Project,
Volume VI. Washington (U.S. Government Printing Office)
pp. 840-841.

Muller, G. and Gastner, M.,1971. The "Karbonat-Bombe", a
Simple Device for the Determination of Carbonate Content in
Sediment, Soils, and Other Materials. Neues Jahrbuch
Minearalogie. Volume 10, pp. 466-469.

II. FORMAT AND FIELD DESCRIPTIONS

 A. DATA FORMAT

     Record length = 78 characters (34162 records)
     (Originally 80, 2 blank fields removed by NGDC)

     COLUMN   FIELD   FORMAT
     ======   ==================================   ======
      1-2   LEG   A2
      3-5   SITE   A3
       6   HOLE   A1
      7-9   CORE   A3
     10-11   SECTION   A2
     12-15   TOP INTERVAL DEPTH (centimeters)   F4.1
     16-19   BOTTOM INTERVAL DEPTH (centimeters)   F4.1
     20-27   TOP OF CORE DEPTH (meters)   F8.2
     28-35   SAMPLE DEPTH (meters)   F8.2
     36-41   PERCENT TOTAL CARBON   F6.1
     42-47   PERCENT ORGANIC CARBON   F6.1
     48-53   PERCENT CALCIUM CARBONATE (CaCO3)   F6.1
     54-68   METHOD CODE   A15
     69-78   DATA SOURCE CODE   A10

 B. FIELD DESCRIPTIONS

    The definition of leg, site, hole, core and section may be
    found in the explanatory notes. In addition, the special
    core designations, as well as the methods of sample labeling
    and calculating absolute sample depths are discussed.

INTERVAL DEPTH:

    The depth, in centimeters, within a section at which the top
    or bottom of a measurement was taken. Values are encoded
    with an implicit decimal point, therefore an encoded value
    of 805 represents 80.5 centimeters.

CORE DEPTH:

     The subbottom depth in meters to the top of the core.

SAMPLE DEPTH:

     The subbottom depth in meters to the point of measurement.

PERCENT TOTAL CARBON:

     The weight percent of total carbon measured by one of the
     LECO analyzers.

PERCENT ORGANIC CARBON:

     The weight percent of organic carbon measured by a LECO
     analyzer, CHN analyzer or by the wet combustion method.

PERCENT CALCIUM CARBONATE:

     The weight percent of calcium carbonate ($CaCO_3$) may be
     measured directly by the carbonate bomb, gasometric,
     gravimetric or wet combustion methods. It may also be
     calculated from values determined for total and organic
     carbon.

METHOD CODE:

```
  CODE               METHOD (parameter measured)
  =============      ============================================
  LECO               LECO (TYPE UNKNOWN) (total and/or organic)
  LECO70             LECO 70-SECOND ANALYZER (total and/or organic)
  LECO12             LECO WR-12 ANALYZER (total and/or organic)
  LECOAB             LECO ACID-BASE ANALYZER (total and/or organic)
  BOMB               CARBONATE BOMB (CaCO3 only)
  CHN                CARBON-HYDROGEN-NITROGEN ANALYZER (organic)
  GAS                GASOMETRIC ANALYSIS (CaCO3 only)
  CHN/BOMB           CHN ANALYZER (organic carbon)/BOMB (CaCO3)
  LECO/GAS           LECO (organic carbon)/GASOMETRIC (CaCO3)
  GRAVIMETRIC        GRAVIMETRIC ANALYSIS (CaCO3 only)
  WETCOMBUSTION      WET COMBUSTION (organic carbon and/or CaCO3)
  LECOAB/LECO70      LECOAB (total carbon)/LECO70 (organic carbon)
  LECO70/LECOAB      LECO70 (total carbon)/LECOAB (organic carbon)
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DATA SOURCE CODE:

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  CODE             SOURCE                  LEGS
  ==========       =======================  ======================
  DSDP/SHORE       DSDP Shore laboratory    1-45,47-71,73,74,76-79
  DSDP/CHAL        DSDP Shipboard           50,63,68,70-82,84-87,
                                            89,90,93-96
  LISITZIN         Dr. A.P. Lisitzin        6
  CRONAN           Dr. David S. Cronan      16
  KIDD             Dr. Robert Kidd          42
  SIMONEIT         Dr. Bernd R. Simoneit    64
  GARDNER          Dr. James V. Gardner     75
  VANANDEL         Dr. Tjeerd H. Van Andel  19,20,21,30,31,32
  MOORE            Dr. Theodore C. Moore    3,8,9,12,16,18,21,24,
                                            29,30,31,32,41,47,49
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NGDC NOTES: (list of deviations from field descriptions)

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Description of deviation                    Record Number(s)
================================            ================
Method code (CHN/GAS)not listed in          27146,27312,27346,27353,
   documentation file                       27367,27514,27559,27603,
                                            27606,27631,27670,27696,
                                            27739,27789

Top interval depth exceeds bottom           33325
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