CATALOG DOCUMENTATION
NATIONAL COASTAL ASSESSMENT DATABASE
NORTHEAST REGION 2000-2002
SEDIMENT GRAIN COMPOSITION DATA

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1. DATASET IDENTIFICATION

1.1 Title of Catalog document

National Coastal Assessment Database
Northeast Region 2000-2002
Sediment Grain Composition Data

1.2 Authors of the Catalog entry

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1.3 Catalog revision date

August 2007

1.4 Dataset name

Sediment Grain Composition Data

1.5 Task Group

National Coastal Assessment-Northeast

1.6 Dataset identification code

007

1.7 Version

001

1.8 Request for Acknowledgment

EMAP requests that all individuals who download EMAP data acknowledge the source of these data in any reports, papers, or presentations. If you publish these data, please include a statement similar to: "Some or all of the data described in this article were produced by the U. S. Environmental Protection Agency through its Environmental Monitoring and Assessment Program (EMAP)".

2. INVESTIGATOR INFORMATION

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2.3 Sample Processing Investigators
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3. DATASET ABSTRACT

3.1 Abstract of the Dataset

The Sediment Grain Composition Data report the grain size, total organic carbon (TOC), and % moisture of sediments collected in Northeast estuaries sampled during the 2000-02 NCA northeast program. Per cent moisture was not measured in 2002. One record is presented per sampling event. These measurements were made on the same sediments collected for sediment chemistry concentrations.

3.2 Keywords for the Dataset

Percent sand, percent silt-clay, TOC, total organic carbon, percent moisture

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The National Coastal Assessment (NCA) is a national monitoring and assessment program with the primary goal of providing a consistent evaluation of the estuarine condition in U.S. estuaries. It is an initiative of the Environmental Monitoring and Assessment Program (EMAP), and is a partnership of several federal and state environmental agencies, including: EPA's Regions, Office of Research and Development, and Office of Water; state environmental protection agencies in the 24 marine coastal states and Puerto Rico; and the United States Geological Survey (USGS) and the National Oceanic and Atmospheric Agency (NOAA). The five-year NCA program was initiated in 2000.

Stations were randomly selected using EMAP's probabilistic sampling framework and were sampled once during a summer index period (June to October). A consistent suite of indicators was used to measure conditions in the water, sediment, and in benthic and fish communities. The measured data may be used by the states to meet their reporting requirements under the Clean Water Act, Section 305(b). The data will also be used to generate a series of national reports characterizing the condition of the Nation's estuaries.

4.2 Dataset Objective

The objective of the Sediment Grain Composition Data is to characterize the grain size, percent total organic carbon (TOC), and percent moisture in sediment collected in 2000-02 in estuaries of the northeast.

4.3 Dataset Background Discussion

A two-year sampling design was employed for 2000-2001 NCA program in the Northeast. Analysts may therefore wish to consider the two years of data together.

The grain size, moisture content, and total organic carbon content of sediments are properties that may affect the sediment's ability to bind chemical contaminants. Sediment characterisitcs were measured on the same grabs used to measure chemical and toxicological properties of the sediments, and can therefore be used to help interpret those results.

The grain-size parameters, % sand and % silt/clay, show a strong correlation between size and composition. Particles larger than 63 microns are defined to be sand, while particles smaller than 63 microns are considered to be silt-clay; however, the mineralogical composition of the sediment particles was not analyzed directly.

4.4 Summary of Dataset Parameters

The Sediment Grain Composition Data report grain size, percent total organic carbon (TOC) collected in 2000-02 and % moisture collected in 2000-01 in estuarine sediment.

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition / Field Sampling

5.1.1 Sampling Objective

Sediment was collected for use in measuring physical, chemical, and toxicological characteristics. Separate sediment grabs were taken for benthic macro faunal analysis.

5.1.2 Sample Collection: Methods Summary

Sediment was collected with a 0.04-m2 Young-modified Van-Veen grab or similar sampler. Only the top two centimeters of a grab were retained for physical, chemical, and toxicological analyses. A sufficient number of grabs were processed to provide three liters of the 2-cm composite material. The composite was homogenized and separated into two fractions for storage until analysis. One fraction was frozen and used in the measurement of total organic carbon (TOC) and concentrations of chemical contaminants. The second fraction was chilled but not frozen during storage, and was used for grain-size and toxicity analyses. Separate sediment grabs were taken for benthic macro faunal analysis.

5.1.3 Beginning Sampling Dates

7 July 2000
25 June 2001
25 June 2002

5.1.4 Ending Sampling Dates

20 October 2000
31 October 2001
31 October 2002

5.1.5 Sampling Platform

Samples were collected from gasoline or diesel powered boats, 18 to 133 feet in length.

5.1.6 Sampling Equipment

A 1/25 m2, stainless steel (coated with Kynar), Young-modified Van Veen grab sampler was used to collect sediments.

5.1.7 Manufacturer of Sampling Equipment

Young's Welding, Sandwich, MA

5.1.8 Key Variables

Not applicable

5.1.9 Sample Collection: Methods Calibration

The sampling gear does not require calibration, although it was inspected regularly for damage by mishandling or impact on rocky substrates.

5.1.10 Sample Collection: Quality Control

Care was taken to minimize disturbance to the sediment grabs. Grabs that were incomplete, slumped, less than 7 cm in depth, or comprised chiefly

of shelly substrates were discarded. The chance of sampling the same location was minimized by repositioning the boat five meters downstream after three sampling attempts.

5.1.11 Sample Collection: References Strobel, C.J. 2000. Environmental Monitoring and Assessment Program: Coastal 2000 - Northeast component: field operations manual. Narragansett (RI): U.S. Environmental Protection Agency, National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division. Report nr EPA/620/R-00/002. 68 p.

5.1.12 Sample Collection: Alternate Methods
Different grab samplers used by NCA partners include the Smith-MacIntyre and Ponar grab samplers.

5.2 Data Preparation and Sample Processing

5.2.1 Sample Processing Objective
Sediment samples were analyzed to measure the sediment grain size (reported as either < 63 microns or > 63 microns), the percent total organic carbon (TOC), and percent moisture of sediments collected in the 2000-02 NCA programs (northeastern states).

5.2.2 Sample Processing: Methods Summary
For the grain size analysis, sediments were homogenized and diluted to a suspended slurry with the aid of chemical dispersant, and the suspension passed through a 63 micron sieve. The fine fraction passing through the sieve (<63 micron) and the coarse fraction retained on the filter (>63 micron) were separately dried and weighed. A small correction to the weight was applied to account for the salt and dispersant residue remaining after evaporation. Silt/clay was calculated as the salt-free weight of the fine fraction divided by the combined fine plus coarse salt-free weights (the result expressed as a percentage). SAND was calculated as 100% minus Silt/clay. For the moisture analysis, the sediments were homogenized and dried, and percent moisture was calculated from the loss in weight after correcting for salt remaining after evaporation.

For the percent total organic carbon (TOC) analysis, sediment samples were acidified by immersion in 10% HCl to remove inorganic carbonate materials. The dried sediments were oxidized in a muffle furnace at 950 oC in pure O2. The evolved CO2 gas was integrated, compared to standard curves, and reported as percent organic carbon based on dry weight.

The procedures for these analyses are those developed for the EMAP-Estuaries program and described in "EMAP-Estuaries Laboratory Methods Manual Volume 1-Biological and Physical Analyses" (U.S. EPA, 1995).

5.2.3 Sample Processing: Calibration
The apparatus for TOC measurements was calibrated by combusting standard reference materials, in accordance with standard laboratory procedures.

5.2.4 Sample Processing: Quality Control
Replicate analyses are performed on 10% of samples. Standard materials are included with each batch of TOC analyses.

5.2.5 Sample Processing: References
U.S. EPA. 1995. Environmental Monitoring and Assessment Program (EMAP): Manual-Estuaries, Volume 1: Biological and Physical Analyses. Narragansett, RI: U.S. Environmental Protection Agency, Office of Research and Development, EPA/620/R-95/008.

U.S. EPA. 2001. Environmental Monitoring and Assessment Program (EMAP): National Coastal Assessment Quality Assurance Project Plan 2001-2004. U.S. Environmental Protection Agency, Office of Research and Development, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, FL. EPA/620/R-01/002. 189 p.

5.2.6 Sample Processing: Alternate Methods
Not Applicable

6. DATA ANALYSIS AND MANIPULATIONS

6.1 Name of New or Modified Values
Not applicable

6.2 Description of Data Manipulation
Not applicable

7. DATA DESCRIPTION

7.1 Description of Parameters

7.1.1 Components of the Dataset

Attribute Name	Format	Description
Data Group	VARCHAR2(4)	Data Group Conducting Sampling
Sampling Year	NUMBER(4.0)	Year When Data Were Collected
Station Name	VARCHAR2(20)	The Station Identifier
Sampling Collection Date	DATE	Date of Sample Collection
Siltclay (%)	NUMBER(5.1)	Silt/Clay (%) in Sample
Sand (%)	NUMBER(5.1)	Sand (%) in Sample
Silt (%)	NUMBER(5.1)	Silt (%) in Sample
Clay (%)	NUMBER(5.1)	Clay (%) in Sample
Moisture (%)	NUMBER(5.1)	Sediment Moisture Content(%)
TOC	NUMBER(6.3)	Total Organic Carbon
TOC Units	VARCHAR2(15)	Total Organic Carbon units

7.1.2 Precision of Reported Values
Sand, Silt/clay, Moisture and TOC are reported as percentages to 0.01%. Values are reliable to no more than three significant digits; however more significant digits may be reported in the dataset because of formatting restrictions.

7.1.3 Minimum Value in Dataset

SAND	0.2%
SILT/CLAY	0.1%
MOISTURE	6.2%
TOC	0.0%

7.1.4 Maximum Value in Dataset

SAND	100%
SILT/CLAY	140.8%
MOISTURE	91.5%
TOC	14.79%

7.2 Data Record Example

7.2.1 Column Names for Example Records
Data Group,Sampling Year,Station Name,Sampling Collection Date, Latitude Decimal Degrees,Longitude Decimal Degrees,Silt/clay (%),Sand (%), Moisture (%),TOC,TOC Units

7.2.2 Example Data Records
National Coastal Assessment-Northeast/Connecticut,2000,CT00-0001-A,
17-AUG-2000,41.151,-73.22,,,2.69,%
National Coastal Assessment-Northeast/Connecticut,2000,CT00-0007-A,
10-AUG-2000,41.298,-73.066,,,0.55,%
National Coastal Assessment-Northeast/New Jersey/Delaware Bay,2000,
DE00-0037-A,28-SEP-2000,39.225,-75.401,35.4,64.7,40.7,0.91,%
National Coastal Assessment-Northeast/New Jersey/Delaware Bay,
2000,DE00-0039-A,09-OCT-2000,39.063,-75.381,71.6,28.4,52.2,1.7,%

8.GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude (Westernmost)
-75.774 decimal degrees

8.2 Maximum Longitude (Easternmost)
-66.98 decimal degrees

8.3 Minimum Latitude (Southernmost)
38.452 decimal degrees

8.4 Maximum Latitude (Northernmost)
45.185 decimal degrees

8.5 Name of Region
The National Coastal Assessment Northeast Region covers the northeastern US coastline from Maine to Delaware.

9. QUALITY CONTROL AND QUALITY ASSURANCE

9.1 Measurement Quality Objectives
Measure replicate grain size of samples to within a precision of 10% (see USEPA 2001).

9.2 Data Quality Assurance Procedures

9.3 Actual Measurement Quality

10. DATA ACCESS

10.1 Data Access Procedures
Data can be downloaded from the web at: http://www.epa.gov/emap/nca/html/data/

10.2 Data Access Restrictions
None

10.3 Data Access Contact Persons
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10.4 Dataset Format
Tab-delimited ASCII files

10.5 Information Concerning Anonymous FTP
Not available

10.6 Information Concerning WWW
See Section 10.1 for WWW access

10.7 EMAP CD-ROM Containing the Dataset
Data not available on CD-ROM

11.REFERENCES

Salonen, K. 1979. A versatile method for the rapid and accurate determination of carbon by high temperature combustion. Limnol. Oceanogr. 24:1770-183.

U.S. EPA. 2001. Environmental Monitoring and Assessment Program (EMAP): National Coastal Assessment Quality Assurance Project Plan 2001-2004. U.S. Environmental Protection Agency, Office of Research and Development, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, FL. EPA/620/R-01/002. 189 p.

U.S. EPA. 1995. Environmental Monitoring and Assessment Program (EMAP): Manual-Estuaries, Volume 1: Biological and Physical Analyses. Narragansett, RI: U.S. Environmental Protection Agency, Office of Research and Development, EPA/620/R-95/008.

12. TABLE OF ACRONYMS

AED	Atlantic Ecology Division
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency
NCA	National Coastal Assessment
NHEERL	National Health and Environmental Effects Research Laboratory
QA/QC	Quality Assurance/Quality Control
TOC	Total Organic Carbon
WWW	World Wide Web

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