CATALOG DOCUMENTATION
COASTAL BAYS DATABASE
1993 DELAWARE AND MARYLAND BAYS
SEDIMENT CHLOROPHYLL DATA FROM RANDOM AND ITE SITES

TABLE OF CONTENTS

1. DATA SET IDENTIFICATION

1.1 Title of Catalog document

Coastal Bays Database
1993 Delaware and Maryland Bays
Sediment Chlorophyll Data from Random and ITE Sites

1.2 Author of the Catalog entry

Melissa Hughes, OAO Corporation

1.3 Catalog revision date

18 December 1996

1.4 Data set name

BENCLRAN, BENCLITE

1.5 Task Group

Mid-Atlantic Integration and Assessment (MAIA)

1.6 Data set identification code

208

1.7 Version

001

1.8 Requested Acknowledgment

If you plan to publish these data in any way, EPA requires a standard statement for work it has supported:

"Although the data described in this article have been funded wholly or in part by the U. S. Environmental Protection Agency through its EMAP-Estuaries Program, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement should be inferred."

2. INVESTIGATOR INFORMATION

2.1 Principal Investigator

Dr. Frederick W. Kutz
U.S. Environmental Protection Agency - Region III

2.2. Investigation Participant-Sample Collection

Janis Chaillou
Versar, Inc.

2.3 Principal Investigator-Sample Processing

3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The Sediment Chlorophyll data set presents chlorophyll measurements from a surficial sediment sample collected at each site. Some sites were visited more than once. Results were determined from two methods of analysis.

3.2 Keywords for the Data Set

Benthic chlorophyll, chlorophyll

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The objective of the Coastal Bays Joint Assessment was to assess the ecological condition of the Delaware and Maryland coastal bays, compare the current ecological condition of the bays with their historical condition and to evaluate indicators and sampling design elements that can be used to direct future monitoring activities in the system.

4.2 Data Set Objective

The objective of the Sediment Chlorophyll data set is to present chlorophyll data analyzed from surficial sediment.

4.3 Data Set Background Information

Water quality in the coastal bays of Delaware and Maryland was evaluated using four classes of indicators: measures of algal productivity, dissolved oxygen (DO), water clarity and nutrients. One measure of algal biomass included the concentration of chlorophyll in surficial sediment.

4.4 Summary of Investigation Parameters

Chlorophyll measurements were determined by two methods using the combined supernatant from 5 samples.

5. DATA ACQUISITION AND SAMPLING METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

Collect surficial sediment cores suitable for the analysis of chlorophyll.

5.1.2 Sample Collection Methods Summary

The grab sampler was lowered through the water column; the grab penetrated the sediment by gravity releasing a trigger allowing the jaws to close. When the grab was pulled from the sediment using the winch, the jaws closed, encapsulating the sediment sample. 5 1-cm plugs of surficial sediment were removed with a 50-cc plastic syringe.

5.1.3 Sampling Start Date

12 July 1993

5.1.4 Sampling End Date

30 September 1993

5.1.5 Platform

Sampling was conducted from 7 m (21 ft) Privateer equipped with an electric winch with a 12-foot boom.

5.1.6 Sampling Gear

A 1/25 m2, stainless steel, Young-modified Van Veen Grab sampler was used to collect sediment grabs for benthic analyses. This grab sampled an area of 440 cm2 and a maximum depth of penetration in the sediment of 10 cm.

5.1.7 Manufacturer of Sampling Equipment

Young's Welding, Sandwich, MA

5.1.8 Key Variables

No data were recorded at the time of sample collection.

5.1.9 Collection Method Calibration

The sampling gear did not require any calibration. It required inspection for deformities incurred due to mishandling or impact on rocky substrates.

5.1.10 Sample Collection Quality Control

The sieve was inspected immediately following the removal of the sample to ensure no organisms were left clinging to the sieve. The sieve was also thoroughly scrubbed with a stiff brush between samples.

At least once during the field season, QA evaluation of each field crew will be performed by either the QA officer or a designee to insure compliance with prescribed protocols. Field crews will be re-trained whenever discrepancies are noted.

5.1.11 Sample Collection Method Reference

Weisberg, S.B., A.F. Holland, K.J. Scott, H.T. Wilson, D.G. Heimbuch, S.C. Schimmel, J.B. Frithsen, J.F. Paul, J.K. Summers, R.M. Valente, J. Gerritsen and R.W. Latimer. 1993. EMAP-Estuaries, Virginian Province 1990: Demonstration Project Report. EPA/600/R-92/100. U.S. Environmental Protection Agency, Washington, D.C.

5.1.12 Sample Collection Method Deviations

NA

5.2 Data Preparation and Sample Processing

5.2.1 Sample Processing Objective

Process sediment samples to accurately measure chlorophyll content.

5.2.2 Sample Processing Methods Summary

5.2.2.1 Field Summary

A 50-cc plastic syringe was inserted into a random location in the grab. This was repeated until 5 1-cm plugs of surficial sediment were collected. The plugs were placed in a Nalgene bottle, wrapped in aluminum foil and frozen immediately on dry ice.

5.2.2.2 Laboratory Summary

Sample aliquots were suspended in 90% acetone, extracted overnight at -20 degrees C, resuspended and the supernatant was collected. Each sample was extracted three times and the supernatants were combined. The benthic chlorophyll concentration was determined by: 1) a high-performance liquid chromatography method (Heukelem et al., 1992) and 2) a fluorometric method (Parsons et al., 1984).

5.2.3 Sample Processing Method Calibration

NA

5.2.4 Sample Processing Quality Control

The sediment plugs were frozen immediately on dry ice in preparation for chlorophyll analysis.

5.2.5 Sample Processing Method Reference

Heukelem, L. Van, A.J. Lewitus, T.M. Kana and N.E. Croft. 1992. High-performance liquid chromatography of phytoplankton pigments using a polymeric reversed phase C18 column. J. Phycol. 28:867-872.

Parsons, T.R., Y. Maita and C.M. Lalli. 1984. A Manual of Chemical and Biological Methods for Seawater Analysis. Pergamon Press.

5.2.6 Sample Processing Method Deviations

NA

6. DATA ANALYSIS AND MANIPULATIONS

6.1 Name of New or Modified Value

NA

6.2 Data Manipulation Description

NA

6.3 Data Manipulation Examples

NA

7. DATA DESCRIPTION

7.1 Description of Parameters

#	Parameter SAS Name	Data Type	Len	Format	Parameter Label
1	SITE	Num	8	4.	The Site Number
2	EVNTDATE	Num	8	YYMMDD6.	Date when Sample Collected
3	EVNTNUM	Num	8	4.	Event Number
4	HPLC	Num	8	5.1	HPLC Method Chl_a (ug/g)
5	FLUOR	Num	8	6.1	Fluorometric Method Chl_a (ug/g)

7.1.6 Precision to which values are reported

Chlorophyll measurements are accurate to one decimal place

7.1.7 Minimum Value in Data Set

HPLC 0.1
FLUOR 0.5

7.1.7 Maximum Value in Data Set

HPLC 122.1
FLUOR 115.7

7.2 Data Record Example

7.2.1 Column Names for Example Records

SITE EVNTDATE EVNTNUM HPLC FLUOR

7.2.2 Example Data Records

OBS	SITE	EVNTDATE	EVNTNUM	HPLC	FLUOR
1	101	08/10/93	1091	14.8	14.0
2	102	08/10/93	1092	87.3	.
3	105	09/30/93	1330	17.8	24.7
4	106	08/17/93	1117	5.3	7.0
5	107	08/04/93	1080	7.1	7.9

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-77 Degrees 17 Minutes 4.80 Decimal Seconds

8.2 Maximum Longitude

-70 Degrees 04 Minutes 18.60 Decimal Seconds

8.3 Minimum Latitude

36 Degrees 49 Minutes 54.60 Decimal Seconds

8.4 Maximum Latitude

41 Degrees 38 Minutes 33.00 Decimal Seconds

8.5 Name of area or region

Delaware and Maryland Coastal Bays

Stations were located in coastal bays along the East Coast of the United States in the States of Delaware and Maryland. Four major subsystems included Rehobeth Bay, Indian River Bay, Assawoman Bay and Chincoteague Bay. Areas of interest included Indian River, St. Martin River, Trappe Creek and artificial lagoons.

9. QUALITY CONTROL/ QUALITY ASSURANCE

9.1 Measurement Quality Objectives

Measurement quality objectives are outlined for precision and accuracy are outlined below:

	Accuracy Goal	Precision Goal	Completion Goal
Chlorophyll a	20 %	20%	90%

9.2 Quality Assurance/Control Methods

9.2.1 Sample Collection Quality Control

At least once during the field season, QA evaluation of each field crew will be performed by either the QA officer or a designee to insure compliance with prescribed protocols. Field crews will be re-trained whenever discrepancies are noted.

9.2.2 Sample Processing Quality Control

Complete and detailed QA/QC procedures for field and laboratory measurements can be found in the EMAP-E Quality Assurance Project Plan (Heitmuller and Valente, 1992). QA sample procedures for chlorophyll are outlined below:

QA Sample Type	Frequency of Use	Data Generated for Measurement Quality Definition
Duplicates and analysis of standards	Each batch	Duplicate results and standard recovery

9.3 Quality Assessment Results

These in-house QC measures met the requirements established in the QA Plan.

9.4 Unassessed Errors

NA

10. DATA ACCESS

10.1 Data Access Procedures

Data can be downloaded from the WWW site.

10.2 Data Access Restrictions

10.3 Data Access Contact Persons

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(410)305-2742 (Tel.)

10.4 Data Set Format

The data sets are in a fixed column format.

10.5 Information Concerning Anonymous FTP

Not accessible

10.6 Information Concerning WWW

Data can be downloaded from the WWW.

10.7 EMAP CD-ROM Containing the Data Set

Data not available on CD-ROM.

11. REFERENCES

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Frithsen, J.B., L.C. Scott and M. Young 1994. Methods for processing estuarine benthic macroinvertebrate samples from the EMAP Estuaries Virginian Province. Versar, Inc, Columbia, MD.

Heitmuller, P.T. and R. Valente. 1992. Environmental Monitoring and Assessment Program: EMAP-Estuaries Louisianian Province: 1992 quality assurance project plan. EPA/ERL-GB No. SR-XXX. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

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Parsons, T.R., Y. Maita and C.M. Lalli. 1984. A Manual of Chemical and Biological Methods for Seawater Analysis. Pergamon Press.

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Valente, R., C.J. Strobel, J.E. Pollard, K.M. Peres, T.C. Chiang and J. Rosen. 1990. Quality Assurance Project Plan for Near Coastal: 1990 Demonstration Project. U.S. EPA NHEERL-AED, Narragansett, RI.

12. TABLE OF ACRONYMS

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