CATALOG DOCUMENTATION
EMAP-GREAT LAKES PROGRAM LEVEL DATABASE
1994 LAKE ONTARIO NEARSHORE AND OFFSHORE
WATER QUALITY VERTICAL PROFILE DATA

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog document

EMAP-Great Lakes Program Level Database
1994 Lake Ontario Nearshore and Offshore
Water Quality Vertical Profile Data

1.2 Authors of the Catalog entry

Greg Elonen, ILS

1.3 Catalog revision date

22 May 1997

1.4 Data set name

LOCTD94

1.5 Task Group

Great Lakes

1.6 Data set identification code

516

1.7 Version

001

1.8 Requested Acknowledgment

These data were produced as part of the U.S. EPA 's Environmental Monitoring and Assessment Program (EMAP). 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 has been funded wholly or in part by the U.S. Environmental Protection Agency through its EMAP-Great Lakes 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

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2.2 Investigation Participant - Sample Collection

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3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The Vertical Profile Water Quality file provides data on depth, conductivity, beam attenuation coefficient (BAT), dissolved oxygen, pH, photosynthetically active radiation (PAR), per cent light transmittance and fluorometer voltage at one meter intervals of the water column at each station visited.

3.2 Keywords for the Data Set

Lake Ontario, conductivity, dissolved oxygen, pH, PAR, fluorescence, transmissometry, CTD, vertical profile, nearshore, offshore.

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The Environmental Monitoring and Assessment Program (EMAP) was designed to periodically estimate the status and trends of the Nation's ecological resources on a regional basis. EMAP provides a strategy to identify and bound the extent, magnitude and location of environmental degradation and improvement on a regional scale based on station sites randomly located in the Great Lakes. Three-fold enhanced sampling sites from nearshore and offshore Lake Ontario are included.

4.2 Data Set Objective

The objective of the vertical profile water quality data is to provide summary data of specific water quality parameters measured at one meter intervals in the water column at each station visited in the Lake Ontario nearshore and offshore regions.

4.3 Background Discussion

Water quality parameter measurements provide valuable information concerning the environmental conditions at a given sample site. Water depth by itself does little to directly influence a region's biota. However changes in water quality parameters are often associated with changes in water depth. Measurements of depth have been included as a means to explain changes in other water quality parameter measurements. Water clarity was measured three ways: per cent transmittance provided information on the turbidity of the water. Fluorometer voltage was used to provide information on the reduction of light penetration due to photosynthetic algae, and PAR provided information on the effect turbidity has on photosynthetic activity. Dissolved oxygen (DO) concentration is often one of the most important abiotic condition indicators of an environment. Low DO levels can seriously impact aquatic populations both directly and indirectly. Exposure to low DO may make a population more susceptible to other stressors such as disease or toxic chemicals.

4.4 Summary of Data Set Parameters

Water quality parameters of the water column were reported at one meter intervals on the downcast at each station. Transmittance, used as an estimate of turbidity was reported as per cent transmission. Fluorescence, used as an estimate of the chlorophyll_a concentration, was reported as a voltage reading. Depth was measured in meters. Temperature was measured in degrees C. Conductivity was measured in S/m. Dissolved oxygen was reported in mg/L.

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

To collect high quality vertical water column profiles of depth, temperature, dissolved oxygen, pH, PAR, per cent transmission, transmissometer voltage (BAT), and fluorometer voltage. At least one successful cast at each station was expected to be performed.

5.1.2 Sample Collection Methods Summary

A CTD probe will be slowly lowered to the bottom at each sampling station to give a continuous profile of depth, transmittance, and fluorescence. Data will be captured electronically on a personal computer.

5.1.3 Beginning Sampling Date

3 September 1994

5.1.4 Ending Sampling Date

19 September 1994

5.1.5 Platform

Sampling was conducted from the R/V Guardian.

5.1.6 Sampling Equipment

Sea-Bird Electronics, Inc. model SBE-25 Sealogger CTD is a self-contained array of instruments capable of measuring temperature, dissolved oxygen, pH, transmissivity, fluorescence, and photosynthetically active radiation (PAR)

5.1.7 Manufacturer of Instrument

Sea-Bird Electronics, Inc.

5.1.8 Key Variables

Not applicable.

5.1.9 Collection Method Calibration

5.1.10 Collection Quality Control

5.1.11 Sample Collection Method Reference

Strobel, C.J. and S.C. Schimmel, 1991. Environmental Monitoring and Assessment Program-Near Coastal. 1991 Virginian Province, Field Operations and Safety Manual. U.S. EPA, NHEERL-AED, Narragansett, RI. June 1991.

5.2 Data Processing and Sample Processing

5.2.1 Sample Processing Objective

Evaluate the quality of the data of every cast in order to insure a complete and representative sampling of all parameters.

5.2.2 Sample Processing Methods Summary

Download electronic files after each station was sampled to a personal computer.

5.2.3 Sample Processing Method Calibration

Not reported.

5.2.4 Sample Processing Quality Control

5.2.5 Sample Processing Method Reference

5.2.6 Sample Processing Method Deviations

None reported.

6. DATA ANALYSIS AND MANIPULATIONS

6.1 Name of New or Modified Values

None.

6.2 Data Manipulation Description

None reported.

6.3 Data Manipulation Examples

Not applicable.

7. DATA DESCRIPTION

7.1 Description of Parameters

#	Name	Type	Length	Format	Parameter Label
1	STA_NAME	Char	10	10.	Station Name
2	DATE	Num	6	6.	Sampling Date (YYMMDD)
3	DPTH	Num	3	3	Depth in Meters
4	TEMP	Num	3	2.1	Temperature (C)
5	COND	Num	4	1.3	Conductivity in S/m
6	D.O.	Num	3	2.1	Dissolved Oxygen in mg/L
7	pH	Num	2	1.1	pH
8	PAR	Num	3	2.1	Irradiance as PAR
9	%TRANS	Num	4	2.2	Per Cent Light Transmission
10	BAT	Num	4	2.2	Beam Attenuation Coefficient as Voltage
11	V4	Num	4	2.2	Voltage for Fluorometer

7.1.1 Precision to which values are reported

Depth reported to the nearest meter; temperature, dissolved oxygen, pH, and PAR to one decimal place, conductivity to three decimal places; per cent transmission, beam attenuation coefficient, and fluorometer voltage to two decimal places.

7.1.2 Minimum Value in Data Set

DPTH	1
TEMP	3.7
COND	0.018
D.O.	5.1
pH	7.4
PAR	0.0
%TRANS	10.2
BAT	-5.87
V4	-0.46

7.1.3 Maximum Value in Data Set

DPTH	213
TEMP	20.2
COND	0.026
D.O.	13.2
pH	9.0
PAR	1190
%TRANS	84.29
BAT	46.16
V4	5.43

7.2 Data Record Example

7.2.1 Column Names for Example Records

STA_NAME, DATE, DPTH, TEMP, COND, D.O., pH, PAR, %TRANS, BAT, V4

7.2.2 Example Data Records

```
L094-157 940903  1  20.2  0.026  7.5  7.4  4.57  48.12  14.58 1.37
L094-157 940903  2  20.2  0.026  7.9  7.6  2.92  62.46   2.72 1.80
```

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-79 deg 29' 59"

8.2 Maximum Longitude

-76 deg 19' 22"

8.3. Minimum Latitude

42 deg 27' 29"

8.4 Maximum Latitude

43 deg 52' 57"

8.5 Name of Area or Region

Nearshore and Offshore Lake Ontario:
Stations were located within the Nearshore and Offshore resource class of Lake Ontario. The nearshore sites were within the non-depositional zone (13 sites) and the offshore sites were within the depositional zone (45 sites).

9. QUALITY CONTROL/QUALITY ASSURANCE

9.1 Measurement Quality Objectives

9.2. Data Quality Assurance Procedures

Data validation by principal investigators.

9.3 Actual Measurement Quality

10. DATA ACCESS

10.1 Data Access Procedures

Data can be downloaded from the EMAP Website.

10.2 Data Access Restrictions

Not applicable.

10.3 Data Access Contact Persons

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10.4 Data Set Format

Data from the Website are in ASCII fixed format.

10.5 Information Concerning Anonymous FTP

Not accessible.

10.6 Information Concerning WWW

Data can be downloaded from the EMAP Website.

10.7 EMAP CD-ROM Containing the Data Set

Data are not available on CD-ROM.

11. REFERENCES

Hedtke, S., A. Pilli, D. Dolan, G. McRae, B. Goodno, R. Kreis, G. Warren, D. Swackhamer, and M. Henry. 1992. Great Lakes Monitoring and Research Strategy: Environmental Monitoring and Assessment Program. USEPA, Office of Research and Development, ERL-Duluth, Duluth, Minnesota. EPA /602/R-92/001. 204 p.

12. TABLE OF ACRONYMS

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