Chesapeake Bay Maryland (CBM) NERR Water Quality Metadata
August 1999-December 1999
Latest Update: July 24, 2000

I. Data Set and Research Descriptors

1. Principle investigator(s) and contact persons
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2. Entry verification
The data are uploaded to a PC from the YSI 6000UPG data logger and graphs are produced and quickly examined using the PC6000 software. Data files are then exported from the PC6000 format into Excel (for Windows NT 3.1) files where the headers, footers, and inappropriate spaces are removed. Plots of the data are made and suspect data (outliers) are dealt with accordingly. Removed data points and missing data are replaced with a periods (.). Edited files are merged to contain one full month for each data logger. Data is then QA/QC'd using the cdmomac(ro)3.xls macros and Appendix B., YSI 6000 Data Review and Editing Protocol. Jill Rooth was responsible for data management.

3. Research Objectives
The purpose of the monitoring program at CBM NERR is to conform to the NERR SWMP monitoring program looking at trends in water quality over both temporal and spatial scales. Differences in how marshes can change water quality is being studied by comparing a marsh creek site to a river channel site. Measurements are taken every 30 minutes over a 5-14 day period at both the Patuxent River Park (PR) and Jug Bay Wetlands Sanctuary (JB) sites.

4. Research methods (YSI data loggers)
Each YSI data logger is laid down on a 4" diameter PVC pipe that has been cut in half. The PVC is nailed to a 4"x4" block of wood which secured to a crab pot. The crab pot with the data logger in it sits on the bottom at both sites. At

each site, the crab pot is locked to a pier. The YSI probes sit approximately 6-10 centimeters above the sediment. Every 30 minutes up to a two-week period, measurements for specific conductivity, salinity, percent saturation, dissolved oxygen, temperature and water level are recorded. Within 14 days of deployment, the data is downloaded and either new calibrated probes or a new YSI unit with calibrated probes are placed at each site. At times, however, probes and/or units could not be replaced resulting in prolong periods (up to 5 days) of missing data. Calibration procedures are carried out according to the methods described in the YSI Operating Manual. All calibration standards are purchased from scientific warehouses.

5. Site location and character
The Chesapeake Bay NERR - Maryland has three components in Maryland's portion of Chesapeake Bay. Monie Bay is a mesohaline region on the lower Eastern Shore; Otter Point Creek is a tidal freshwater river and marsh system; and Jug Bay is part of the freshwater portion of the Patuxent River. Both data loggers are within the Jug Bay component.

1) Patuxent River Park (PR) – (38 deg 46’ 00” N, 76 deg 42’ 30” W) is on the Prince Georges County side of the River. The data logger is on the flank of the River channel off of Jackson Landing. The Patuxent is approximately 50 meters wide at Jackson Landing. High sedimentation rates have led to a very soft bottom at this point in the Patuxent River. Salinity rarely reaches above 1 ppt.
2) Jug Bay Wetlands Sanctuary (JB) - (38 deg 46’ 00” N, 76 deg 42’ 30” W) is on the Anne Arundel County side of the River directly across from PR. The data logger is in a shallow tidal marsh creek that is approximately 5 meters wide. Wide temperature fluctuations are normal at this site. Salinity rarely reaches above 1 ppt.

6. Data collection period
Data loggers initiated collection in August 1999 and continued through the end

of December of 1999, at Jug Bay Wetlands Sanctuary (JB) only. The logger did not collect any data for the year 2000 at Patuxent River Park (PR) due to malfunctioning equipment.

7. Associated researchers and projects

The Jug Bay Wetlands Sanctuary staff have been collecting weekly to monthly temperature, salinity, dissolved oxygen, and nutrient samples at the same location as the data logger at JB.

II. Physical Structure Descriptors

8. Variable name, range of measurements,

Variable	Range of Measurements	Resolution	Accuracy
Date	(MMDDYY)	1-12, 1-31, 00-99	(1 day, 1 month, 1 year)
Hour	(HHMMSS)	0-24, 0-60, 0-60	(1 second, 1 minute, 1 hour)
Temp	-5 to 45 (oC)	0.1 oC	+/- 0.15 oC
SpCond	0-100 (mS/cm)	0.01 mS/cm	+/- 0.5% of reading + 0.001mS/cm
Sal	0-70 ppt	0.1 ppt	+/- 1.0% of reading or 0.1ppt, whichever is greater
DO %	0-200 (% Saturation)	0.1 % air sat	+/- 2.0 % air sat
DO %	200-500 (% Saturation)	0.1 % air sat	+/- 6.0 % air sat
DO mg/l	0-20 (mg/l)	0.01 mg/l	+/- 0.2 mg/l
DO mg/l	20-50 (mg/l)	0.01 mg/l	+/- 0.6 mg/l
Depth	0-9.1 (m)	0.001 m	+/- 0.018 m
pH	2-14 units	0.01 units	+/- 0.2 units

10. Coded variable indicator and variable code definitions

Site definitions: PR = Patuxent River Park; JB = Jug Bay Wetlands Sanctuary

11. Data anomalies (suspect data)

Suspect and outlier data from any measurement collected was replaced with a period (.). This is in accordance with the QA/QC procedure. There was no "true" suspect data observed for the year 1999, although outliers were removed throughout the 1999 time period and are believed to be the result of internal datasonde error.

JB: negative DO data removed 8/19/99 0100-0700, 8/20/99 0530-0700, 8/21/99 0600, 0700-0800, 8/26/99 0100-0530, 8/27/99 2200, 8/28/99 0200-0300, 8/28/99 2200-

2230, 8/29/99 0300-0330, 2230-08/30/99 0000, 0400, 08/31/99 0200-0300;
negative
DO data removed 9/2/99 0300, 0500-0630, 9/3/99 0530-0700, 9/4/99 0600,
0700,
1930, 9/5/99 1000-1030, 1300-1530, 1900, 2100, 2200-9/6/99 0530, 1300,
1530-
1630, 1730, 2130-2200, 9/7/99 1500-1600, 2300-9/8/99 0000, 0600-0730,
0900,
1100, 1230, 2300; Negative DO data removed 10/10/99 2330-10/11/99 0100,
10/12/99
0100-0330, 10/13/99 0200, 10/14/99 0330, 10/17/99 0530, 10/18/99 0630-
0930,
1030, 1700; Negative DO data removed 11/2/99 0630-0730, 11/20/99 0230-
1430,
1700, 1800-2100, 2300-11/21/99 0000, 0100-0330, 0630, 0930-1100, 1430-
1900,
2230, 11/22/99 0230, 0430-0500, 0600-0730, 1100-1130, 1900-2200, 11/23/99
0130-
0530, 0700-1300, 2100-11/24/99 0230, 11/24/99 0400-0530, 0700-1000, 1130,
11/25/99 0200, 0500-0530, 0630, 0830-0930, 1030-1430, 2300, 11/27/99
0530, 0630,
0800-0900, 1600-1700, 1930, 2030, 2130, 2330, 11/28/99 0700-0730,
11/29/99 0300-
0400, 0500, 0700-0800, 0900-0930, 11/30/99 0330-0430, 0530-0630, 0800,
2000-
2130; DO data deleted due to possible probe failure 11/18/99 1300-
11/30/99 2330;
DO data deleted due to possible probe failure 12/01/99 0000-12/02/99
1300,
12/9/99 2030-12/14/99 1200; Negative DO removed 12/14/99 1230-12/17/99
1530;
High pH spike 12/3/99 1530 due to redeployment;

12. Missing data
Note: there were no turbidity probes deployed for the entire year,
additionally
the pH probe was only operable from 12/3/99 at 15:30:00 until the end of
1999.

JB: Datasonde first enters water on 8/17/99 at 11:30:00; negative DO data
removed 8/19/99 0100-0700, 8/20/99 0530-0700, 8/21/99 0600, 0700-0800,
8/26/99
0100-0530, 8/27/99 2200, 8/28/99 0200-0300, 8/28/99 2200-2230, 8/29/99
0300-
0330, 2230-08/30/99 0000, 0400, 08/31/99 0200-0300; datasonde removed for
calibration on 8/31/99 at 11:00:00 (missing data point) and reinitiated
on
8/31/99 at 11:30:00; datasonde removed for calibration on 9/8/99 at
13:30:00
(missing data point) and reinitiated on 9/8/99 at 14:30:00; negative DO
data
removed 9/2/99 0300, 0500-0630, 9/3/99 0530-0700, 9/4/99 0600, 0700,
1930,

9/5/99 1000-1030, 1300-1530, 1900, 2100, 2200-9/6/99 0530, 1300, 1530-1630,
1730, 2130-2200, 9/7/99 1500-1600, 2300-9/8/99 0000, 0600-0730, 0900, 1100,
1230, 2300; datasonde removed for calibration on 9/22/99 at 12:30:00 (missing
data points) and reinitiated on 9/22/99 at 13:30:00; datasonde data retrieval
was delayed as well as removed for calibration on 10/6/99 at 14:00:00 (missing
data points) and reinitiated on 10/7/99 at 14:30:00; Negative DO data removed
10/10/99 2330-10/11/99 0100, 10/12/99 0100-0330, 10/13/99 0200, 10/14/99 0330,
10/17/99 0530, 10/18/99 0630-0930, 1030, 1700; datasonde removed for
calibration on 10/21/99 at 11:30:00 (missing data point) and reinitiated on
10/21/99 at 12:00:00; datasonde data retrieval was delayed as well as removed
for calibration on 11/4/99 at 12:30:00 (missing data points) and reinitiated on
11/18/99 at 13:00:00; Negative DO data removed 11/2/99 0630-0730, 11/20/99 0230-
1430, 1700, 1800-2100, 2300-11/21/99 0000, 0100-0330, 0630, 0930-1100, 1430-
1900, 2230, 11/22/99 0230, 0430-0500, 0600-0730, 1100-1130, 1900-2200, 11/23/99
0130-0530, 0700-1300, 2100-11/24/99 0230, 11/24/99 0400-0530, 0700-1000, 1130,
11/25/99 0200, 0500-0530, 0630, 0830-0930, 1030-1430, 2300, 11/27/99 0530, 0630,
0800-0900, 1600-1700, 1930, 2030, 2130, 2330, 11/28/99 0700-0730, 11/29/99 0300-
0400, 0500, 0700-0800, 0900-0930, 11/30/99 0330-0430, 0530-0630, 0800, 2000-
2130; DO data deleted due to possible probe failure 11/18/99 1300-
11/30/99 2330;
possible membrane puncture or DO probe failure- data deleted from 11/18/99
13:00:00 through 11/30/99 23:30:00; DO data deleted due to possible probe
failure 12/01/99 0000-12/02/99 1300, 12/9/99 2030-12/14/99 1200; Negative DO
removed 12/14/99 1230-12/17/99 1530; datasonde data retrieval was delayed as
well as removed for calibration on 12/2/99 at 13:30:00 (missing data points) and
reinitiated on 12/3/99 at 15:30:00; datasonde data retrieval was delayed as well
as removed for calibration on 12/17/99 at 16:00:00 (missing data points) and
reinitiated on 12/20/99 at 17:00:00 until the end of the year 1999.

PR: Instrument not deployed all year

12. Other Remarks

1999 Deployment Dates

Deployed	Retrieved
8/17/99 - 1130	8/31/99 - 1030
8/31/99 - 1130	9/08/99 - 1330
9/08/99 - 1430	9/22/99/ - 1200
9/22/99 - 1330	10/06/99 - 1330
10/21/99 - 1200	11/04/99 - 1200
11/18/99 - 1300	12/02/99 - 1300
12/03/99 - 1530	12/17/99 - 1530
12/20/99 - 1700	01/03/00 - 1700