Maryland Chesapeake Bay Water Quality Monitoring Program:Fluorescence Monitoring Component

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Richard Lacouture
Originator: Stella Sellner
Originator: Morgan State Estuarine Reseach Labortory
Publication_Date: 20080430
Title:
Maryland Chesapeake Bay Water Quality Monitoring Program:Fluorescence Monitoring Component
Publication_Information:
Publication_Place: Annapolis, MD
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Other_Citation_Details:
None
Online_Linkage: www.chesapeakebay.net
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Citation_Information:
Originator: Jacqueline Johnson
Publication_Date: 19981231
Title:
Chesapeake Bay Program Fluorescence Monitoring Database
Edition: Version 2.0
Geospatial_Data_Presentation_Form: database
Publication_Information:
Publication_Place: Annapolis, MD
Publisher: US EPA Chesapeake Bay Program
Other_Citation_Details:
None
Online_Linkage: www.chesapeakebay.net
Description:
Abstract:

Vertical fluorescence profiles were measured at stations in the Chesapeake Bay and its tidal tributaries. Horizontal fluorescence profiles were measured on transects between fixed monitoring stations in the Chesapeake Bay and its tidal tributaries. Data were typically collected 18 times annually between 1984 and 1994; monthly from October - March and twice monthly from April - September (with the exception of the Choptank River stations and the station in Baltimore Harbor, which are not sampled in January and February). One station near the mouth of the Patuxent River, XCG8613, was dropped from the sampling scheme beginning in March 1992. A deviation in the normal cruise track of the main bay cruises occurred between April 1994 and June 1994 when the Maryland Department of the Environment (agency managing the program at that time) added two extra stations between CB3.1 and CB2.2. The two extra stations were only sampled by MDE. Beginning in January of 1996, the Patuxent River was only sampled in on one cruise in each January, June and September.

All horizontal in vivo fluorescence reading were made at 0.5 below the surface. At all stations, in vivo fluorescence reading were made at 0.5, 1.0, 2.0, and 3.0 meters below the surface. Thereafter, readings were made every three meters and at 1 meter above the bottom. At stations in located in the mainstem of Chesapeake Bay, additional reading are made at each station at either one or two meter intervals.

SPECIAL POTOMAC SURVEY:
Potomac River, near-surface in vivo fluorescence (IVF) was measured along horizontal transects every two weeks for the periods: August - September 1990; June -September 1991; April - September 1992; April -September 1993; April - September 1994 April -September 1995; April - September 1996. Due to program funding reductions in 1996, sampling was reduced to once a month for the months of April, May, June and September. Fluorometry measurements were made along a longitudinal transect between buoy 19 (XDA1177) and buoy 64 (XEA9075) and along cross-river transects: 1) from Wades Bay on the east to a point approximately 450 yards off the shoreline on the western side of the river, 2) from mid-channel in

the mainstem of the river to the center of Mattawoman Creek mouth, 3) from approximately 250 yards off the eastern shoreline of the mainstem at Buoy 51 to the middle of Occoquan Bay, and 4) from mid-channel of the mainstem river to the western end of Gunston Cove. IVF values were subsequently converted to active chlorophyll a from regressions between IVF and chlorophyll a measured from grab samples collected during each trip. The position of each IVF reading on the transect path was determined by Loran-C. Note: Improper filters were used in the fluorometer during April and May 1991 so data is not included. For the period 1991 - 1993, the chlorophyll data in the Horizontal profiles from the tributaries (Potomac, Choptank and Patapsco) were miscalculated because the blank of the dissolved fraction was mistakenly subtracted twice from the sample. This mistake was realized and those data have been corrected as of the 4/15/95 data submittal. The implication of this mistake was also reflected in the productivity data set since assimilation ratios are calculated as part of this program.

Purpose:

The state of Maryland, in cooperation with the US EPA Chesapeake Bay Program, has used in vivo fluorescence to measure horizontal and vertical profiles of chlorophyll a between fixed monitoring stations in the Maryland Chesapeake Bay mainstem and tidal tributaries since August 1984. A horizontal transect program from the during the months of April-September began in the Potomac estuary in August 1990. The program is designed to give comprehensive spatial and temporal information on phytoplankton. Sampling is performed in conjunction with the Maryland phytoplankton, zooplankton and water quality monitoring programs.

Supplemental_Information:

STATION NAMES AND DESCRIPTIONS

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>Vertical Profile and Horizontal Transect  End Point Stations.
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CB1.1 -Mouth of Susquehanna River-Main Bay
CB2.1 -South West of Turkey Point-Main Bay
CB2.2 -West of Still Pond near Buoy R 34-Main Bay
CB3.1 -South East of Gunpowder Neck between Buoys 24A and 24B Main Bay
CB3.2 -North West of Swan Point near Buoy R 10- Main Bay
CB3.3W -North West of Bay Bridge-Main Bay
CB3.3C -North of Bay Bridge-Main Bay
CB3.3E -North East of Bay Bridge-Main Bay
CB4.0W -South West of Thomas Point Shoal-Main Bay
CB4.0C -South of Thomas Point Shoal-Main Bay
CB4.0E -South East of Thomas Point Shoal-Main Bay
CB4.1W -South East of Horseshoe Point-Main Bay
CB4.1C -South West of Kent Point-Main Bay
CB4.1E -South of Kent Point-Main Bay
CB4.2W -North West of Plum Point-Main Bay
CB4.2C -South West of Tilghman Island near Buoy BWCR-Main Bay
CB4.2E -South West of Tilghman Island-Main Bay
CB4.3W -East of Dares Beach-Main Bay
CB4.3C -East of Dares Beach near Buoy R 64-Main Bay
CB4.3E-Mouth of Choptank River-Main Bay
CB4.4 -North East of Cove Point-Main Bay
CB5.1 -East of Cedar Point East of PR Buoy-Main Bay
CB5.2 -East of Point No Point-Main Bay
CB5.3 -North East of Smith Point at Virginia State Line-Main Bay
LE2.3 -Mouth of Potomac River-Main Bay
ANPC -Annapolis City dock-Severn River
ANPS -Sandy Point Park near Annapolis-Main Bay
SOL-Solomons Island CBL dock-Patuxent River
TIL -West entrance of Knapps Narrows on Tilghman Island
TOLCHES-Entrance to marina south of Tolchester Beach
BENEDIC-Old Benedict Estuarine Reseach Laboratory-Benedict MD
CB5.1-Off Cedar Point at RB HI Buoy-Patuxent River
CB5.1W-Between Cedar Point and Cove Point in mid channel-Patuxent River
LE1.4-Between Drum Point and Fishing Point in mid channel-Patuxent River
LE1.3 -North of Point Patience and ESE of Half Pone Point in mid channel-Patuxent River
LE1.2-South West of Petersons Point in mid channel-Patuxent River
LE1.1 -Between Jack Baysandspit and Sandgates in mid channel-Patuxent River
RET1.1-East North East of Long Point in midchannel-Patuxent River
TF1.7-East South East of Jacks Creek in mid channel-Patuxent River
TF1.6-Off wharf at Lower Marlboro in mid channel-Patuxent River
TF1.5 -At Nottingham in mid channel-Patuxent River
TF2.3 -Off Indianhead at Buoy N 54-Potomac River
RET2.2 -Off Maryland Point at Buoy 19-Potomac River
LE2.2-Off Ragged Point at buoy BW 51B-Potomac River
ET4.2 -South of Eastern Neck Island at Buoy 9-lower Chester River
ET5.1 -Downstream of confluence with Tuckahoe Creek-upper Choptank River
ET5.2 -Near Rt. 50 bridge at Cambridge-lower Choptank River
EE3.1-North Tangier Sound North of Buoy R 16-Main Bay
WT5.1 -East of Hawkins Point at Buoy 5M-Patapsco River (Baltimore Harbor)
3S -South of Sandy Point Light House-Main Bay

4S -North of Sandy Point Light House-Main Bay

>Potomac River Horizontal Transects. Note, this station list represents only the start and ending stations of cross river transects.

XEA9075-400 yds. N of buoy 64
XEA6000C-Red buoy 62 off Gunston Cove
XEA6000W-300 yds. off boat ramp at Pohick Bay Regional Park
XEA5000C-Buoy 51
XEA5000E-250 yds. W. of shoreline parallel to buoy 51
XEA5000W -Middle of Occoquan Bay parallel to buoy 51
XEA4000C -Green buoy 45, off Mattawoman Creek
XEA4000E -Red day marker 6, Mattawoman Creek
XDA3000C -Green buoy 33
XDA3000E-600 yds. W. of shoreline in Wades Bay parallel to green buoy 33
XDA3000W-450 yds. E. of shoreline parallel to green buoy 33
RET2.2 -10 yds. N. of buoy 19

Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 19840701
Beginning_Time: unknown
Ending_Date: 20090916
Ending_Time: unknown
Currentness_Reference:
ground condition

Status:
Progress: Complete
Maintenance_and_Update_Frequency: None planned

Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -77.2936
East_Bounding_Coordinate: -75.9222
North_Bounding_Coordinate: 39.4794
South_Bounding_Coordinate: 37.9947

Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: ANALYZED
Theme_Keyword: Water
Theme_Keyword: Fluorescence
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Chesapeake Bay
Place_Keyword: Potomac River
Place_Keyword: Maryland
Place_Keyword: Patuxent River
Place_Keyword: Chester River
Place_Keyword: Choptank River
Place_Keyword: Patapsco River
Stratum:
Stratum_Keyword_Thesaurus: None
Stratum_Keyword: Water Column
Temporal:
Temporal_Keyword_Thesaurus: None
Temporal_Keyword: monthly
Temporal_Keyword: bimonthly

Access_Constraints: None

Use_Constraints:
Use at your own risk

Point_of_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Jacqueline Johnson
Contact_Organization: Interstate Commission on Potomac River Basin
Contact_Position: Chesapeake Bay Program Living Resources Data Manager
Contact_Address:
Address_Type: mailing and physical address
Address:
410 Severn Avenue, Suite 109
City: Annapolis

State_or_Province: Maryland
Postal_Code: 21403
Country: USA
Contact_Voice_Telephone: 1-800-968-7229
Contact_Voice_Telephone: 410-267-5729
Contact_Facsimile_Telephone: 410-267-5777
Contact_Electronic_Mail_Address: jjohnson@chesapeakebay.net
Hours_of_Service: 7:00 a.m. to 2:00 p.m. Monday Through Friday
Contact Instructions:
unavailable

Data_Set_Credit:
Morgan State University, BENEDICT ESTUARINE RESEARCH LABORATORY, Maryland Department of Natural Resources and EPA Chesapeake Bay Program

Security_Information:
Security_Classification_System: None
Security_Classification: Unclassified
Security_Handling_Description: None

Native_Data_Set_Environment:
Microsoft Access Database

Cross_Reference:
Citation_Information:
Originator: Jacqueline Johnson
Publication_Date: 20000101
Publication_Time: Unknown
Title:
2000 Users' Guide to Chesapeake Bay Program Biological and Living Resources Data
Edition: Version 1
Publication_Information:
Publication_Place: Annapolis, MD
Publisher: USEPA CHESAPEAKE BAY PROGRAM OFFICE
Other_Citation_Details:
Unknown
Online_Linkage: https://archive.chesapeakebay.net/pub/living_resources/guide2000.pdf

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Data_Quality_Information:

Attribute_Accuracy:
Attribute_Accuracy_Report:
In Vivo fluorescence readings wer converted into Chlorophyll A concentrations by a regression calibration with grab samples for chlorophyll a taken in the field.

Logical_Consistency_Report:
Not Applicable

Completeness_Report:
In vivo fluorescence (IVF) was measured on a Turner Designs Model 10000 fluorometer from July 1984 thru June 1998. Beginning in June of 1996, a Turner Designs Model 10-AU-005 was used for some of the tributary stations. Beginning in March, 1999, a Turner Designs Model 10-AU-005 was used for all stations.

Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
Sample site latitude and longitude positional accuracy is tested by visual comparison of hard copy check plots to the source materials and verifying the location of the data on-screen relative to other data layers in the same geographic area.

Chesapeake Bay Program Analytical Method Code CHL_F101

Sampling station location along transects was determined using the simple geometry of right triangles to compute latitude and longitude. Calculations were based on the following assumptions: a) the transect was over a straight line from departure station to arrival station, b) boat speed was assumed to be constant, c) the Latitudes and Longitudes of end point stations were consistent. Equations were based on the relationship of total strip recorder tape length being proportional to actual distance between stations. Sampling position was based on the distance from the starting position of the strip recorder tape of the at sample time against the total length of the tape at the destination station.

TOT_DIST=(((LONG_DES-LONG_DEP)**2)+((LAT_DES-LAT_DEP)**2))
ALPHA=ARCTAN((LAT_DES-LAT_DEP)/(LONG_DES-LONG_DEP))
SMP_DIST = TOT_DIST * (DIS_MM / TOT_LEN);

SAMPLELONG ~IF LONG_DEP < LONG_DES THEN
LONG = LONG_DEP + ABS(COS(ALPHA) * SMP_DIST;
ELSE LONG = LONG_DEP - ABS(COS(ALPHA) *SMP_DIST;

SAMPLE LAT ~IF LAT_DEP < LAT_DES THEN
LAT = LAT_DEP + ABS(SIN(ALPHA) *SMP_DIST);
ELSE LAT = LAT_DEP- ABS(SIN(ALPHA) * SMP_DIST);

WHERE
TOT_DIST-Actual Total Distance Between Departure and Destination Station
LONG_DES- Longitude Destination Station
LONG_DEP- Longitude Departure Station
LAT_DES- Latitude Destination Station
LAT_DEP- Latitude Departure Station
SMP_DIST- Actual distance of sampling site from transect Departure Station
DIS_MM- Distance from beginning of strip chart recording to sampling point
TOT_LEN- Total Length of Strip Chart Recording in millimeters.

Chesapeake Bay Program Analytical Method Code CHL_F102
Fluorescence is measured with a turner model 10000 fluorometer, position by interpolation from loran-c fitx taken every 5 minutes. Positions on transect were interpolated using equation in method CHL_F 101.

Chesapeake Bay Program Analytical Method Code CHL_F103:

In vivo fluorescence (IVF) is measured on a Turner Designs Model 10000 fluorometer and beginning in June of 1996 Turner Designs Model 10-AU-005CE fluorometer was used. Station positions in data set are approximations of actual positions in the field. Between 1984 and 1997 station station latitudes and longitudes are input into a Loran-C receiver and sampling begins when boat reaches pre-programmed coordinates. Loran-C is accurate to +/- 1500 ft. The actual Loran coordinates for each sampling event were not recorded in data set.

-Chesapeake Bay Program Analytical Method Code CHL_F104
Station positions in data set are actual positions in the field. For Vertical sampling stations Station latitudes and longitudes are input into a GPS receiver and sampling begins when boat reaches pre-programmed coordinates. For horizontal transect measurements actual latitudes and longitudes are output from a GPS receiver and recorded in data set. Beginning in 1999, a Turner Designs Model 10-AU-005CE fluorometer was used and a Lowrance GPS receiver was used for positioning. Prior to 1999 a Turner Designs Model 10000 fluorometer was used.

-Chesapeake Bay Program Analytical Method Code CHL_F109
Horizontal transect measured with a turner model 10-au-005 fluorometer, position by position by interpolation from Fixed start and end points of transect. Positions on transect were interpolated using equation in method CHL_F 101.

Vertical_Positional_Accuracy:

Vertical_Positional_Accuracy_Report:

Chesapeake Bay Program Sample_Type Code.
ISM_V: Water is pumped from depth. A Hydrolab CTD with a pressure/depth sensor and hose mounted on the sampling array are lowered through the water column to obtain profiles. Accurate to Plus or minus 0.1 meter.
ISM_H-A hull pump mounted 0.5 meters below the boat waterline is used to pump water through the fluorometer. Accurate to Plus or minus 0.1 meter.

Lineage:

Source_Information:

Source_Citation:

Citation_Information:

Originator: Richard Lacouture
Originator: Stella Sellner
Publication_Date: 20000101
Publication_Time: Unknown
Title:
Maryland Chesapeake Bay Water Quality Monitoring Program:Mainstem and Tributary Living Resource Component
Publication_Information:
Publication_Place: Annapolis, Maryland USA
Publisher: US EPA Chesapeake Bay Program
Other_Citation_Details:
Unknown
Online_Linkage: http://www.chesapeakebay.net
Larger_Work_Citation:
Citation_Information:
Originator: Jacqueline Johnson
Publication_Date: 19981231
Title:
Chesapeake Bay Program Plankton Database
Edition: Version 2.0
Geospatial_Data_Presentation_Form: database
Publication_Information:
Publication_Place: Annapolis, MD

Publisher: US EPA Chesapeake Bay Program
Other_Citation_Details:
None
Online_Linkage: www.chesapeakebay.net
Type_of_Source_Media: digital database file
Source_Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 19840701
Beginning_Time: unknown
Ending_Date: 20071231
Ending_Time: unknown
Source_Currentness_Reference:
ground condition
Source_Citation_Abbreviation:
None
Source_Contribution:
None
Process_Step:
Process_Description:
After collection of all field voltages and grab samples all data is returned to the lab. Chlorophyll A calibration samples are processed and regression conversions are determined and applied to fluorescence voltage inorder to derive invivo chlopophyll a concentrations. Latitude and Longitude positions were then determined if necessary.

> DETERMINATION OF CHLORPHYLL a FOR DERIVATION OF FLUORESCENCE TO CHLOROPHYLL REGRESSIONS

Generally, a volume between 100-500 ml is filtered at < 10 p. s. i. vacuum pressure onto Whatman GF/F filters with ~ 10 drops of MgCO3 added just prior to completion of filtration. Spectrophotometric analysis of these grab samples is performed with a Milton Roy Spectronic 501. Each sample is first read at an absorbance of 750 nm. to determine turbidity and then read again at an absorbance of 665 nm. Each sample is then acidified with 3 drops of 2N HCl and reread at 665 nm and at 750 nm. Final chlorophyll a concentrations are then calculated using the formula outlined in Strickland and Parsons, Standard Methods for Seawater Analysis.

Beginning in march, 1999, a new technique for determining chl a was initiated. The new procedure is as follows: The spectrophotometer is zeroed with the blank at 750nm. Each sample is read at this wavelength and the value is recorded in the data book. The spectrophotometer is then changed to a wavelength of 665nm and zeroed. Then, the above process is repeated. After the initial reading at 665nm is recorded, 2 drops of 1N HCl is added to each sample. The spectrophotometer is then changed to a wavelength of 664nm and rezeroed. The samples are then read again at 664nm and 750nm. After this process is complete, the samples are removed from the cuvettes and each cuvette is rinsed with 90% acetone 3 times before being filled again. All values that have been recorded in the data book are entered into a spreadsheet that contains the formula for calculating chlorophyll concentration.
The formula used is from Standard Methods:

$$\text{chl a (mg/m3)} = \frac{26.7((665b-750b)-(664a-750a)) * ve}{Vf * l}$$

where ve = volume of extracted sample
and Vf = volume filtered

The chlorophyll a concentrations are used to formulate a linear regression of chlorophyll a against IVF (in vivo fluorescence). These linear regressions are then used to convert the remaining IVF's to chlorophyll a. Only the resulting CHLA, and not the IVF itself, is contained in this data file. Beginning October, 1990, for the Patuxent, and for all systems in November, all IVF values were corrected for background-dissolved fluorescence. This fluorescence was estimated on samples passing 0.22 um Millipore filters. The y-intercept of the regression is analyzed with a t-test to determine whether it is significantly different than zero. If the intercept is not significantly different, zero is substituted in the regression equation. Beginning in March, 2000, separate regressions were generated for horizontal transects and vertical profiles and for the upper and lower portions of the Maryland Bay and for the horizontal transects and vertical profiles of the Patuxent River. These regressions were applied to the corresponding data. Negative CHLA values reflect values below detection threshold of methods. In the ASCII version of the data set, prior to cruise 47, values proceeded by '>'indicate IVF values where the fluorometer was off scale indicating values greater than the highest value for that scale. Prior to March, 1987, horizontal IVF data was recorded directly onto a strip chart recorder.

For purposes of determining the actual geographical location of a reading, the following assumptions were made:

(1) The total distance between the two stations is represented by the total length of the strip chart.
(2) The course from one station to the next was a straight line.
(3) The speed was constant from one station to the next so that there is a linear relationship between units along the chart (or readings on the computer) and distance from the start station. The actual geographical location is a distance of DIST away from the start station along a straight line toward the destination station.

For horizontal transects on cruises conducted after January, 1987, IVF values are automatically transcribed onto a personal computer (instead of a strip chart recorder used on earlier cruises) directly from the fluorometer. The computer

takes fluorescence readings every 5 seconds and records a mean value of these readings every 45 seconds. Beginning in March 1999, a Lowrance 212 GPS receiver is being used to record latitude and longitude coordinates for each mean fluorescence value.

Source_Used_Citation_Abbreviation:
None
Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Jacqueline Johnson
Contact_Organization: Interstate Commission on Potomac River Basin
Contact_Position: Chesapeake Bay Program Living Resources Data Manager
Contact_Address:
Address_Type: mailing and physical address
Address:
410 Severn Avenue, Suite 109
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21403
Country: USA
Contact_Voice_Telephone: 1-800-968-7229
Contact_Voice_Telephone: 410-267-5729
Contact_Facsimile_Telephone: 410-267-5777
Contact_Electronic_Mail_Address: jjohnson@chesapeakebay.net
Hours_of_Service: 8:00 a.m. to 4:00 p.m. Monday Through Friday
Contact Instructions:
unavailable

Process_Step:
Process_Description:
Metadata imported.
Source_Used_Citation_Abbreviation:
C:\DOCUME~1\jjohnson\LOCALS~1\Temp\xml427.tmp
Process_Date: 20081002
Process_Time: 13343500

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Spatial_Data_Organization_Information:
Indirect_Spatial_Reference_Method:
Chesapeake Bay and tidal tributaries in state of Maryland
Direct_Spatial_Reference_Method: Point
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: Area point
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: Entity point

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Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Geographic:
Latitude_Resolution: 30
Longitude_Resolution: 30
Geographic_Coordinate_Units: Decimal degrees
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1983
Ellipsoid_Name: Geodedic Reference System 80
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.98
Vertical_Coordinate_System_Definition:
Altitude_System_Definition:
Altitude_Datum_Name: North American Vertical Datum of 1988
Altitude_Resolution: .1
Altitude_Distance_Units: meters
Altitude_Encoding_Method: Attribute Values
Depth_System_Definition:
Depth_Datum_Name: Chart datum; datum for sounding reduction
Depth_Resolution: .1

Depth_Distance_Units: meters
Depth_Encoding_Method: Attribute Values

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Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: SOURCE
Attribute_Definition:
Data Collection Agency
Attribute_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: ANS
Enumerated_Domain_Value_Definition:
Academy of Natural Science
Enumerated_Domain_Value_Definition_Source:
Living Resources Data Dictionary
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: CRUISE
Attribute_Definition:
Chesapeake Bay Program Cruise Number
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: Chesapeake Bay Program Bay Cruise Numbers
Codeset_Source: Living Resources Data Dictionary
Detailed_Description:
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Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
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Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
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Attribute_Label: SAMPLE_DATE
Attribute_Definition:
Sampling Date (YYYYMMDD)
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 19840701
Range_Domain_Maximum: 19991231
Detailed_Description:
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Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
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Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: Longitude

Attribute_Definition:
Sampling Station Longitude
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 77.1167
Range_Domain_Maximum: 77.3180
Attribute_Units_of_Measure: ment: decimal degrees

Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: STATION
Attribute_Definition:
Sampling Station (if ISM_V sample_type)
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: Chesapeake Bay Program Standard Station Identifier
Codeset_Source: Living Resources Data Dictionary

Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: SAMPLE_TIME
Attribute_Definition:
Sample Collection Time
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 060000
Range_Domain_Maximum: 220000
Attribute_Units_of_Measure: ment: HH:MM:SS-hours minutes and seconds

Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: Latitude
Attribute_Definition:
Sampling Station Latitude
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 38.3467
Range_Domain_Maximum: 38.6818
Attribute_Units_of_Measure: ment: Decimal Degrees

Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: SAMPLE_TYPE

Attribute_Definition:
Sample Collection Type
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: Chesapeake Bay Program Sample Collection Types
Codeset_Source: Living Resources Data Dictionary
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: SAMPLE_DEPTH
Attribute_Definition:
Sample Collection Depth (Meters)
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 0.5
Range_Domain_Maximum: 36
Attribute_Measurement_Resolution: .1
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: PARAMETER
Attribute_Definition:
Parameter Sampled
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: CHL_F
Enumerated_Domain_Value_Definition:
Chlorophyll a Fluorescnece
Enumerated_Domain_Value_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: Chesapeake Bay Program Sample Parameters
Codeset_Source: Living Resources Data Dictionary
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: VALUE
Attribute_Definition:
Reported Parameter Value
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 0
Range_Domain_Maximum: 800
Attribute_Units_of_Measure: ment: micrograms per liter
Attribute_Domain_Values:
Unrepresentable_Domain:
Numeric value based on methodology and

Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: UNITS
Attribute_Definition:
Parameter Reporting Units
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: Living Resources Reporting Units
Codeset_Source: Living Resources Data Dictionary
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: QUALIFIER
Attribute_Definition:
Detection Limit Qualifier
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: CBP Detection Limit Codes
Codeset_Source: Living Resources Data Dictionary
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: METHOD
Attribute_Definition:
Parameter Collection Method Code
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: CBP Living Resources Methods Codes
Codeset_Source: Living Resources Data Dictionary
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: SALZONE
Attribute_Definition:
Salinity Zone
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: Venicean Salinity Zones
Codeset_Source: Living Resources Data Dictionary
Attribute_Domain_Values:
Unrepresentable_Domain:
Standard Venice Salinity classes used

Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: R_DATE
Attribute_Definition:
Data Version Date
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 19850301
Range_Domain_Maximum: 19991231
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: BASIN
Attribute_Definition:
Chesapeake Bay Basin Designation
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: Chesapeake Bay Basin Designation
Codeset_Source: Living Resources Data Dictionary
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: SER_NUM
Attribute_Definition:
Source Sample Serial Number
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Unrepresentable_Domain:
Source specific internal values
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: HUC8
Attribute_Definition:
USGS Eight Digit Hydrologic Unit Code
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: USGS Eight Digit Hydrologic Unit Code
Codeset_Source: US Geologic Survey
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:

Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: FIPS
Attribute_Definition:
Federal Information Processing Code
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name: Federal Information Processing Code
Codeset_Source: Federal Information Processing Center
Detailed_Description:
Entity_Type:
Entity_Type_Label: MDFLHFyy.TXT or MDFLVFyy.TXT or MDFLPFyy.TXT
Entity_Type_Definition:
Horizontal or Vertical fluorescence data
Entity_Type_Definition_Source:
Chesapeake Bay Program Fluorescence Monitoring Database
Attribute:
Attribute_Label: LL_DATUM
Attribute_Definition:
Geographic Datum for Station Position
Attribute_Definition_Source:
Living Resources Data Dictionary
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: NAD27
Range_Domain_Maximum: NAD83

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Distribution_Information:
Distributor:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Jacqueline Johnson
Contact_Organization: Interstate Commission on Potomac River Basin
Contact_Position: Chesapeake Bay Program Living Resources Data Manager
Contact_Address:
Address_Type: mailing and physical address
Address:
410 Severn Avenue, Suite 109
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21403
Country: USA
Contact_Voice_Telephone: 1-800-968-7229
Contact_Voice_Telephone: 410-267-5729
Contact_Facsimile_Telephone: 410-267-5777
Contact_Electronic_Mail_Address: jjohnson@chesapeakebay.net
Hours_of_Service: 8:00 a.m. to 4:00 p.m. Monday Through Friday
Contact Instructions:
unavailable
Distribution_Liability:
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Standard_Order_Process:
Fees: None
Ordering_Instructions:
None
Standard_Order_Process:
Digital_Form:

Digital_Transfer_Information:
Format_Name: ASCII
Format_Version_Date: 20000101
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: www.chesapeakebay.net
Offline_Option:
Offline_Media: CD-ROM
Recording_Capacity:
Recording_Density: 750
Recording_Density_Units: megabite
Recording_Format: ISO 9660
Compatibility_Information:
None
Fees: None
Ordering_Instructions:
None
Turnaround: 5 Working Days
Custom_Order_Process:
None
Technical_Prerequisites:
None
Available_Time_Period:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 19840701
Beginning_Time: unknown
Ending_Date: 20000101
Ending_Time: unknown

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Metadata_Reference_Information:
Metadata_Date: 20000124
Metadata_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Jacqueline Johnson
Contact_Organization: Interstate Commission on Potomac River Basin
Contact_Position: Chesapeake Bay Program Living Resources Data Manager
Contact_Address:
Address_Type: mailing and physical address
Address:
410 Severn Avenue, Suite 109
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21403
Country: USA
Contact_Voice_Telephone: 1-800-968-7229
Contact_Voice_Telephone: 410-267-5729
Contact_Facsimile_Telephone: 410-267-5777
Contact_Electronic_Mail_Address: jjohnson@chesapeakebay.net
Hours_of_Service: 8:00 a.m. to 4:00 p.m. Monday Through Friday
Contact Instructions:
unavailable
Metadata_Standard_Name: NBII Content Standard for National Biological Information Infrastructure Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Access_Constraints: None
Metadata_Use_Constraints:
None
Metadata_Security_Information:
Metadata_Security_Classification_System: None
Metadata_Security_Classification: Unclassified
Metadata_Security_Handling_Description:
None

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