Dissolved Oxygen Assessment in the Chesapeake Bay Community Seminar
Hosted by the Tidal Monitoring and Analysis Workgroup (TMAW)

Tuesday, May 7, 2013
10AM-3PM
U.S. Fish and Wildlife Service's Field Office, Annapolis, MD
(Click for Directions)
Conference Line: (866) 299-3188 Code: 2679856222
Adobe Connect: https://epa.connectsolutions.com/doseminar/

Seminar Materials can be found at:
http://www.chesapeakebay.net/calendar/event/19317/

AGENDA

10:00 AM **Welcome, Introductions** – Walter Boynton (TMAW Chair), Liza Hernandez (TMAW Coordinator) and Lea Rubin (STAR Staffer)
(Light refreshments provided)

10:10 AM **Kriging-based Interpolation of Dissolved Oxygen in Chesapeake Bay: Comparing main-channel to full-bay results in early and late summer** – Rebecca Murphy (EA Engineering, Science, and Technology, Inc.)

A statistical interpolation method (kriging) was used to interpolate oxygen, salinity, and temperature along the main channel of the Chesapeake Bay for a 60 year analysis of mainstem hypoxic volumes compared to stratification and nutrient loads. Further analyses included analyzing the dissolved oxygen data since the 1980s for the full Bay using a different kriging-based method that allows for interpolation around boundaries. Results from the two methods were consistent and showed different early and late summer long-term trends in hypoxic volume.

10:50 AM **Using the Chesapeake Bay Program Interpolator to Analyze Chesapeake Bay Monitoring Program Data –** Mark Trice (Maryland Department of Natural Resources)

M. Trice will present work conducted by B. Romano at the Maryland Department of Natural Resources (MDDNR) using the Chesapeake Bay Interpolator to calculate annual hypoxic and anoxic volumes of the Bay and the tidal tributaries; these are the same methods used by analysts at the Chesapeake Bay Program Office (CBPO). M. Trice will also present some of his older work assessing continuous monitoring DO data for instantaneous criteria, 7-day and 30-day means, as well time standardization of DO data to daily minimums.

11:30 AM **Using Monitoring Data and Water Quality Model Simulation to Observe Summer Hypoxia in the Mainstem Portion of the Chesapeake Bay** – Younjoo Lee (University of Maryland Center for Environmental Science at the Horn Point Laboratory)

Y. Lee will present the about the processes controlling summer hypoxia in the Mainstem portion of the Chesapeake Bay. This research is based on 1) the Chesapeake Bay Monitoring Program data collected from 1985 to 2007 and 2) the water quality model simulation from 1996 to 2005. Based on the Data-Interpolating Variational Analysis

(DIVA), observed dissolved oxygen (DO) fields were interpolated to estimate hypoxic volume and then analyzed using a Self-organizing map (SOM) method to extract the time-varying spatial patterns.

12:10 PM **Break for Lunch** *(bring lunch or check out the café across the street)*

1:10 PM **Combining Observations and Numerical Model Results to Improve Estimates of Hypoxic Volume within the Chesapeake Bay** – Marjorie Friedrichs (Virginia Institute of Marine Science)

M. Friedrichs will present results from her recent study with M. Scully using multiple Bay models to assess uncertainties in interpolated hypoxic volume estimates resulting from temporal factors (due to not being collected synoptically) and spatial factors (due to data being collected at discrete stations).

1:50 PM **Using Circulation Models to Understand the role of Physical Processes in Controlling Inter-annual Variations of Hypoxia in Chesapeake Bay** – Malcolm Scully (Woods Hole Oceanographic Institution)

M. Scully will present results from a 15-year simulation using a 3-D circulation model with a simple 1-term representation of dissolved oxygen dynamics. This simplified approach essentially removes the variability due to biological processes in order to isolate the role that physical processes play in modulating inter-annual variations in hypoxia in the Chesapeake Bay. Simulations and the analysis of model residuals highlight both the role of wind forcing and nutrient loading in controlling the hypoxic volumes in the Bay.

2:30 PM **A Combination of Quantitative Data Analysis, Regional (coarse-scale) Budget Models, and 3-D Hydrodynamic-biogeochemical Models to Understand Patterns of Dissolved Oxygen** – Jeremy Testa (University of Maryland Center for Environmental Science at the Horn Point Laboratory)

J. Testa evaluates the relationships between N loading, O2 depletion, and hypoxia over different time and space scales. Modeling studies and data analysis suggest (1) positive feedbacks associated with hypoxia-induced increases in N and P recycling and (2) a spatial and seasonal dependence in the response of algal growth, respiration and hypoxia to nutrient loading in Chesapeake Bay.

3:10 PM **Closing Remarks and Discussion**

3:30 PM **Adjourn**

NEXT TMAW CONFERENCE CALL
June 13, 2013
11AM – 3PM