



Modeling Quarterly Review Meeting

July 23rd, 2013

CBPO Conference Room – The Fishshack

410 Severn Avenue

Annapolis, MD

For Remote Access:

Adobe Connect <https://epa.connectsolutions.com/modeling/> (Enter as guest)

Conference Bridge: (866)-299-3188 code 410-267-5731#

- 10:00 am** **Announcements and Amendments to the Agenda – Montali-Currey**
- 10:05 am** **Potential Impacts of Climate Change on Washington Metropolitan Area Water Supply – Ahmed-Schultz**
Cherie Schultz and Sarah Ahmed of ICPRB will describe the use of the Phase 5 Watershed Model to examine estimated future Potomac flows and the report's findings on water supply for the Nation's capital.
- 10:20 am** **Improving Estimates of Nutrient Loads to the Chesapeake Bay through Satellite Imagery-based Forest Disturbance Metrics – Deel**
Lindsay will present initial preliminary estimates of disturbed forest area due to silviculture, insect defoliation, drought, and other disturbances over time. Ultimately, an annual time series of the area of forest disturbance in each of the WSM land-river segments would provide the basis for improving Watershed Model performance.
- 10:35 am** **Phase 6 Sensitivities Analysis Overview – Shenk**
Gary will provide an overview of the work to document in detail the input-export response of all land uses in all model land-segments to provide necessary information for the development of an all-PQUAL based Phase 6 Watershed Model.
- 10:45 am** **AGCHEM Sensitivities Analysis – Tian**
Richard will describe the overall findings and implications of the analysis of AGCHEM nutrient export sensitivities to input loads.
- 11:35 am** **Extension of linked Watershed, CH3D, and ICM Models to 2011 – Bhatt**
Gopal will describe the extension of the Watershed Model from 2002 to 2012 using a new NLDAS precipitation input. The calibration and application of the model will be described.
- 12:00 noon** **LUNCH**
- 1:00 pm** **The Chesapeake Bay Watershed and Knowledge Systems for Sustainability (KSS) – Fowler**
Lara Fowler (Penn State) will describe a specific Chesapeake Bay KSS project that's just getting underway. The mission of KSS is to leverage technical, financial, and other resources to better address critical issues facing land, water and energy decisions, and to help ensure that information is

seamlessly transferable between institutions and to decision makers, both at a policy level and on the ground.

- 1:20 pm Agricultural Modeling Subcommittee Update – Dubin**
Mark Dubin will describe the work of the nascent Agricultural Modeling Subcommittee that will advise the Agricultural Workgroup, but will also cover topics that overlap with the WQGIT and Modeling Workgroup.
- 1:35 pm Evaluation of RDM for Chesapeake Bay Water Quality Decision-making Under Uncertainty – Julius-Johnson**
Susan Julius and Tom Johnson will describe the progress in a prototype application of RDM (Robust Decision Making) in the Chesapeake. RDM is a decision framework which provides quantitative estimates of uncertainty related to management decisions and climate change. The proposed STAC WS on CC will also be discussed.
- 1:55 pm Climate Change Forcing Functions – Najjar-Herrmann**
Ray Najjar and Maria Herrmann will present a Phase 5 model sensitivity analysis of the separate climate change forcing functions of hydrology including temperature, precipitation change, and potential evapotranspiration. The work is aimed at providing a deeper understanding of estimated hydrologic differences under climate change conditions.
- 2:15 pm Modeling the Terrestrial Effects of Climate Change on Nutrient Loading to the Chesapeake Bay – Wilusz**
Dano Wilusz (JHU) will describe his work examining the influence of climate change on trends in nutrients, sediment, and flow in the Chesapeake watershed.
- 2:45 pm Chesapeake Modeling Lab Action Team Status - Bennett**
The status of the response to the NAS recommendation for a Chesapeake Modeling Laboratory will be reviewed.
- 3:00 pm ADJOURN**

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- 10:00 am Announcements and Amendments to the Agenda – Currey-Montali**
- 10:05 am Watershed Modeling for Nanosilver Risk Assessment – Dale**
Amy Dale will describe the development of a nanosilver watershed transport and transformation simulation for nanoparticle risk assessment. Nanosilver is a widely used bioavailable broad-spectrum biocide.
- 10:20 am Progress on Lower Susquehanna Dams – Cerco**
Carl will describe the progress being made on the simulation of the Lower Susquehanna Reservoirs including movement of Jan. 1996 Big Melt storm to June, October, and the simulation of “No Storm” conditions to examine large flow events simulated under Conowingo infill conditions on Chesapeake DO and SAV-clarity.
- 11:10 am Stoplight Plots of DO and Clarity – Linker-Tian**
Updated Conowingo infill scenario stoplight plots of DO and water clarity attainment will be presented.
- 11:25 am Tributary Hypoxia: Is it Locally Initiated or Primarily under Bay’s Influence – Wang-Irby**
Harry Wang, Marjy Friedrichs, and Isaac Irby of VIMS conducted a data analysis comparing hypoxia onset timing and duration characteristics in the Maryland tributaries. It was found that the hypoxic events in the tributaries distinctly differentiate themselves from the associated events in the main stem of the Bay, suggesting that the initiation of hypoxia in the tributaries is triggered by local conditions.
- 11:55 am Extension of the WQSTM to 2011 and Shallow Water Assessment Plans – Cerco**
Extending the WQSTM to 2012 in order to incorporate, for the first time, the shallow water monitoring observations into CBP model calibration will be discussed.
- 12:15 pm LUNCH**
- 1:00 pm Developing Oxidized Nitrogen Atmospheric Deposition Source Attribution from CMAQ for Air-Water Trading for Chesapeake Bay – Dennis-Linker**
A demonstration prototype approach to applying aggregate emission reductions beyond the 2020 Air Allocation Scenario will be reviewed. The prototype demonstration is an approach for establishing CBP airshed/watershed nitrogen

exchanges on an aggregate basis for all CBP states using delta emissions from proposed updated state emissions and allocation air scenario in order to account for air nitrogen emission load reductions made beyond the 2020 Allocation Air scenario.

1:30 pm Considering Climate Change in the CMAQ Simulation System – Dennis

To prepare for climate change simulations with CMAQ, the VIC (Variable Infiltration Capacity) hydrologic model is being coupled with the WRF meteorological model. VIC is a macro-scale model and techniques to dynamically downscale global climate to regional climate using our WRF meteorological model are being developed at a 12km Chesapeake grid resolution. The coupled WRF-VIC system will work with climate change projections from global models to estimate changes in temperature, surface runoff, ET, and other variables of interest. CMAQ will be driven with these runs to develop changes in nitrogen deposition using mid-century simulations.

1:45 pm Assessment of the Influence of Sea Level Rise in the Chesapeake Bay – Wang

Progress in simulating sea level rise in the mid-century with the CH3D Hydrodynamic Model will be presented.

2:05 pm James River CHLa Study: 2012 Summary and 2013 Research – Butt

The status of the James River chlorophyll analysis will be reviewed.

2:50 pm ADJOURN