Modeling Workgroup Quarterly Review

April 2, 2024

Event webpage: Link
For Remote Access – Microsoft Teams: Link
Meeting number: 231 773 466 386 **Password:** PVEC4c
Phone number: +1 469-208-1525 **Access code**: 257 282 097#
To enter the webinar, please open the webinar link first.
Please note: the meeting link for the first day is different than the second day.
This meeting will be recorded for internal use only to assure the accuracy of meeting notes.

10:00 Announcements and Amendments to the Agenda – Mark Bennett, USGS and Dave Montali, Tetra Tech

10:05 Using Machine Learning Approaches for Phase 7 WSM – Kim Van Meter and Chaopeng Shen, PSU
The development of machine learning approaches to advance the calibration and application of the Phase 7 Watershed Model will be discussed.

10:20 Discussion of Machine Learning Approaches for Phase 7 WSM

10:30 Phase 7 Watershed Model Overview – Gary Shenk, USGS-CBPO
Gary will provide an updated timeline for completion of the Phase 7 Model in time for the 2026 partnership review.

10:45 Discussion of the Phase 7 Model Overview

10:55 Update on CalCAST Development – Isabella Bertani, UMCES-CBPO
Isabella will describe the progress made in work on improving the CalCAST model performance with the new calibration datasets (both average annual and annual) discussed at the January 2024 Quarterly.

11:15 Discussion of CalCAST Development

11:25 Progress in Phase 7 WSM Development – Gopal Bhatt, Penn State-CBPO
The NHDplus 100K scale Phase 7 Dynamic Watershed Model (DWM) is using a nested model segmentation of streams and rivers with a hybrid structure for the simulation of water quality processes using HSPF and non-iterative routing models. Gopal will survey the ongoing model development progress on the structure, implementation, and testing of a simplified water quality routing for small NHDplus streams for phosphorus and describe activities upcoming in the next quarter.

11:45 Discussion of Phase 7 WSM Development Progress

12:00 LUNCH

12:30 Phase 7 Land Use Progress – Peter Claggett, USGS-CBPO

12:50 Discussion of Phase 7 Land Use Progress

1:00 Development of Efficient Multi-Objective Optimization Procedures – Kalyan Deb, Pouyan Nejadhashemi, Gregorio Toscano, and Hoda Razavi, MSU
The presentation will focus on results of the Optimization Approach in Lancaster, PA, and demonstrate the integration of web-user and decision-making interfaces across county, state, and watershed levels.

1:30 Optimization Discussion

1:40 Most Implemented Agricultural and Urban Stormwater BMPs – Olivia Devereux (Devereux Consulting) and Auston Smith (EPA-CBPO)
Olivia will present the methodology and data used to show the percent contribution of each BMP to the total Phase III WIP reductions. This creates a ranking of the most important BMPs to the states in their planning efforts. Auston will present on the context for this effort, the RAND Climate Resilient Stormwater Support project (see next agenda item).

1:50 Stormwater Management in a Changing Climate SWM & AG BMPs – Michelle Miro and Krista Romita Grocholski, RAND
The presentation will be a quick overview of the project to apply existing, well-documented, open source, and public domain stormwater and/or watershed models under different future climate hydrologic conditions to determine relative change in pollutant removal efficiency in existing CBP-approved stormwater management BMPs under future climate conditions. Plans to work closely with the CBP will also be discussed.

2:05 Combined Discussion of Top 20 Most Implemented Agricultural and Urban Stormwater BMPs and Stormwater Management in a Changing Climate SWM & AG BMPs

2:15 Advances in Precision Agriculture Practices – Katie Walker, Chesapeake Conservancy
The presentation will feature new developments for site-specific modeling that support BMP implementation planning. A proof of concept has been deployed in the FieldDoc platform to support NPS reduction estimates.

2:45 Discussion of Precision Agriculture Practices

3:15 ADJOURN

Modeling Workgroup Quarterly Review

April 3, 2024

Event webpage: Link
For Remote Access – Microsoft Teams: Link
Meeting number: 214 987 693 568 **Password:** BreM2w
Phone number: +1 469-208-1525 **Access code**: 358 168 269#
To enter the webinar, please open the webinar link first.
Please note: the meeting link for the second day is different than the first day.
This meeting will be recorded for internal use only to assure the accuracy of meeting notes.
==========

10:00 Announcements and Amendments to the Agenda – Dave Montali, Tetra Tech and Mark Bennett, USGS

10:05 Update on Main Bay Model (MBM) Progress – Zhengui Wang and Joseph Zhang, VIMS
Progress on the MBM water quality simulation will be presented. First, we successfully tested a method in redistributing the total nutrient loading over time to fix the large anomalous nutrient concentrations related to watershed loading. Second, we also improved the simulation of nutrients and chlorophyll-a, and the latest results will be presented. Lastly, we will give a short statistical summary of the latest MBM model skill.

10:35 Discussion of the Main Bay Model (MBM) Progress

10:45 Phase 7 Update of Model Criteria Assessment – Richard Tian, UMCES-CBPO
Richard will provide progress on a water quality assessment of the entire tidal Bay.

11:05 Discussion of Whole Bay Criteria Assessment

11:15 East Coast Tracer Model – Nicole Cai, ORISE-CBPO
Progress on a regional cross-scale model of US East Coast estuaries and sounds will be described. The purpose of this study is to investigate the connections among different water bodies, which will provide useful information and insights such as a quantified approach to assess the influence of coastal ocean atmospheric deposition to nitogen loads at the Chesapeake Bay boundary.

11:30 Discussion of East Coast Tracer Model

11:40 Decarbonization Sensitivity Scenarios on GLIMPSE-GCAM-CMAQ – Chris Nolte, Dan Loughlin, and Jesse Bash, EPA-ORD
Initial work on decarbonization sensitivity scenarios on the atmospheric chemistry models of GLIMPSE, GCAM, and CMAQ will be described. Once estimated nitrogen deposition loads under estimated conditions of reduced carbon emission from stationary, mobile, and area sources are available from CMAQ the Phase 6 Watershed and Estuary Models will be run to understand the influence of reduced atmospheric nitrogen loads on water quality.

12:00 Discussion of Decarbonization Sensitivity Scenarios

12:10 LUNCH

12:40 Model Segment Viewer (MSV) Demonstration – Andy Fitch, USGS-CBPO
Andy will describe the extension of the MSV to the various Phase 6 and Phase 7 model grids of the Chesapeake watershed and tidal Bay. The MSV is a useful and easy to use web-based tool for model analysis and communication and is now widely available.

12:55 Discussion of MSV

1:05 Initial Progress With the Patapsco-Back MTM – Harry Wang, VIMS and Jeremy Testa, UMCES
The Patapsco-Back MTM Team, one of the three MTMs supported by a five year grant, will describe progress on the MTM.

1:25 Discussion of Patapsco-Back MTM

1:35 Progress on the Rappahannock MTM – Qubin Qin, East Carolina University and Jian Shen, Zhengui Wang, Pierre St-Laurent, VIMS
Progress on the Rappahannock MTM will be reviewed by the Rappahannock MTM Team.

1:50 Discussion of Rappahannock MTM Progress

2:00 Progress on the Choptank MTM – Jian Zhao, William Nardin, Elizabeth North, Larry Sanford, Jeremy Testa, UMCES and Jiabi Du, Texas A&M
Initial work on the Choptank MTM will be described by the Choptank MTM.

2:20 Discussion of Choptank MTM Progress

2:30 Progress in Estimating Nutrient Applications and Projecting Future Demand – Joseph Delesantro, ORISE-CBPO
Advances in estimating nutrient applications and estimating future nutrient demand will be reviewed.

2:45 Discussion of Crop Yield Calculations for Estimating Nutrient Application and Projecting Future Demand

2:55 Progress of the Agricultural Modeling Team – Tom Butler, EPA-CBPO
Tom will describe progress of the Ag Modeling Team in its role in determining the agricultural data inputs for the Phase 7 Watershed Model.

3:05 Discussion of Agricultural Modeling Team Progress

3:15 ADJOURN