



Modeling Workgroup Quarterly Review

October 4, 2022

Event webpage: [Link](#)

For Remote Access - WebEx Link:

<https://umces.webex.com/umces/j.php?MTID=m968a1f6eb07caa8aa3bd8caed8e5fae7>

Meeting number: 2622 491 8876 **Password:** 28iVMP3PTBU

Phone number: +1-408-418-9388 **Access code:** 2622 491 8876

To enter the webinar, please open the webinar link first.

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 Phase 7 Watershed Model Overview – Gary Shenk, USGS-CBPO
Gary will provide an overall summary of progress.

10:20 Discussion of the Phase 7 Model Overview

10:30 Update on CalCAST Development: Nitrogen Component – Isabella Bertani, UMCES

Isabella will provide an update on the progress made in the development of CalCAST, specifically focusing on adding the capability to predict nitrogen load. CalCAST is a relatively parsimonious Bayesian modeling tool that is being developed to test predictors and spatially calibrate parameters that will ultimately inform prediction of flow and loads at monitoring stations throughout the watershed.

10:50 Discussion of CalCAST development

11:00 Progress in Phase 7 WSM Development – Gopal Bhatt, Penn State

This quarter the NHDplus scale Phase 7 Dynamic Watershed Model (DWM) was expanded to include sediment simulation. DWM is using the nested model segmentation and hybrid process simulation structure as presented previously. Gopal will provide an overview of the progress made during this quarter on the aspects of (a) incorporation of CalCAST Stormflow in an operational DWM hydrology calibration framework, (b) incorporation of CalCAST Sediment in the DWM, and (c) minor refinements to the Total Flow model calibration.

11:30 Discussion of Phase 7 WSM Development Progress

11:40 Development of Efficient Multi-Objective Optimization Procedures – Gregorio Toscano, Kalyan Deb, Pouyan Nejadhashemi, Rafiei Vahid, and Hoda Razavi, MSU
Progress in the development of efficient multi-objective (MO) optimization procedures including developing generative MO optimization using the current hybrid optimization

procedure developed and to develop simultaneous MO customized optimization using population-based evolutionary algorithms.

12:10 Optimization Discussion

12:20 Formation of the Agricultural Modeling Team – Tom Butler, EPA-CBPO

Tom will describe the status of the Ag Modeling Team and its role in determining the agricultural data inputs for the Phase 7 Watershed Model. He will provide background for how this group will function in collaboration with the Modeling Workgroup.

12:30 Discussion of Agricultural Modeling Work Group

12:40 ADJOURN



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October 5, 2022

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9:00 Announcements and Amendments to the Agenda – Dave Montali, Tetra Tech and Mark Bennett, USGS

9:05 Update on Main Bay Model (MBM) Progress – Joseph Zhang, VIMS

We will present first results with the almost completed code for MBM, and discuss some key questions and plans for (1) the SAV simulation approach in the MBM and related revision of the MBM mesh, (2) the PIP, G1, G2, G3 approach in sediment and water column, (3) incorporation of the shoreline erosion data, and (4) the treatment of iron-oxyhydroxides as either a simulated state variable or dealt with by a “key” to a date, or temp, or DO turnover event. The data sets for oyster biomass of the different oyster groups and sediment/nutrient inputs from tidal shorelines will be provided to the MBM Team.

9:40 Discussion of the Main Bay Model (MBM) Progress

9:50 Update on Designated Use Modification for CB6 and CB7 – Tish Robertson, DEQ and Richard Tian, UMCES-CBPO

The northernmost portions of the CB6PH and CB7PH segments are designated for both the Deep Water and Open Water uses, while the remaining portions are only designated for the Open Water use. However, the presence of a pycnocline in wider areas of the two segments than represented in published documentation on the DU boundaries (USEPA, 2003) indicates an expansion of the Deep Water designated use is warranted for the two segments. Tish and Richard will provide an overview of the DU modification work and the modeling analysis that supports it.

10:00 Discussion of Analysis for DU Mod for CB6 & CB7

10:10 Progress on Phase 7 Watershed and Tidal Water Model Boundaries – Andy Fitch, USGS-CBPO and Karinna Nunez, VIMS

Andy and Karinna will describe progress in the shoreline product of updated and refined model boundaries for the Phase 7 Watershed Model, MBM, and MTMs including spatially detailed estimates of the tidal wetlands.

10:25 Discussion of Phase 7 Watershed and Tidal Water Model Boundaries Including How Sea Level Rise Will Be Simulated in Future Climate Change Scenarios

10:40 Wave Simulation – Jiabi Du, VIMS

The simulation results from a fully two-way coupled waves-sediment transport model (SCHISM-SED3D-WWM) will be presented, using four sediment classes (sand, silt, and 2 classes of clays). This model is a critical component of the MBM and will provide the water quality model with the simulated TSS.

11:00 Discussion of Wave Simulation and Bottom Resuspension

11:10 CHAMP Program Update – Marjy Friedrichs and Pierre St-Laurent, VIMS

An update on the multiyear Chesapeake Hypoxia Analysis and Modeling Project (CHAMP) that has supported the CBP climate change assessment and other areas will be presented.

11:30 Discussion of CHAMP program

11:40 Update on Multiple Tributary Model (MTM) Selection – Alex Gunnerson, CRC

An update on the guidance for the selection of MTMs supported by an EPA RFA that will support up to three Multiple Tributary Model (MTM) teams over five years. The CBPO can also support two in-house MTM teams. The MTM teams might begin in the first Quarter of 2023 with the following timeline: 2025 Fully Operational MTMs, 2026 CBP Review of MTMs, and 2027 CBP Application of MTMs. The WQGIT will recommend to the Management Board the five tributaries for MTM development along with the York MTM.

12:00 Discussion of Approaches to MTM Selection

12:10 Progress on MTMs in the Potomac and Choptank Rivers – Nicole Cai, EPA ORISE and Richard Tian, UMCES-CBPO

Richard and Nicole will discuss initial progress on the set up of the Choptank and Potomac MTMs.

12:30 Discussion of the Potomac and Choptank River Progress

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