A Proactive STAC Workshop:

Comparison of Shallow Water Models for Use in Supporting Chesapeake Bay Management Decision-making

May 20, 2015
VIMS

VIMS | William & Mary
Virginia Institute of Marine Science

1940-2015 75 Years

stac

A Vision for Using Multiple Models in the CBP Modeling Suite

(MB meeting Jan 4, 2012)

(1) **CBP model** should continue to be used as the **sole regulatory** model for WQ management decisions with several other **community models** being used for comparison and **R&D**.

(1) The MB should consider directing the CBP to **implement a prototype multiple modeling strategy** involving both skill assessment and peer review for the identification of models that best match observations **in this shallow border** of the tidal Chesapeake Bay and its tributaries.

This would:

- Demonstrate that the CBP model is equally as skillful as a range of models routinely used by the scientific community
- Bolster community-wide (management and academic) support for the TMDL Modeling Framework

MB Response:
(Mar 2012)

- "A demonstration project in a well monitored system… would serve as a prototype for the application and assessment of multiple models. **The EPA is now examining the potential to fund a few prototype shallow water models this year."**

- Hold two workshops on Multiple Models for Management (M3):

  (1) Define elements that should be included in such a pilot project

  (2) Discuss benefits and challenges of using multiple models in a regulatory framework

  M3.1 (April 2012; 25 attendees; Virginia)

  M3.2 (early 2013; 50-75 attendees; Maryland/D.C.)

M3.1 workshop

➢ Overall Recommendation:

A shallow water multiple model pilot project is key to the advancement of the CBP modeling program and should begin as soon as possible.

➢ Need multiple modeling efforts to:

- Help determine whether the regulatory model is as skillful as other models of the Bay
- Build scientist, management and stakeholder confidence in the model at a time when confidence in the regulatory model is low
- Provide an opportunity for the CBP to heed recommendations suggested in several recent CBP reports and reviews

M3.1 workshop (cont.)

- **Need for <u>new shallow water</u> modeling efforts:**
  - Modeling WG has identified limitations to existing model in the shallowest, most productive part of Bay
  - The shallowest parts of the Bay are likely where restoration efforts may be first observed.

STAC Workshop: 20 May 2015

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Overarching goal: To discuss the relative skill of multiple linked hydrodynamic+water quality models in terms of their ability to reproduce observations of temperature and salinity in the Chester River.

If we can't simulate a conservative property like salinity correctly, how will we be able to successfully model the more complex properties like water clarity and nutrients?