Evaluation of Options for a Chesapeake Modeling Laboratory

CBP Management Board

Mark Bennett, USGS
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"Establishing a Chesapeake Bay modeling laboratory would ensure that the CBP would have access to a suite of models that are state-of-the-art and could be used to build credibility with the scientific, engineering, and management communities."

- Achieving Nutrient and Sediment Reduction Goals in the Chesapeake Bay: An Evaluation of Program Strategies and Implementation; National Research Council

Modeling Lab Action Team (MLAT)

- Action Team membership

  - 7 jurisdiction members; Maryland, Virginia, Pennsylvania, New York, Delaware, Washington DC , and West Virginia

  - 8 academic members

  - 4 Federal agency members; USACE, USDA, NOAA, and USGS

  - Support to MLAT from the Modeling Team

Rationale for a Modeling Lab?

- Testing of the model/establishing uncertainty

- Credibility – involve more expert opinion

- Gaining buy-in from stakeholders

- Numerous recommended model changes

- Adaptive management

- Communicating understanding

Rationale for a Modeling Lab?

- Modeling Team is not able to address all of the priorities/recommendations that it currently has

- Current list of 454 model issues identified by the Water Quality GIT; STAC recommendations

- Major issues such as: lag times, inclusion of BMPs, shallow water modeling, connection of water quality to living resources, model scale, etc.

Essential Functions of Models for the Chesapeake Bay Program

- Operations

- Operational Development

- Research-Oriented Development

- Research

Essential Functions of Models for the Chesapeake Bay Program

- Operations – rapid and automated development of scenarios. Scenarios that support the TMDL, the WIPs, progress runs, milestones, *ad-hoc* questions from partners and collaborations

- Operational Development

- Research-Oriented Development

- Research

Essential Functions of Models for the Chesapeake Bay Program

- Operations

- Operational Development – programming and development work that supports scenario development. For example: BMP inclusion, model calibration, linkages among the models, changes in input algorithms

- Research-Oriented Development

- Research

Essential Functions of Models for the Chesapeake Bay Program

- Operations

- Operational Development

- Research-Oriented Development – addition of new processes to the model that requires conceptual modeling, code development, testing, and model validation

- Research

Essential Functions of Models for the Chesapeake Bay Program

- Operations

- Operational Development

- Research-Oriented Development

- Research – incorporation of mechanisms into the models that they are currently not equipped to handle, often because the mechanisms themselves are not clearly understood. Example: lag times

Essential Functions of Models for the Chesapeake Bay Program

- Discussions in the MLAT have revealed that the CBPO modeling teams are focused primarily on Operations and Operational Development

- MLAT sees an urgent need for a Modeling Lab that focuses on Research and Research-Oriented Development

- Close ties would need to be created between the CBP, CBPO Modeling Team and the Modeling Lab in order to meet management needs

Essential Functions of Models for the Chesapeake Bay Program

- Of the 454 issues listed for the 2017 midpoint assessment they break down into the following functions:

- Operations – 22%

- Operational Development & Research-Oriented Development – 47%

- Research – 31%

Next Steps

- Governance

- Budget

Timeline

- Draft report to be completed by the end of March 2013

- MLAT will meet in April 2013 to discuss needed revisions to that report

- Presentation of final draft report to the Management Board at the May 16, 2013 meeting

Questions?