Chesapeake Community Model Program Watershed Workshop

Sept. 24, 2004

Motivation

"A vigorous [community modeling] initiative is needed to provide the scientific foundation for the next generation of coupled estuarine circulation/ecology [and watershed] models [in Chesapeake Bay], which in turn is needed to support water quality managers and decision makers in the public policy sphere, and a wide spectrum of research and educational activities. The Chesapeake Research Consortium is an ideal mechanism for coordinating and providing focus for this multi-state, multi-institutional effort."

-Linden Group 2000

House Testimony, UMCES

- I suspect that the Program espoused model-based estimates of progress that are over-simplified because of the natural human tendency of managers to look on the bright side, promote optimism and encourage future progress. That said, I would hope that the current controversy would: (1) make managers and policy makers more aware of the uses and limitations of both modeling and monitoring; (2) prompt them to promote a scientific culture of organized skepticism; (3) strengthen its efforts in environmental monitoring and interpretation of monitoring results; (4) develop and employ models that are appropriate for addressing inter-annual variability and event-scale processes (e.g. storms); and, most importantly, (5) advance the thorough integration of modeling and monitoring in order to better achieve the requirements of adaptive management. The Chesapeake Bay region is endowed with the largest and most accomplished community of estuarine scientists in the world. From both the governmental and university sides, we need to work to ensure that their extraordinary intellectual and material resources are fully engaged in advancing knowledge and critical assessment to advance Bay restoration goals. --D. F. Boesch

Rationale:

Development of large-scale models in general has been limited by the ability of any single team of researchers to deal with the complex environmental models.

Communicating the structure of the model to others can become an insurmountable obstacle to collaboration and acceptance of a model.

The traditional closed team approach to model development often results in a model that is essentially a "black-box" as far as the rest of the research and management community is concerned.

CCMP Method:

- Encourage cooperation between modelers with workshops and community bulletin boards.
- Make available model examples for community use.
- Seek out funding opportunities for Chesapeake Basin modelers.
- Seek out funding for development of Community Modeling methods.

Progress and Status

- 1st annual CMP Workshop, June 2002
- Scientific Steering Committee formed, July 2002
- Implementation plan developed, October 2002
- 2 years of funding committed by CRC board, Nov. 2002
- Manager hired/program office established, June 2003
- Draft business plan developed, June 2003
- 2nd Community Modeling Workshop, Sept. 25-26, 2003
- Physical Ocean Modeling Workshop, Feb. 2004
- Several PO models on web
- NCBO hosted Web Page Wiki'ized, OpeNDAP'ed, CVS'ed
- CLEANER, ECOFORE grants
- Watershed Workshop, Sept. 2004

CCMP Website

- New Front Page. Ccmp.chesapeake.org
- Wiki Pages
  - Main
  - TWikiUsers TWikiRegistration
  - Model SubPage
  - Edit Model
  - Preview Model Edit

Ambitions for CCMP Office

- Science and Modeling Broker
  - Facilitate the development of community models and open source philosophy
- Establish and Fund an IT presence to serve the open source modeling community
  - Build Multiple Model Scaffold.
  - Develop standards, protocols and methods needed to join models.
  - Communicate expertise in shareable tools.
  - Provide training in use and development.
- Obtain funding for researchers to participate by working with and contributing models to the scaffold.

Near Term Tasks:

- CLEANER:
  - Discover watershed modeling needs and target participants to develop next generation Environmental Engineering Decision Tools.
- CUAHSI:
  - Work with CUAHSI cyberinfrastructure groups to interface models with new data methods. Community models as part of the Observatory Network. Connect modelers with the CUAHSI funding and needs.
- MARA/IOOS/DMAC:
  - Help develop standards to share data and model results according to DMAC principles. Models which help display, assimilate and interpret the IOOS data streams.
- NCBO/DNR Oyster Projects:
  - Community Model Applications: Share oyster population modeling techniques. Provide flow fields from CCMP hydro models.

Goals of Workshop

- Identify Watershed modeling needs which will enable us to respond and participate in the CLEANER and CUAHSI initiatives.
- Identify working methods which will promote our watershed modeling activities to Community efforts.
- Solicit participants to start building Community Watershed Modeling capability.

Focus on Watershed Models

- Discover what a community watershed model will provide. It's Purpose.
- Discover what form a community watershed model should take. It's Structure.
- Expose the steps we must take to build and maintain the community model.

Goals of the Workshop I

- Requirements:
  - Define the purpose of a community watershed model. What problems must it address and what questions must it answer? What does the community aspect of the watershed model address?

Goals of the Workshop II

- Structure:
  - What will the model need to have to meet those requirements?
  - What is needed to provide the environmental science answers to the people who need them?
  - What data needs must be satisfied? How will data access become a community tool?
  - What existing models meet parts or all of these structural requirements?

Goals of the Workshop III

- How can we build it to meet the structural needs and requirements?
  - Volunteer effort or Funding development?
  - How will the community participate?
  - What will encourage separate groups to work on, develop and build the same model and system?
  - What type of modeling systems lay a template for this?
  - How to integrate with other community model and database efforts: CLEANER, CUAHSI, IOOS/DMAC.
  - What Next?

Agenda

- 8:30-9:30 Coffee and light breakfast while we gather.
- 9:30-10:00
  - Introduction and Goals for Chesapeake Community Watershed Model Workshop T. Gross
  - Integration with National programs (CLEANER, CUAHSI, NEON) K. Sellner
- 10:00-12:00 Guided Discussion #1 What are the requirements and goals of a community watershed model? Raleigh Hood
- 12:00-01:00 Lunch break
- 01:00-2:30 Guided Discussion #2 What structure must the model have to meet those requirements? Gary Shenk
- 03:00-4:30 Guided Discussion #3 What steps should be taken to build the model structure? Tom Gross
- 4:30-4:45 Synthesis and take home tasks Adjourn