



The Chesapeake Community Modeling Program

Raleigh R. Hood

June 20, 20012

DoubleTree Annapolis Hotel, Annapolis, MD





Outline:

Genesis of the CCMP

- The Infamous STAC Report (Nixon et al., 1999)
- The Linden Group Report (2000)
- CRC Community Modeling Workshop (2002)
- CCMP Implementation Plan (2002)

The CCMP Today

- Leadership
- Newsletter
- Workshops
- Symposia
- Synergy with the CBP



Genesis of the CCMP

The Infamous STAC Report (Nixon et al., 1999):

- This report was highly critical of the estuarine model both in terms of how it was developed and its performance.
- It was recommended that the model should not be used for management purposes until these problems were addressed.
- This report led to the formation of the "Linden Group"

Review of the Water Quality Model

**A Report from the
Scientific and Technical Advisory Committee**

November 1999

Review of the Water Quality Model



Genesis of the CCMP

The Linden Group Report (2000):

Acting in response to the STAC-sponsored review, the CRC convened a small group of CRC member-institution scientists at Linden House, Champlain, VA on June 26, 2000 to discuss the need for a new Chesapeake Bay modeling initiative. The group crafted a short, formal report which stated in part:

"Although the Bay research community represents a significant expertise in estuarine science, it has not yet availed itself of the modern, cooperative, community-shared style to advance the modeling art.

A vigorous initiative is needed to provide the scientific foundation for the next generation of coupled estuarine circulation/ecology models, 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."



Genesis of the CCMP

The Linden Group Report (2000):

The group also identified a list of key principles to guide the initiative they envisioned:

- 1) *Models should be open source and supported by a substantial user community.*
- 2) *Models should have institutional homes.*
- 3) *Data integration, prediction and uncertainty quantification are essential aspects of the modeling process.*
- 4) *Modeling activity should be integrated into the educational mission of the CRC institutions.*
- 5) *Models should incorporate modern numerics as well as physical/biological parameterizations.*



Genesis of the CCMP

The CRC Community Modeling Workshop (2002):

Welcome

CRC Community Modeling Workshop

June 5-7, 2002

Sheraton Barcelo Hotel, Annapolis, MD



Organizing Committee:

Raleigh Hood (Chair), UMCES

Hugh Ducklow, VIMS

Eileen Hofmann, ODU

Denise Breitburg, SERC

William Boicourt, UMCES

Michael Kemp, UMCES

CRC Representatives:

Kevin Sellner (director)

Gordon Smith

Sydney Arny



Workshop Goals

1. Promote the development and free dissemination of open-source models for Chesapeake Bay scientific and management applications.
2. Review the state-of-the-art in open-source airshed, watershed, and estuarine models.
3. Discuss the feasibility of developing a suite of open-source community models, or an open-source modeling system, for the Chesapeake Bay.
4. Make specific recommendations to the CRC on how to proceed.



The 'Community Model' Concept

The idea has been advanced that a different, or perhaps parallel, strategy should be adopted for future model development, i.e., an open source, "community modeling" approach where alternative models for both management and scientific purposes are developed through the combined efforts of managers and scientists throughout the Chesapeake Bay region (and elsewhere), and freely distributed to anyone who wishes to inspect them or use them.

However, it is unclear whether or not this is a viable approach for developing models intended for management purposes.



Genesis of the CCMP

CCMP Implementation Plan (2002):

I Mission Statement

II Motivation and Background

III Scope of Effort

IV Open Source and Collaborative Modeling

V The Chesapeake Bay Community Modeling Project

VI Applications

VII Workplan

VIII Budget and Justification

CRC Community Modeling Project Implementation Plan

FINAL (10-23-02)

Steering Committee:

Raleigh Hood (chair), UMCES
Hugh Ducklow, VIMS
Don Weller, SERC
Bob Wood, UMCES
Peter Wilcock, JHU
Eileen Hofmann, ODU/CCPO
Tom Gross, NOAA
Alexy Voinov/Tom Maxwell, U. Vermont

CRC Staff

Kevin Sellner, Executive Director
Sydney Army

CRC Member Institutions

The Johns Hopkins University
University System of Maryland
Smithsonian Institution
The College of William and Mary
The Academy of Natural Sciences
Old Dominion University





Genesis of the CCMP

CCMP Implementation Plan (2002):

Mission Statement

The overarching goal of the proposed CRC member institution-supported Community Modeling Project is to significantly improve our ability to model and predict physical and biogeochemical processes in the Chesapeake Bay and its watershed.

The foundation of the effort will be a collaborative, open-source, research-oriented modeling framework designed to focus and coordinate the intellectual resources of the CRC institutions and the broader scientific community, and promote free and open exchange of information, data, models, and results.

Within this framework, the Community Modeling Project will develop a range of models serving the research and management communities. An explicit goal will be to develop a new, state-of-the-art, coupled watershed and estuarine model for the Chesapeake Bay region based upon the latest technologies and modeling approaches.

However, this effort is also intended to foster the development of a diversity of approaches and models, and promote model inter-comparison efforts. Another major goal of this initiative will be to develop of a suite of models intended for a wide range of purposes, including management, research and operational applications. In so doing we hope to fundamentally change the way in which models are developed, tested and applied in Chesapeake Bay.



The CCMP Today

Leadership:

Raleigh Hood (Program Manager)

David Jasinski (Program Coordinator)

Kevin Sellner (CRC Oversight)

Current Steering Committee:

Raleigh Hood (University of Maryland Center for Environmental Science)

Bill Ball (Johns Hopkins University)

Claire Welty (University of Maryland Baltimore County)

Courtney Harris (Virginia Institute of Marine Science)

Chris Duffy (Penn State University)

Carl Friedrichs (Virginia Institute of Marine Science)

Marjy Friedrichs (Virginia Institute of Marine Science)

Gary Shenk (EPA Chesapeake Bay Program)

Howard Townsend (NOAA Chesapeake Bay Office)

Kevin McIlhany (Naval Postgraduate School)

Alexey Voinov (ITC, Netherlands)



The CCMP Today Newsletters:

Published Quarterly

Typical Contents

- CCMP News in Brief
- News From Other Communities
- Open Source on the March
- Featured Modeler
- Featured Model
- Upcoming Meetings and Events

Chesapeake Community Modeling Program

CCMP Newsletter | March 2012

Volume 5, Issue 1

Introduction

Hello and welcome to the first CCMP news letter of 2012. We have been busy organizing the Chesapeake Modeling Symposium 2012 and it is shaping up to be a fantastic event!

Please Note - The abstract submission deadline for CheMS12 of March 15 is fast approaching. This is also the deadline for the early-bird registration discount. For information on registration and abstract submission please go to www.chesapeakemeetings.com/CheMS2012/registration.php

Enjoy this edition and, as always, please contact [Dave Jasinski](mailto:dave.jasinski@epa.gov) if you have any questions or comments.



Contents

1. [CCMP News in brief](#)
2. [News From Other Communities](#)
3. [Featured Modeler: Eileen Hofmann](#)
4. [Featured Model: SELFE](#)
5. [Upcoming Meetings](#)

1. CCMP News in Brief

CheMS12 May 21-22, 2012

Registration is now open for the Chesapeake Community Modeling Symposium 2012. The theme for CheMS12 is "Interfacing between modeling, management, and the public: TMDLs, politics, litigation, and conflicting stakeholder interests". As we mentioned in our last newsletter, plenary talks will include those by Jeff Corbin (EPA), Denise Reed (University of New Orleans), and Gerald Learmonth (University of Virginia). We have also been busy lining up panelists for the Panel discussion on the morning of day 2. The discussion will focus on the theme of the Symposium and the panel will be comprised of state representatives, scientist/modelers, and stakeholders. Our confirmed panelists include:



The CCMP Today Website:

[Updated Routinely](#)

[Contents](#)

- About CCMP
- News and Blog
- Models and Data
- Proposals and Funding
- Workshops and Symposia

The screenshot shows the CCMP website homepage. At the top, there is a navigation menu with links for Home, About, News & Blog, Models & Data, Proposals & Funding, Workshops, Links, and MyCCMP. Below the menu is a 'Building Community' section with a paragraph of introductory text and a 'CCMP Navigation' section containing several icon-based links: Blog: News & Voices, Models & Data, Chesapeake Modeling Symposium 2012, Proposals & Funding, and Links. On the right side, there is a 'Join the Community!' sidebar with sections for 'Become a CCMP Member', 'Tell Us About Your Model/Data', 'Check Out the CCMP Model Catalog', and 'CCMP Navigation' which lists recent news items like newsletters and workshops.



The CCMP Today Workshops:

2010: CCMP Hydrodynamic Model Workshop

2007: AD Model Builder Programming Course

2006: Chesapeake Models and Data Distribution Workshop

2006: Ecopath with Ecosim (EwE) Programming Course

2005: Building a Community Modeling Culture

2004: CCMP Watershed Workshop

2004: Physical Modeling Workshop

2003: CCMP Workshop



The CCMP Today Chesapeake Modeling Symposia (Our Flagship Events):

ChesMS08 "Communicating Models & Data"

ChesMS10 "Community Modeling for Management, Research and Restoration Decision Support"

ChesMS12 "Interfacing between modeling, management and the public: TMDLs, politics, litigation and conflicting stakeholder interests"

CHESAPEAKE MODELING SYMPOSIUM
MAY 12-14 2008 ANNAPOLIS, MD

ChesMS Overview
Overview
Schedule
Participants
Workshops
Plenaries
Presentations
Model/Data Form
Web Conference
Management Tool (WCMT)

Preparation Info
Sponsors
Registration
Location & Lodging
Student Grant
Information
Instructions for Authors

ChesMS'08: Communicating Models & Data

Scope and Aims
The Chesapeake Community Modeling Program (CCMP) seeks to improve modeling tools and related resources specific to the Chesapeake Bay, its watershed, and connected environmental systems by fostering collaborative open source research. Toward this end the CCMP is convening a modeling symposium as a venue to identify and showcase existing modeling efforts as well as promote information exchange and open modeling.

The symposium is intended to facilitate the development of an inventory of models and data sets, and stimulate collaborative research on data processing and modeling. The resulting inventory of modeling tools and data will be made available through the CCMP web pages, in attempt to stimulate cross-pollination across modeling teams and paradigms and encourage future community modeling efforts. It is our hope that this will lead to the development of more comprehensive and integrated modeling tools for the Bay and its watershed, as well as for other watersheds around the country.

Structure and Organization
It is hoped that ChesMS itself will only be a single component of an on-going process of community collaboration. We imagine the process to look as follows:

The Chesapeake Community Modeling Program's
Chesapeake Modeling Symposium
May 10-11, 2010 Annapolis, MD

ChesMS Overview
Home
Schedule
Participants
Sessions
Plenaries

Preparation Info
Registration
Location & Lodging

Timeline
October 1, 2009 Call for session participation
January 15, 2010 Deadline for session abstract submission
February 15, 2010 Notification of abstract acceptance
March 31, 2010 Cut-off for discounted lodging
May 10-11, 2010 ChesMS 2010

Chesapeake Modeling Symposium 2010
COMMUNITY MODELING FOR MANAGEMENT, RESEARCH AND RESTORATION DECISION SUPPORT

Thank You!
Thank you for making Chesapeake Modeling Symposium 2010 a success! The Symposium was attended by over 150 people representing over 40 institutions from 12 states. The Plenary presentations as well as many of the session presentations are now viewable online off of the Symposium Schedule page. If you attended the Symposium and would like to give us your feedback, please fill out our online evaluation. Looking forward to the next Symposium in 2012!

Scope and Aims
The Chesapeake Community Modeling Program (CCMP) seeks to improve modeling tools and related resources specific to the Chesapeake Bay, its watershed, and connected environmental systems by fostering collaborative open source research. Toward this end the CCMP is convening a modeling symposium as a venue to identify and showcase existing modeling efforts as well as communicate how models are used as decision support tools by different developer and user groups.

ChesMS '10 is the second symposium convened by CCMP. ChesMS '08 was focused on highlighting and communicating new and innovative Chesapeake ecosystem open source models and building the existing library of available models and tools. ChesMS '10 expands on this by continuing to showcase new modeling efforts while also demonstrating how new and existing models can be applied to aid in Management, Research and Restoration decision support. By bringing together the model developer and user communities at the symposium, we hope to foster greater intra group understanding and communication. This will lead to a more product focused model development and a more intelligent use of these models.

The Chesapeake Community Modeling Program's
Chesapeake Modeling Symposium 2012
May 21 & 22 Annapolis, MD

ChesMS Overview
Home
Schedule
Participants
Sessions
Plenaries
Download Program

Preparation Info
Registration
Location & Lodging

Timeline
March 15, 2012 Deadline for abstract submission/early bird registration
March 30, 2012 Notification of abstract acceptance
May 21-22, 2012 ChesMS 2012

Interfacing between modeling, management and the public: TMDLs, politics, litigation and conflicting stakeholder interests

Scope and Aims
The Chesapeake Community Modeling Program (CCMP) seeks to improve modeling tools and related resources specific to the Chesapeake Bay, its watershed, and connected environmental systems by fostering collaborative open source research. Toward this end, the CCMP is convening the third bi-annual Chesapeake Modeling Symposium as a venue to identify and showcase existing modeling efforts as well as communicate how models are used as decision support tools by different developer and user groups.

Environmental models are increasingly taking on higher profile roles in the management process. In Chesapeake Bay, the Chesapeake Bay Program Watershed and Water Quality models, used in a decision support role, are increasingly being used to support regulatory decisions such as TMDLs, rather than voluntary decisions. One of the effects of this changing role is that it is bringing to light concerns and conflicting interests within different stakeholder communities affected by the regulatory process. Another effect is that the models are increasingly under scrutiny with respect to their scientific validity and skill. It is anticipated that the thresholds set for TMDLs by these models will face numerous scientific and legal challenges in the coming months and years.

The 2012 Chesapeake Modeling Symposium will attempt to shed light on these emerging concerns and conflicts as they relate to regulatory thresholds and the environmental models that are used to set them, focusing on topics such as understanding, communication, and credibility. By bringing together modelers, managers, scientists, and stakeholders for a series of plenary talks, panel discussions, and special sessions, we hope to highlight the unique issues and concerns of each of these groups and provide a venue for open dialogue that will hopefully lead to greater understanding and adoption of these and other models.



The CCMP Today Synergy with the CBP:

The CCMP relationship with the CBP has evolved significantly over the past ten years from one that was initially somewhat adversarial to the present where the CCMP works side by side with the CBP to: 1) promote greater transparency though use of open source community modeling approaches, and 2) help the CBP and the EPA achieve its goals of reducing nutrient pollution in Chesapeake Bay. This is achieved through:

- Routine participation and support of CBP modeling subcommittee meetings.
- Organizing and/or co-sponsoring workshops that contribute to CBP modeling efforts.
- Organizing major conferences on themes that are highly relevant to the CBP modeling efforts and that are intended to increase communication and transparency among the research, management and stakeholder communities in Chesapeake Bay.



Thank You

Community Model Defined:

A community model is an open source model that is constructed and/or improved through the combined efforts of a “community” of individuals working together or semi-independently to help develop and/or improve a model system for general use. These individuals often include both developers and users, and are usually distributed among a number of different institutions and organizations.