CBP Modeling Panel

STAC Quarterly Meeting
Calvert House Annapolis, MD
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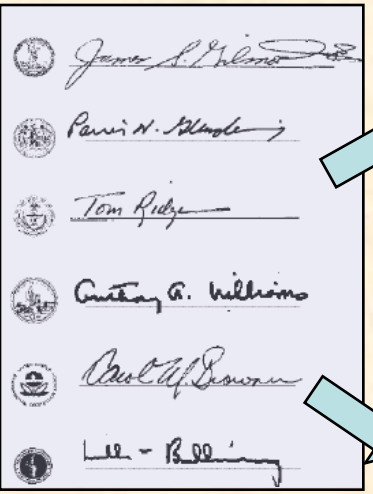
Overview

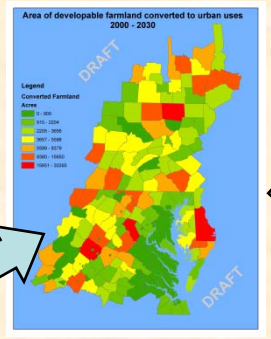
- **Watershed Model schedule.**
- **After Phase 5.3.2 – Next generation CBP modeling and assessment tools.**
- **Working With STAC.**

Chesapeake Bay Program Modeling

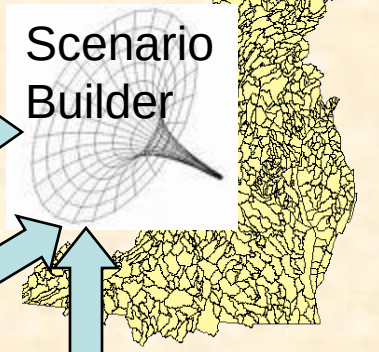
Management Actions



Land Use Change Model

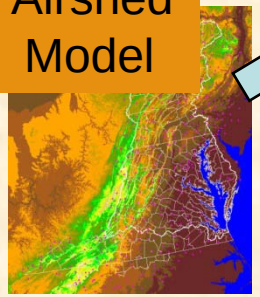


Scenario Builder

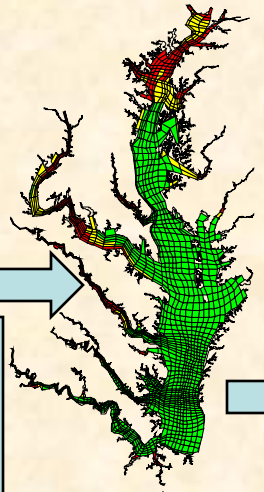


Watershed Model

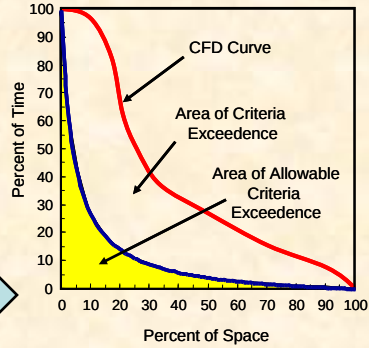
Airshed Model



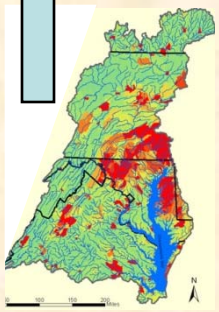
Bay Model



Criteria Assessment Procedures



Sparrow



Effects

Allocations

On to Phase 5.3.2

Our schedule is to compete the more spatially detailed Phase II WIPs by Fall 2011. The final WIP II schedule will be announced soon. Supporting the Phase II WIPs is the Phase 5.3.2 Model which will be completed by late Spring 2011.

Refinements in Watershed Model Phase 5.3.2

- Urban land use improvements.
  Improved simulation of nutrient management.
  Improved low flow simulation.
  CAFO/AFO simulation improvements.

Tentative Phase 5.3.2 Schedule as we see it:

Winter 2011 – Complete Scenario Builder Version 4
Early Spring 2011 – Calibration of Phase 5.3.2
Spring 2011 – Key Phase 5.3.2 scenarios complete, calibrate WQSTM
Late Spring 2011 – Fully operational Phase 5.3.2 modeling system

Next Generation CBP Models for Mid-Point 2017 Assessment

- The outlines of a “rock-em-sock-em” action-packed five year plan.
- Assumes that the Principal Staff Committee (PSC) wants to get the Phase III WIPs by January 1, 2017.
- Our long-term planning for the CBP models needs to be oriented toward getting our entire modeling suite of watershed, airshed, and estuary and living resource models completely calibrated and operational by December 2015.

This in turn means we’ll need to get the first draft Watershed Model inputs available for the estuary and living resource model as early as December 2013 (Allowing a two year development and calibration cycle on the estuary and living resource models.)

Next Generation CBP Models for Mid-Point 2017 Assessment

The overall timeline might look something like this:

December 2010 - Phase I WIPs published with Phase 5.3 WSM and existing Bay Model.

Fall 2012 - Phase II WIPs published with Phase 5.3.2 WSM and recalibrated Bay Model.

Ongoing - 2-year milestone tracking.

About December 2013 - First draft Watershed Model inputs available for calibrating the next generation Bay Model. Airshed Model updates planned and tracked for bi-model NH_3 & Hg and new CMAQ scenarios.

December 2015 - Fully calibrated and operational Phase 6 Watershed Model and next generation Bay Model ready for analysis of Phase III WIPs.

January 2016 - Begin evaluation of the States Phase III WIPs with respect to what remains to be done in the final 7 years of planning (2018 - 2025) to fully achieve the Bay water Quality standards.

January 2017 - States and DC submit Phase III WIPs with 2018 - 2025 actions and controls.

By Summer 2011 We Need to Begin to Lay Out Our Specifications for Next Generation Chesapeake Bay Watershed Model – Phase 6

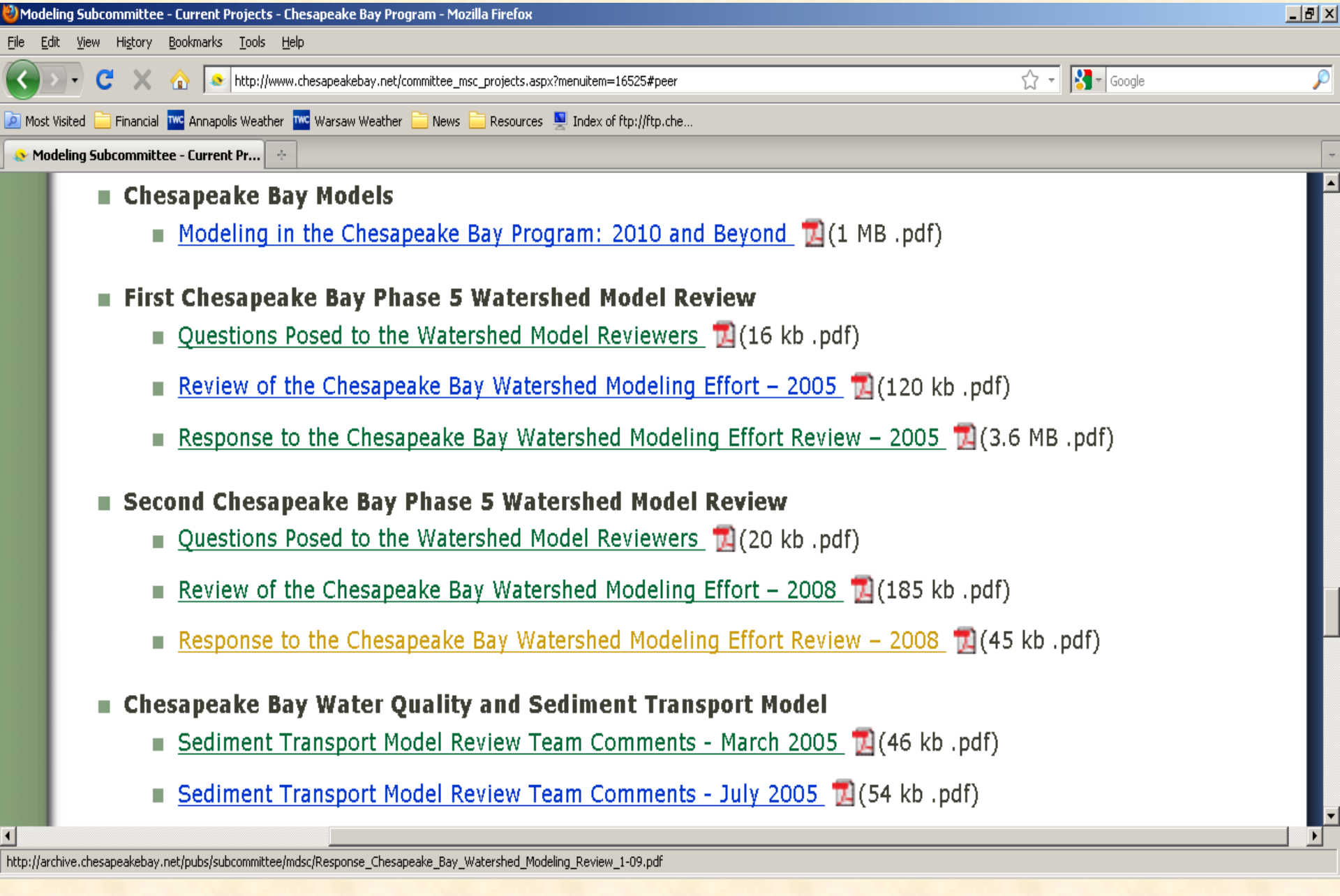
General specifications for the next generation Chesapeake Bay Watershed Community Model are for a state of the science, mass balance, regulatory model as good or better than the current simulation with the fully operational model, linked to the airshed and estuary models, and delivered by December 2015.

A key aspect of the Watershed Model (WSM) is that it accounts for implementation of nutrient and sediment controls in the watershed by State, Local, and Federal agencies. These agencies will have a large say in what the next version of the WSM should look like.

Past Coordination With STAC

- We've had extensive assistance from STAC in peer reviews of CBP Models.
- EPA's Science Advisory Board recommends that major new, not previously reviewed, aspects of regulatory environmental models be peer reviewed.
- The deadlines are relentless, difficult, and generally have precedence over other objectives.
- We welcome an active, engaged STAC in the technical review of the CBP models.

http://www.chesapeakebay.net/committee_msc_projects.aspx?menuitem=16525#peer



Guiding Principle

Always improve the models .....but never ever change them.

Specifications for Next Generation Chesapeake Bay Model

General specifications for the next generation Chesapeake Bay regulatory model are a state of the science, mass balance, regulatory model with key DO, chlorophyll - primary productivity, and SAV clarity simulations as good or better than the current simulation. The fully operational model with complete operational links to the airshed and watershed models will delivered by December 2015.

Dissolved oxygen

- Full sediment diagenesis with scour, resuspension, fate and transport of organic material (required)
- Refined representation of DO in small embayments with finer computational grid in shallow water and in small embayments (required)
- Explicit simulation of adjacent coastal ocean (nice)
- Fine temporal scale light field for diurnal DO in small embayments (nice)

Chlorophyll – Primary Production

Refined chlorophyll simulation and assessment particularly in the James and DC waters (required)

Specifications for Next Generation Chesapeake Bay Model

Living Resources

- Full explicit simulation of oyster and menhaden (IBM?) filter feeders (Required: By 2017 the oyster and menhaden simulations we've developed will have more play as we struggle to achieve our 2-year milestones and look to every option to close the gap)
- Full explicit simulation of other major filter feeder and deposit feeder groups (required)
- Estuarine wetland simulation (nice)

Shallow Water SAV-Clarity

- Full sediment transport simulation with resuspension of sediment (required)
- Refined simulations and assessment of SAV/clarity throughout the model (required)
- Finer computational grid in shallow water and in small embayments (required)
- Extension of simulation period into recent time (required)
- Representation of maintenance dredging and other marine activities that resuspend sediment (nice)