Chesapeake Bay Program's (CBP)
Scientific and Technical Advisory Committee (STAC) Workshop

CBP Climate Change Modeling III: Post-2025 decisions

May 7-9, 2024
Workshop Webpage
Virginia Tech Executive Briefing Center | Arlington, VA

****Exact Times Are Subject to Change****
Presentations will be recorded to assure the accuracy of meeting notes.

Objectives:

- Decision in 2020 and upcoming 2027 decision
- CBP in 2020 to predict 1995-2025 climate effects, both model and application
- What models will be available for 2027 decision
    - What has been decided about these models and what has not.
- What research has been done that is relevant to the discussion

Link for Zoom Registration

Tuesday, May 7th, 2024

9:00 am **Coffee & Light Breakfast (Provided)**

9:45 am **Welcome and Introductions –** *Mark Bennett (USGS)*
Mark Bennett will outline the workshop goals, outcomes, and agenda.

10:00 am **Management Motivation and Model Overview –** *Lee McDonnell (EPA)*
Lee McDonnell will provide an overview on the Bay TMDL and the Chesapeake Bay Program (CBP's) decisions on climate, and outline the current and planned modeling systems.

10:25 am **Application of Climate Data and Earth System Models (ESMs) to the Chesapeake Bay Program (CBP) System P6 Use of Climate Variables** – *Gopal Bhatt (PSU)*
Gopal Bhatt will discuss the use of observed trends and downscaled climate model output in the CBP's previous assessment of climate change effects for the Bay TMDL.

10:50 am **Chesapeake Bay Program Watershed Model** – *Isabella Bertani (UMCES)*
Isabella Bertani (UMCES) will discuss the CBP Watershed model, including the current model structure, the 2019 climate application, and the Next Generation structure.

11:25 am **Chesapeake Bay Program Estuarine Model** – *Lew Linker (EPA), Richard Tian (UMCES), Joseph Zhang (VIMS), Carl Cerco (ATS), Jian Shen (VIMS)*
Invited researchers will review the various CBP Estuarine models, including the current model structure, the 2019 application, and the Next Generation structure.

12:00 pm **Lunch (provided)**

1:00 pm **2019-2020 Climate Management Application of the Chesapeake Bay Program Models** – *Gary Shenk (USGS)*
Gary Shenk will discuss the effect of climate change from 1995-2025 on necessary reduction of nitrogen and phosphorus in the Bay TMDL.

1:15 pm **Overview of Recommendations from Prior STAC Workshops and Reviews**
– Jeni Keisman (USGS), Zach Easton (VT)
Steering committee members Jeni Keisman (USGS) and Zach Easton (USGS) will give an overview on previous STAC-led workshops and reviews related to climate change effects modeling:

- 2016 STAC workshop on climate projections assessed available climate data for use in the CBP decision process (Johnson et al. 2016);
- 2018 STAC workshop (Shenk et al., 2021b) generated specific near-term and long- term recommendations for watershed and estuarine modeling, and methods of model application;
- CBP Modeling in 2025 and Beyond (Hood et al. 2019);
- STAC review of BMP effectiveness under climate change (Hanson et al. 2022); and
- Comprehensive Evaluation of System Response (CESR): report webpage.

1:45 pm **Chesapeake Hypoxia Analysis and Modeling Program (CHAMP): Whole system analysis**
– Marjy Friedrichs (VIMS), Kyle Hinson (PNNL)
Marjy Friedrichs and Kyle Hinson will review results from the Chesapeake Hypoxia Analysis and Modeling Program (CHAMP), a project that used multiple models in a Chesapeake scenario-forecast modeling system in order to predict the impacts of future climate change and future anthropogenic nutrient inputs on hypoxia.

2:45 pm **Break**

3:15 pm **Introduce Breakout Exercise and Structure –** *Gary Shenk (USGS), STAC Staff*
Gary Shenk (USGS) and STAC Staff will introduce the breakout structure (vertical and horizontal), topics, and resulting workshop products. STAC Staff will provide an overview on how participant conversation and input are distilled into the eventual workshop report and the timeline for report completion post-workshop.

3:30 pm **Vertical Breakouts (expansive)**
In-person participants meet in breakout groups containing a broad cross-section of participants to discuss the overall needs for the system of models. Discussions should be expansive rather than restrictive to maximize potential topics.

4:50 pm **Wrap-Up and Objectives of Day 2**

5:00 pm **Recess**

Wednesday, May 8th, 2024

8:15 am **Coffee & Light Breakfast (Provided)**

8:45 am **Review of Day 1; Objectives for Day 2 –** *Gary Shenk (USGS)*

9:00 am **Focus on Ecosystem Management –** *Kenny Rose (UMCES), Bruce Vogt (NOAA)*
Kenny Rose (UMCES) and Bruce Vogt (NOAA) will co-present on ecosystem management: Rose will cover relevant findings from the STAC-led 2023 CESR report as well as synthesis living resource information occurring in the Bay, and Vogt will project into the future – discussing potential winners and losers and the processes to climate-informed marine resource decisions in the Chesapeake Bay.

10:15 am **Break**

10:45 am **Climate Effects on Biogeochemical and Hydrologic Processes in the Watershed**
– Robert Sabo (EPA) and Andrew Elmore (UMCES)

Robert Sabo and Andrew Elmore will describe the climate effects on seasonal processes in the watershed.

11:25 am **The State of Decision-Relevant Regional Climate Projections** – *Paul Ullrich (UC Davis)*
Paul Ullrich will give an overview of available climate models, downscaling methods, and considerations when applying climate information to effects models.

12:00 pm **Lunch (provided)**

1:00 pm **Synthesis of climate impacts on the Bay** – *Raymond (Ray) Najjar (Penn State)*
Raymond (Ray) Najjar will discuss preliminary findings of a review article he is preparing about the impacts of climate change on bay physics, biogeochemistry, vascular plants, fish, shellfish, and other fauna.

2:00 pm **Vertical Breakouts (prioritize)**
In-person participants meet in vertical breakout groups to prioritize recommendations based on Day 1 and Day 2 presentations.

3:00 pm **Break**

3:30 pm **Plenary - Vertical Breakout Group Reports**
Vertical breakout groups facilitators will present out on their group's prioritized recommendations. One slide with four bullets will be allowed per group.

4:00 pm **Horizontal Breakouts (expansive)**
In-person participants meet in breakout groups separate for each model domain for expansive discussions. Time may be reduced if plenary discussion ongoing.

5:00 pm **Recess**

Thursday, May 9th, 2024

8:15 am **Coffee & Light Breakfast (Provided)**

8:45 am **Welcome and Structure for Day 3** – *Gary Shenk (USGS)*

9:00 am **Horizontal Breakouts (expansive)**
Thoughts from the evening of Day 2 and continuation of expansive discussion.

10:00 am **Horizontal Breakouts (prioritize)**
In-person participants meet in horizontal breakout groups to prioritize based on Day 1 and Day 2 presentations.

10:30 am **Break**

11:00 am **Plenary - Horizontal Breakout Group Reports**
Horizontal breakout groups facilitators will present out on their group's prioritized recommendations. One slide with four bullets will be allowed per group.

11:30 am **Plenary – Horizontal and Vertical themes**
The workshop participants will have a facilitated discussion on the recommendations from all breakout groups. An overall prioritization will be discussed.

12:30 pm **Lunch (provided)**

1:30 pm **Plenary – Final Prioritization of High-level Recommendations**

The workshop participants will continue a facilitated discussion on the recommendations from all breakout groups, incorporating lunch conversations. An overall prioritization will be discussed.

2:00 pm **Workshop Adjourns**

2:00 pm **Steering Committee Meets**
The steering committee will discuss writing assignments and schedule.