QUARTERLY PROGRESS MEETING – November 2020
Chesapeake Bay Program

Climate Resiliency

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Climate Resiliency Workgroup Chair

Through the Chesapeake Bay Watershed Agreement*, the Chesapeake Bay Program has committed to…*

Goal: *Climate Resiliency*

Outcome: *Monitoring & Assessment*

Continually monitor and assess the trends and likely impacts of changing climatic and sea level conditions on the Chesapeake Bay ecosystem, including the effectiveness of restoration and protection policies, programs and projects.

Outcome: Adaptation

Continually pursue, design, and construct restoration and protection projects to enhance the resiliency of Bay and aquatic ecosystems from the impacts of coastal erosion, coastal flooding, more intense and more frequent storms and sea-level rise.

What is our Expected and Actual Progress?

- **Climate Indicator Implementation Plan**
- **TMDL climate model/sea level rise considerations**
- **Initial CBP climate smart decision framework conversations**

- **Physical climate indicators**
- **Cross-goal climate indicator framework**
- **Climate Mapping Repository**
- **Initial BMP resilience assessment - stormwater**

- **Climate indicators – connect with impacts**
- **BMP resilience assessment (ag, urban, tidal natural)**
- **Data/model synthesis – support adaptation targeting**
- **Local engagement - climate resilience scorecard**
- **Financing strategies**

L

Learn

What have we learned in the last two years?

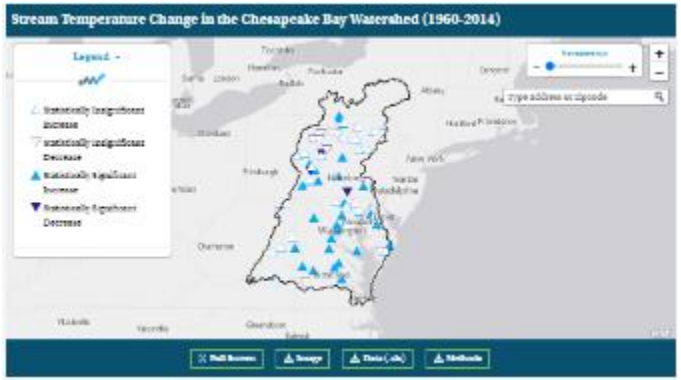
Successes and Challenges

Successes:

- Climate change indicators on Chesapeake Progress:
  - Avg. Air Temp Increase
  - Change in High Temp Extremes
  - Stream Temp Change
  - Total Annual Precip Change
  - River Flood Frequency
  - River Flood Magnitude
  - Relative Sea Level Rise

Red = updates not available

Monitoring and Assessment: Climate Indicators



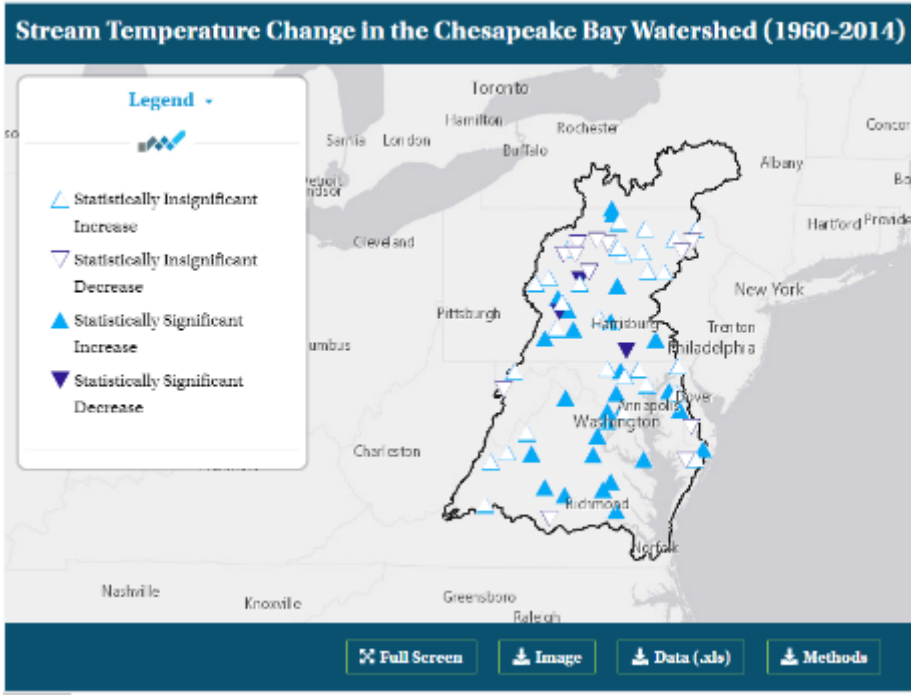
https://www.chesapeakeprogress.com/climate-change/climate-monitoring-and-assessment

Successes and Challenges

Challenges:

- Indicator maintenance - some require new data source to update
- Majority of CBP outcomes are impacted by climate change
  - *How to prioritize new indicators?*
  - *How to handle maintenance with limited staff resources?*

Monitoring and Assessment: Climate Indicators



Successes and Challenges

Monitoring and Assessment: TMDL Climate Model

Successes:

- STAC Climate Change Modeling 2.0
- Sea level rise TMDL climate model scenario

Bottom Dissolved Oxygen Change (mg/L)
(1995-2025)

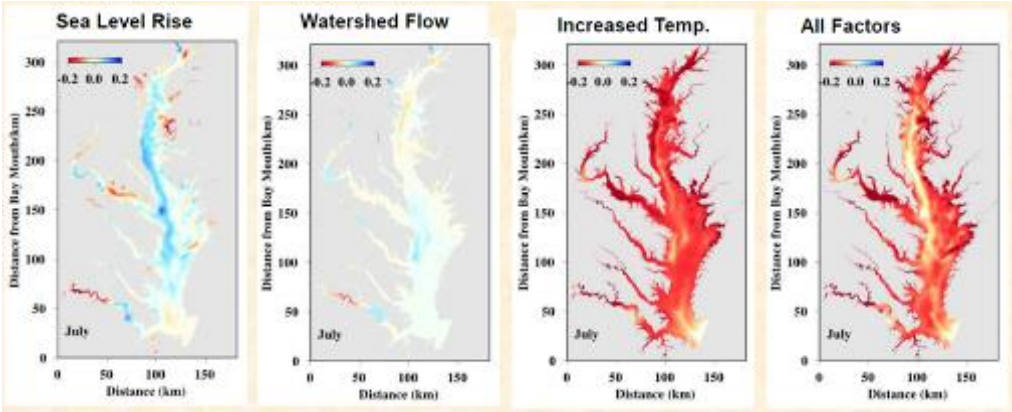


Image: CBP Modeling Team

Successes and Challenges

Adaptation: Design and Function of BMPs under a new climate reality

Successes:

- BMP prioritization related to PSC Request – Revision of Intensity Duration Frequency Curves for stormwater (GIT-funded project)

Challenges:

- Climate change uncertainties – having sufficient resources to address to ensure the desired outcomes
- Climate change BMP performance research is costly – can range from $150,000-$300,000 total for multi-year projects
- Will require overarching Partnership support and dedicated funding for BMP Research Agenda

Successes and Challenges

Adaptation: Climate Smart Tool

Successes:

- Held meeting to understand lessons learned and challenges for GITs to use
- Incorporated climate resilience considerations through other means – collaborative GIT-funding projects, Forums (LGAC Flood Forum)

Challenges:

- Resource driven
  - After use, GITs would request CRWG to lead climate-related efforts
  - Staff resources are limited while climate work is time intensive
  - Workshops are more difficult now due to COVID

Successes and Challenges

Adaptation: Implement and track priority adaptation actions

Challenges:

- Staff time commitments are already stretched thin to update comprehensive lists
- Value of product versus time commitment – is it being used?
- States' focus is on mitigation plans

On the Horizon

Monitoring and Assessment: Climate Indicators

Developing Cross-Goal Climate Indicator Framework

- Connects physical impacts with ecological and community impacts
- Could better inform climate resilience actions related to achieving Chesapeake Bay Watershed Agreement outcomes

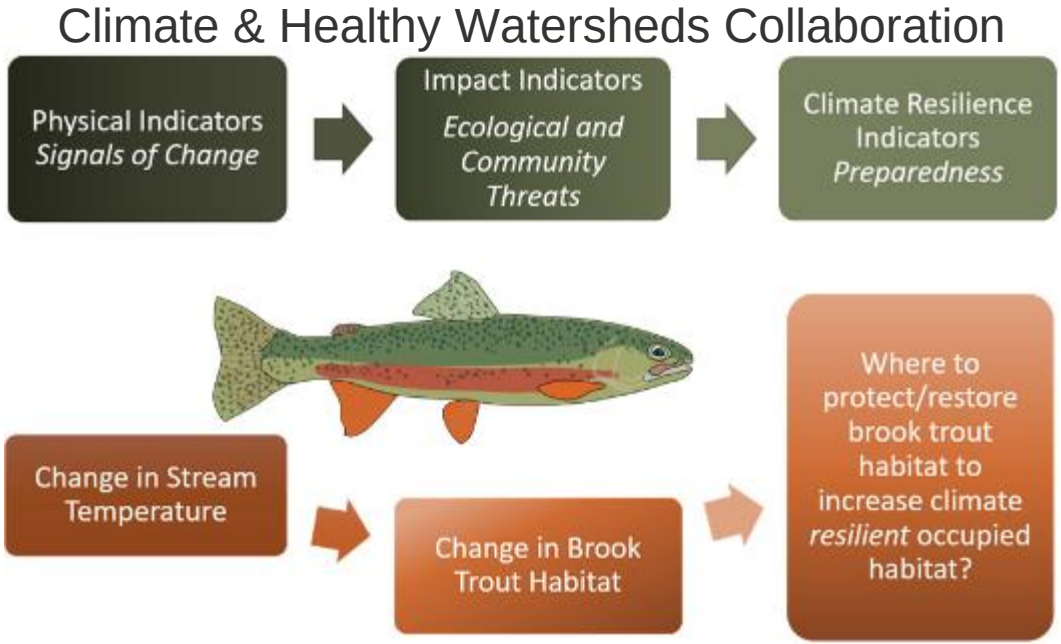


Image Credit: Nora Jackson, Healthy Watersheds
Jane Hawkey, Integration and Application Network, University of Maryland Center for Environmental Science (ian.umces.edu/imagelibrary/)

On the Horizon

Adaptation:

- **BMP climate resilience assessments**
  - Chesapeake Stormwater Network – climate vulnerability analysis of urban stormwater BMPs
  - STAC-funded climate science synthesis project (Virginia Tech) – assessing urban, ag, and natural BMPs
  - NOAA-EPA Inter-Agency Agreement Funding (Virginia Tech) – assessing climate change impacts to tidal water BMPs with habitat/fish co-benefits

Results will help inform a research agenda

On the Horizon

Adaptation:

- Assist localities with design plans for adaptation projects
  - FY19 GIT-Funded project, “Targeted Local Outreach for Green Infrastructure in Vulnerable Areas” (Lead: Habitat GIT; Support from CRWG)

- Consulting with finance experts on investment strategies for adaptation projects

On the Horizon

Local Engagement:

- FY19 GIT-funded project, “Bay-Wide Climate Resilience Scorecard for Watershed Communities” (Lead: CRWG; May 2020 – Nov 2021)
  - **Conversation starter** with localities to identify climate resilience actions that can be taken
  - Connect **local priorities with program needs**
  - Track **progress** in climate resilience efforts

Adapt

How does all of this impact our work?

Based on what we learned, we plan to …

Monitoring and Assessment: Develop Climate Indicators that Inform Adaptation:

- Assist other workgroups with climate impact indicators
  - Develop Bay Water Temperature Change Indicator – connect with fish impacts
  - Update Stream Temperature Change Indicator – connect with Healthy Watersheds and brook trout habitat


NOAA


Julie Nguyen

Based on what we learned, we plan to …

Adaptation:

- Support **data synthesis** projects that will help inform **adaptation strategies** and decision-making
- Seek out **funding strategy** to support PSC-requested **BMP climate resilience research**
- Support development of 1 - 2 proposals from **external funding sources** that would allow for better climate adaptation plans
- Explore possible STAC workshop to **increase understanding** of science gaps for **finance strategies** to work
  - Potential funding avenue for climate resilience projects (blue carbon – marshes, wetlands, SAV)

Based on what we learned, we plan to …

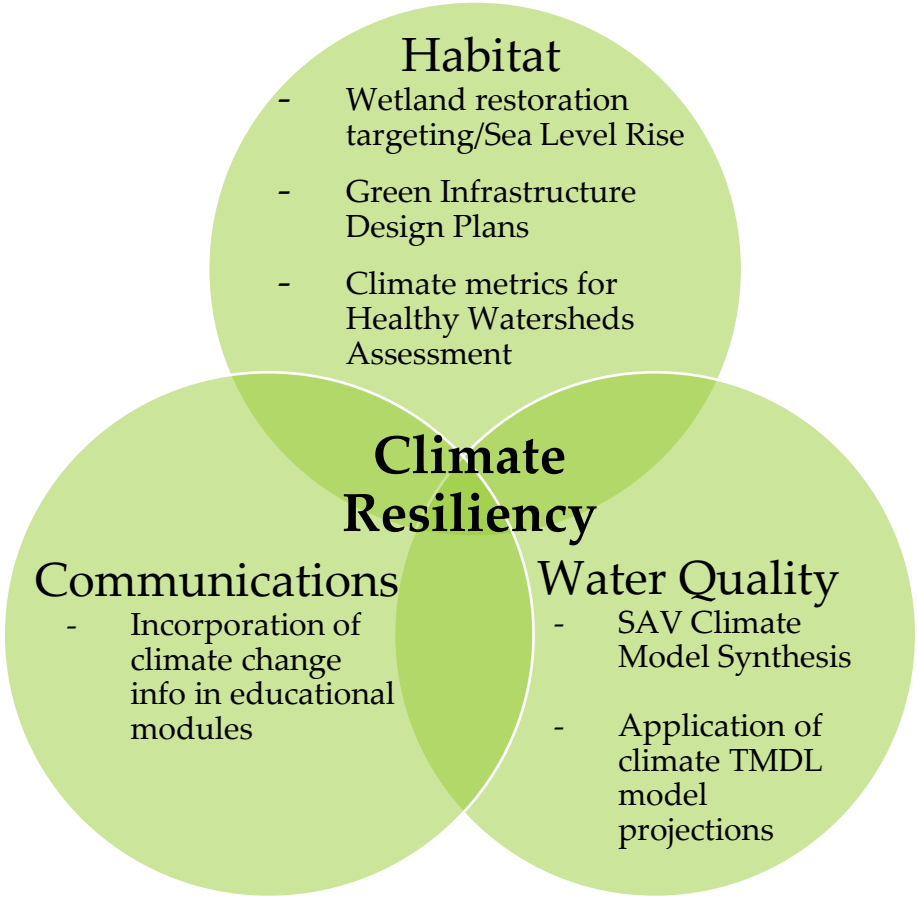
Workgroup Capacity:

- **Streamline work plan** – identify priorities under each climate resiliency outcome that CRWG will take the lead on
  - E.g., Bay-Wide Climate Resilience Scorecard, BMP climate resilience research coordination, exploration of blue carbon strategies.
- Support GITs from an **advisory** capacity – clearly define CRWG role in other projects
  - E.g., cross-workgroup climate indicators, data synthesis to inform adaptation
- **Get additional staff support for CRWG** or narrow work plan focus more
- Develop **charter** that describes **workgroup's role, membership expectations, and operating principles**

Based on what we learned, we plan to …

CRWG Consult on Cross-GIT Climate Change Projects:

- The Climate Resiliency outcomes are quite sizeable and affects success of all Watershed Agreement outcomes – **CRWG lacks capacity to lead all climate change projects, but can provide consultation when staff resources are available**



Help

How can the Management Board lead the Program to adapt?

Help Needed

- Indicator guidance – identify **utility behind climate indicators** being selected
- Establish **funding plan** for research agenda on **climate change impacts** to **BMP performance (function, design, placement)** to inform needed resilience actions – BMP uncertainties affect achievement of desired WQ, habitat, and living resource outcomes
- Engage managers and other CBP partners for use of Bay-Wide Climate Resilience Scorecard – identify **potential stakeholder users**
- Support **more staff resources** for Climate Resiliency Workgroup (CRWG full-time staffer, technical analyst)

Discussion