



Climate Resiliency

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Chair*

Through the Chesapeake Bay Watershed Agreement, the Chesapeake Bay Program has committed to...



Goal: Climate Resiliency

Outcome: Monitoring & Assessment

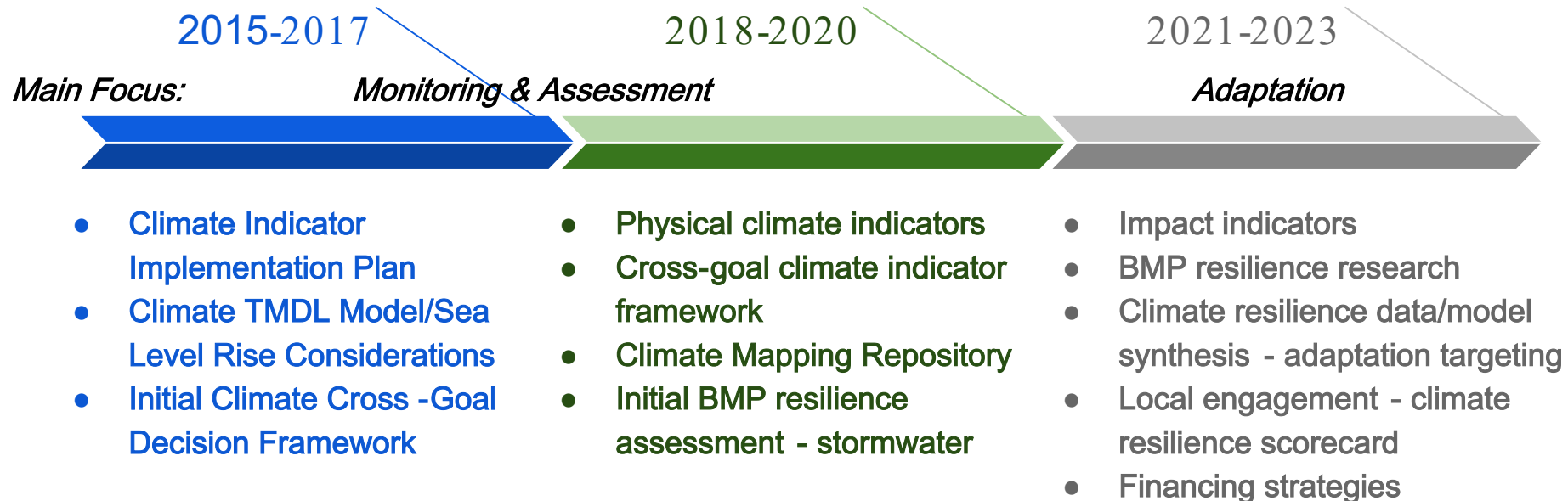
Continually monitor and assess the trends and likely impacts of changing climatic and sea level conditions on the Chesapeake Bay ecosystem, including the effectiveness of restoration and protection policies, programs and projects.

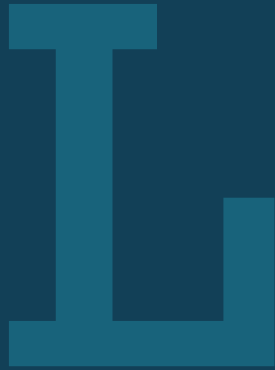


Outcome: Adaptation

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?





Learn

What have we learned in the last two years?

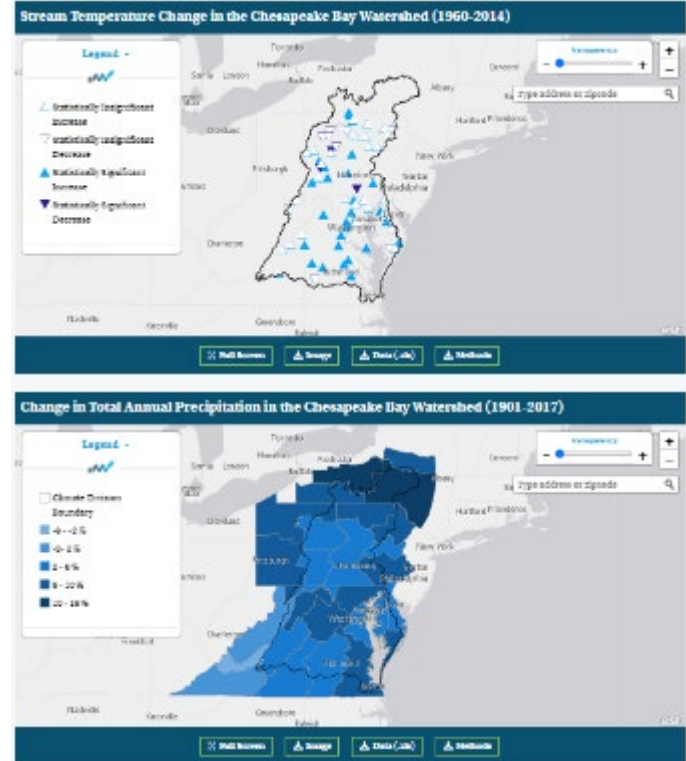


Successes and Challenges

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

Monitoring and Assessment: Climate Indicators



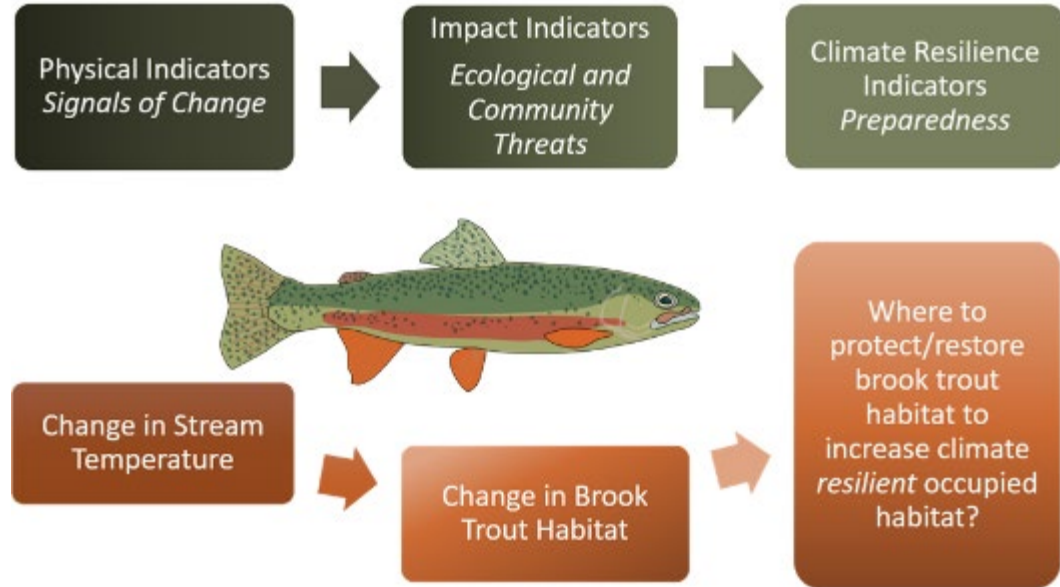


Successes and Challenges

Monitoring and Assessment: Climate Indicators

Successes:

- Cross-Goal Climate Indicator Framework - connect changes with ecological and community impacts and resilience actions



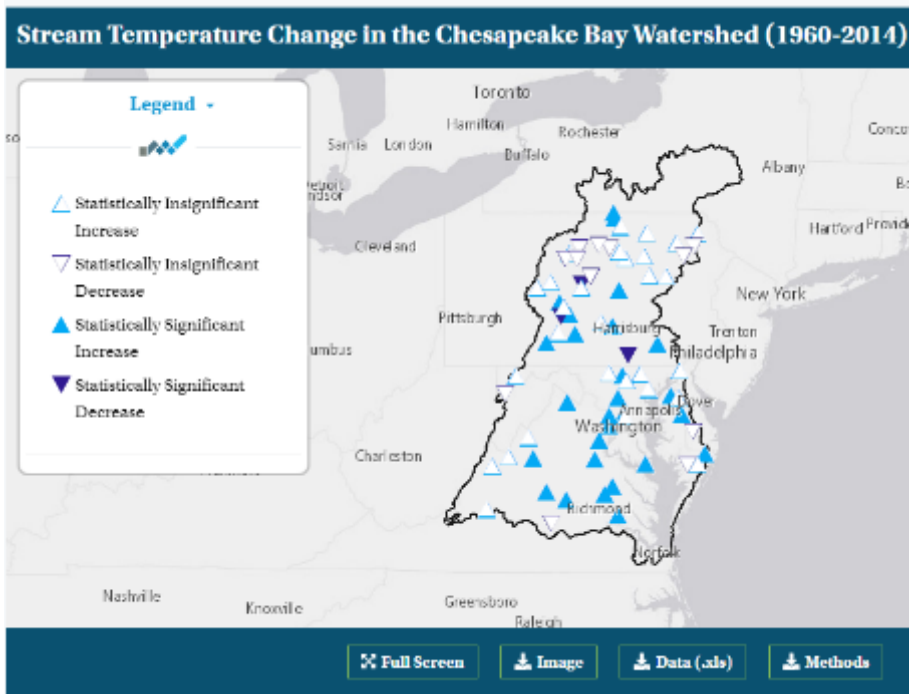


Successes and Challenges

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: Climate TMDL Model

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

Successes:

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

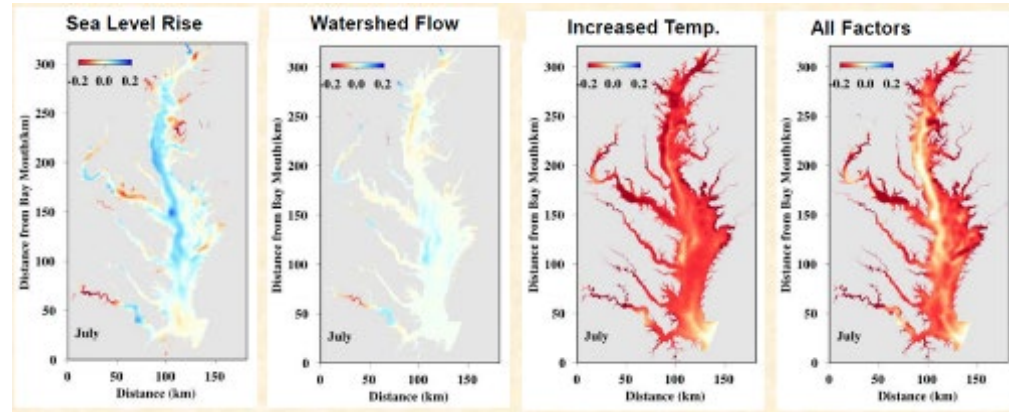


Image: CBP Modeling Team



Successes and Challenges

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

Successes:

- Assisted with BMP prioritization related to PSC Request - IDF Curve (stormwater)
- NOAA-EPA Inter-Agency Agreement - BMPs with habitat/fish co-benefits

Challenge:

- Require 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 - GIT Funding, Forums, Partnerships

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 overarching lists
- Value of product versus time commitment
- States' focus is on mitigation plans





On the Horizon

Monitoring & Assessment to Inform Adaptation:



- Connect climate change indicators with living resource impacts
 - Multi-disciplinary indicators lead to better informed climate resilient actions
- Bay-Wide Climate Resilience Scorecard for Watershed Communities - Local Engagement



On the Horizon



Adaptation:

- **BMP climate resilience assessments**
 - Important to understand pollution removal rate of BMPs in the face of climate change
 - **Need dedicated long-term funding:**
 - less data produces greater uncertainty in removal rates
 - climate change uncertainties will affect achievement of desired outcomes



On the Horizon



Adaptation:

- Assess approaches to support GITs with limited resources
 - Climate Change will impact the trajectory and scale of multiple CBP outcomes
 - Consider working with them in an **advisory capacity**
- Assist states with plans for adaptation projects - green infrastructure
- Consult Finance Experts on strategies for adaptation projects



Adapt

How does all of this impact our work?



Based on what we learned, we plan to ...

Monitoring and Assessment to Inform Adaptation:

- Develop Bay Water Temperature Indicator – one that can be broadly applied and one that connects with fish impacts
- Update strategy for stream temperature indicator – connect with Healthy Watersheds and brook trout habitat

Overall:

- **Request additional staff support for CRWG** or narrow work plan focus





**Based on what we
learned, we plan to ...**

Adaptation:

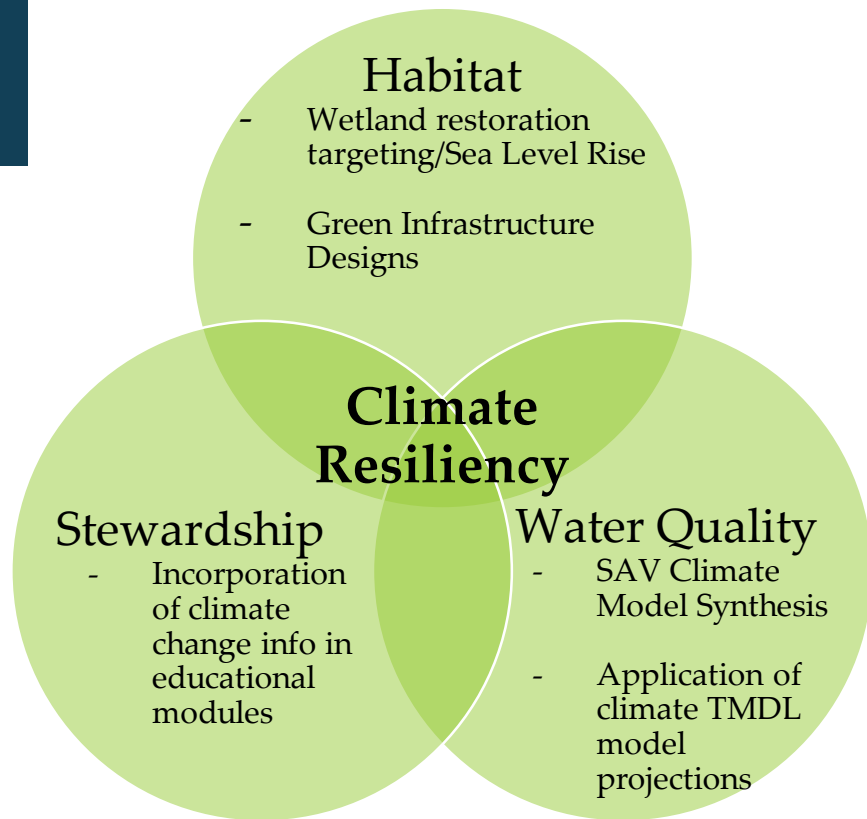
- Seek out strategy to support BMP climate resilience research
- Support development of 1 - 2 proposals that address climate adaptation from external funding sources
- Explore STAC workshop to increase understanding of science gaps for finance strategies to work – potential funding avenue for climate resilience projects (blue carbon – marshes, wetlands, SAV)



Based on what we
learned, we plan to ...

Support Cross-GIT Collaborative Climate Change Projects:

- The Climate Resiliency Outcomes are sizeable and affects success of all Watershed Agreement outcomes - **CRWG can't tackle them alone**





Help

*How can the Management Board
lead the Program to adapt?*



Help Needed



- Indicator guidance – identify utility behind indicators being selected
- Establish long-term funding for research agenda to improve understanding of BMP performance under changing climate conditions
- Engage managers and other CBP partners for use of Bay-Wide Climate Resilience Scorecard – provide list of potential stakeholders
- Provide additional staff resources to support Climate Resiliency Workgroup (additional staffer, technical analyst)



Discussion