Quarterly Progress Meeting - August 2018

Chesapeake Bay Program
Science. Restoration. Partnership.

# Monitoring & Assessment, Adaptation Outcomes

*Climate Resiliency Working Group*

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


## Goal:

Increase the resiliency of the Chesapeake Bay watershed, including its living resources, habitats, public infrastructure and communities, to withstand adverse impacts from changing environmental and climate conditions.

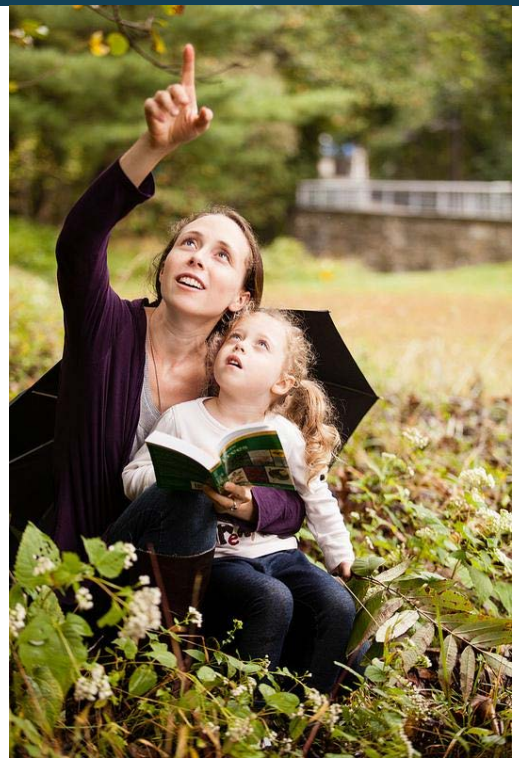
## Monitoring & Assessment Outcome*:*

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.

## Adaptation Outcome*:*

*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 We Want



## To have the Management Board support our efforts in:

- ~~For Management Board (MB) and the Chesapeake Bay Program (CBP) to~~ Communicating monitoring priorities to nontraditional partners and Citizen Science programs.
  - These priorities should include climate-related monitoring ~~and~~ needs. MB (with input from CRWG) will develop a priority list of specific (space & time) data needs for this purpose.

- Promoting utilization of the Chesapeake Bay Program Climate Smart Framework & Decision-Support Tool –
  - Encourage GIT chairs and coordinators to utilize this decision making tool in their workgroup decisions.

- ~~MB Support for~~ Addressing recommendations for data/research needs associated with the results of the "Monitoring and Assessing Impacts of Changes in Weather Patterns and Extreme Events on BMP Siting and Design" STAC Workshop ~~recommendations~~ :
  - "Starting with the 2022-2023 milestones, determine how climate change will impact the BMPs included in the WIPs and address these vulnerabilities in the two-year milestones"

- Jurisdiction, WQGIT input and support re: WIP narrative guidance- a qualitative approach for incorporating climate change into the phase III WIPs

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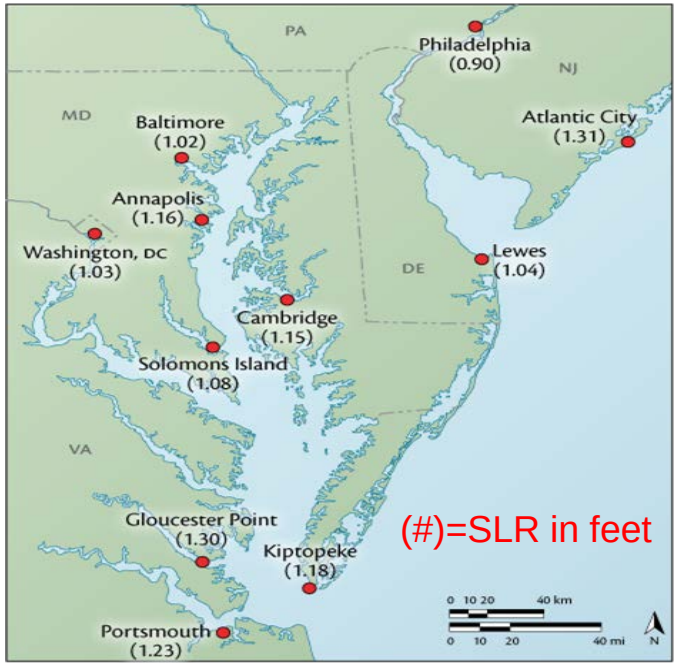
# Setting the Stage:

***What are our assumptions?***

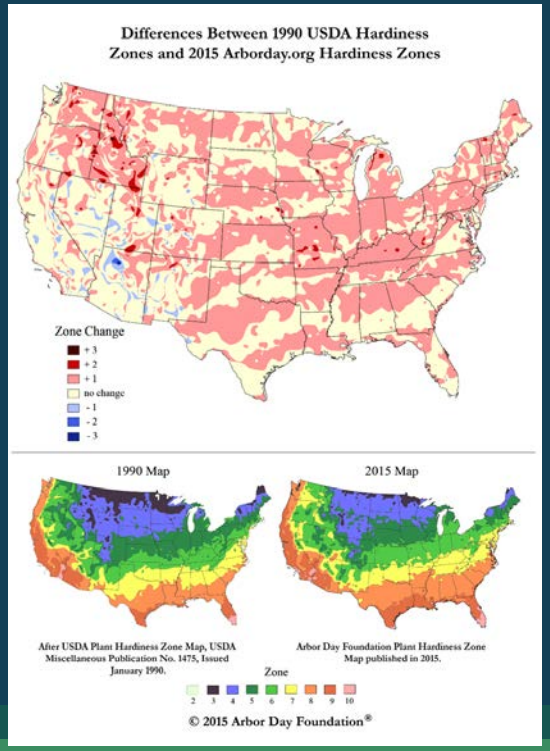
# Climate Change: *Real Consequences*

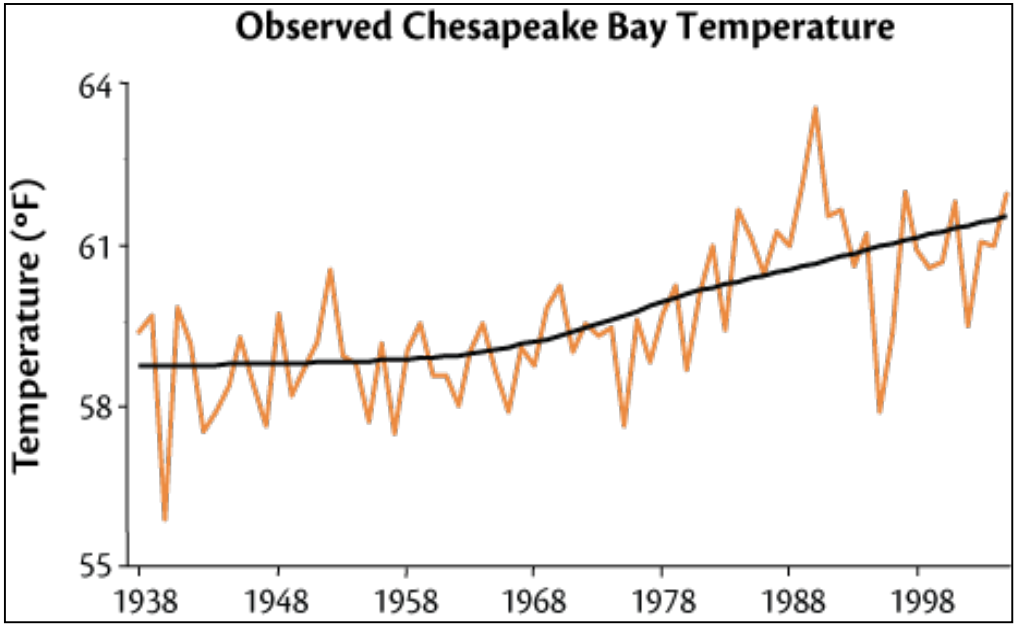




Sea level has risen approximately one-foot in the last century

Source: www.umces.edu/climateimpacts/

# Climate Change: *Real Consequences*



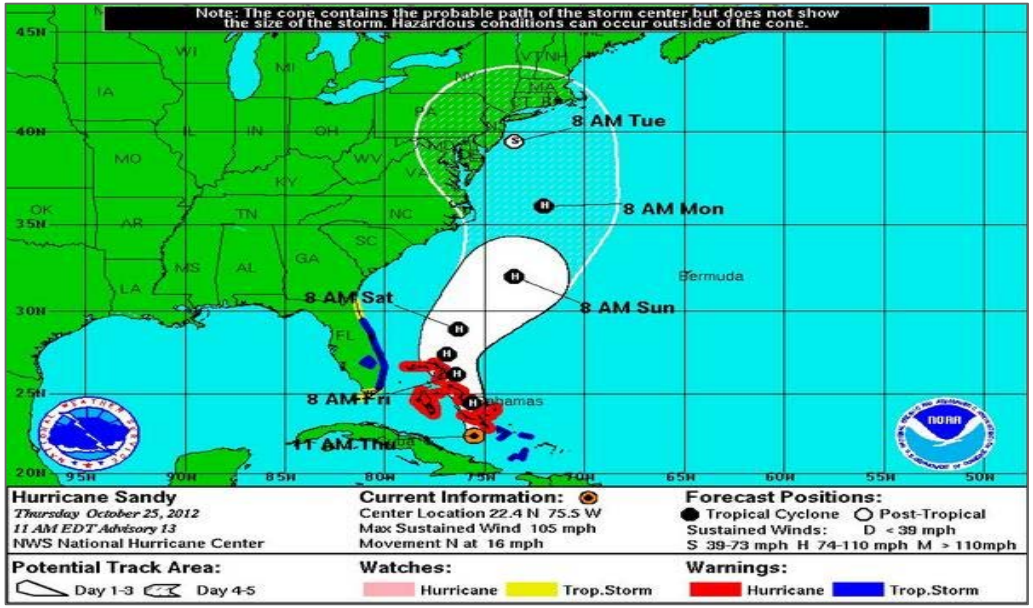




Chesapeake Bay has warmed by more than 2°F.

# Climate Change: *Real Consequences*

Annapolis 2004 Balt Sun

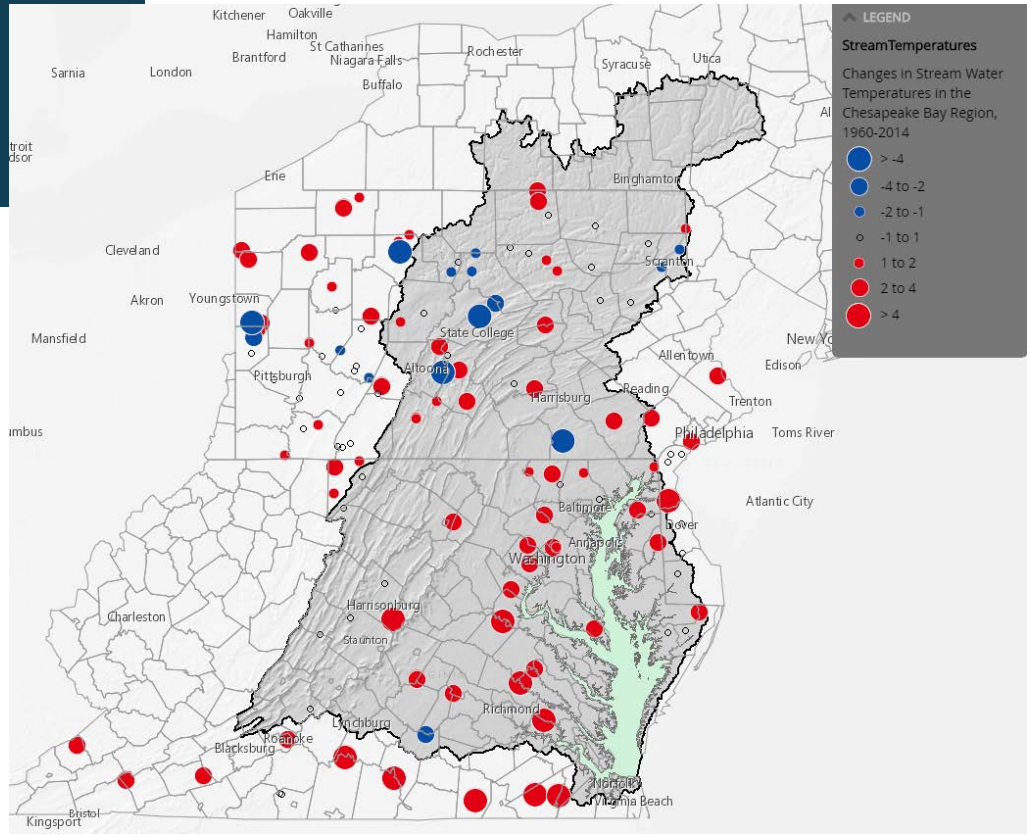
Ellicott City 2018 NY Times




Extreme Events, such as Hurricane Isabel 2004, or higher intensity storm events (Ellicott City 2018) foreshadow the Watersheds vulnerability to climate change

# Changes in Stream Water Temperatures in the Chesapeake Bay Region, 1960-2014

## Cross-Outcome Considerations




Cross GIT Mapping: Stream Temperature Change

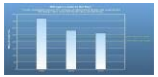
# Agreement Goals and Outcomes

## Sustainable Fisheries

- Blue Crab Abundance
- Blue Crab Management
- Oyster
- Forage Fish
- Fish Habitat

## Vital Habitats Goal

- Wetlands
- Black Duck
- Stream Health
- Brook Trout
- Fish Passage
- Submerged Aquatic Vegetation (SAV)
- Forest Buffer
- Tree Canopy



## Water Quality Goal

- 2017 Watershed Implementation Plans (WIP)
- 2025 WIP
- Water Quality Standards Attainment and Monitoring

## *Toxic Contaminants Goal*

- Toxic Contaminants Research
  Toxic Contaminants Policy and Prevention

## Healthy Watersheds Goal

- Healthy Waters

## Stewardship Goal

- Citizen Stewardship
- Local Leadership
- Diversity

## Land Conservation Goal

- Protected Lands
- Land Use Methods and Metrics Development
  Land Use Options Evaluation

## Public Access Goal

- Public Access Site Development

## Environmental Literacy Goal

- Student
- Sustainable Schools
- Environmental Literacy Planning

## Climate Resiliency Goal

- Monitoring and Assessment
- Adaptation Outcome

Green = Climate Change links

# Logic Behind Our Outcome

**Factors Influencing Success**

**Current Efforts and Gaps**

**Management Approaches**

## Factors Influencing Success:

- Scientific Capabilities: data availability and accessibility

- Variability across the Watershed: wide range of monitoring, assessment and adaptation needs throughout the region

- Collaboration among Goal Implementation Teams (GITs), stakeholders and others that are addressing climate science and adaptation

# Current Efforts and Gaps

EFFORTS (this should refer to our partners' work independent of the Bay Program and CRWG)

- List programs that partners have? USACE, NOAA

GAPS (should be gaps that would exist without the work that CRWG is recommending going forward)

- Consistent incorporation of climate into jurisdiction efforts

The CRWG spent 2 year gathering insights from the partnership on possible indicators to inform decision-making. The Original list of needs was 210 topics, 122 metrics. We are publishing 6 this year. Efforts for the top 21 (and maybe the 150+) Have been captured. The remaining 200ish items of interest is one set of gaps we might reference here.

# Management Approaches

- Continually monitor and assess the trends and likely impacts of changing climatic and sea level conditions on the Chesapeake Bay ecosystem

- 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

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# Progress:

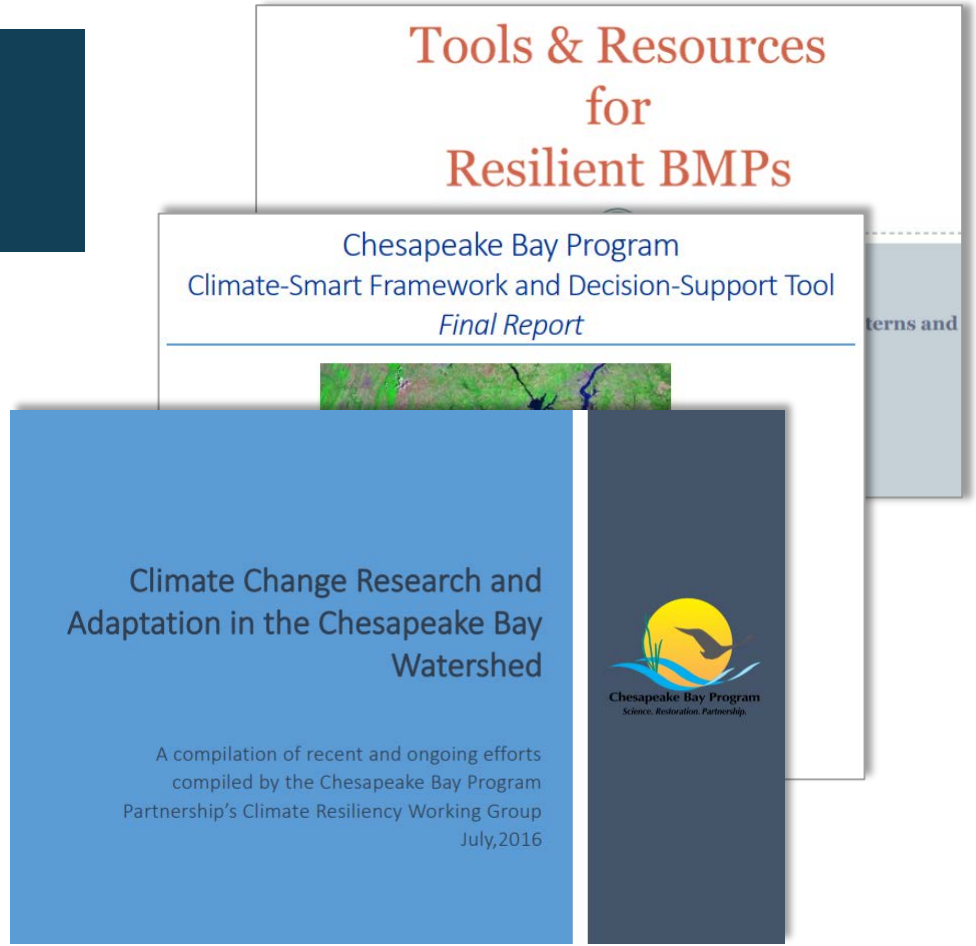
***Are we doing what we said we would do?***

# What is our progress?

- Compendium of Climate Change Research and Adaptation Efforts (2016)
- Development of Climate Change Indicators and Progress Measures for the Chesapeake Bay Program
- Three, One-Day STAC workshop with SAV, Blue Crab, and Oyster (working groups?) : "An Analytical Framework for Aligning Chesapeake Bay Program Monitoring Efforts to Support Climate Change Impact and Trend Analyses and Adaptive Management"
- Technical Recommendations to Modeling Workgroup: Guidance on climate projections & scenarios - sea level rise, temperature, precipitation "Recommendations on Incorporating Climate-Related Data Inputs and Assessments: Selection of Sea Level Rise Scenarios and Tidal Marsh Change Models"
- Climate Change Monitoring Needs Assessment
- STAC Workshops: BMP and The Development of Climate Projections for Use in the Chesapeake Bay Program Assessments

# What is our progress?

- Implementation of STAC Workshop "Monitoring and Assessing Impacts of Changes in Weather Patterns and Extreme Events on BMP Siting and Design"(September 2017)
- Climate Smart Framework & Decision-Support Tool Workshops with Toxic Contaminant, SAV, Tidal Wetlands workgroups
- Inform policy implementation of the Phase III Watershed Implementation Plans (WIPs) – 2017 mid-point assessment



# Analysis

Consideration – we are not sustaining existing monitoring programming with present funding, much less growing programs to meet needs. And yet, monitoring is one of the two key outcomes. Need data? Need commitments to sustain and grow networks to address information gaps. **Analysis** should reflect this issue.

Which management actions will be the most critical to your progress in the future?

- STAC Workshop in September 2018: Chesapeake Bay Program Climate Change Modeling 2.0: Developing recommendations for new/refined methods for modeling techniques to assess future impacts of projected climate change on watershed loads and estuarine processes

- PSC ask- more science re: BMP efficiencies (use PSC language here) "Starting with the 2022-2023 milestones, determine how climate change will impact the BMPs included in the WIPs and address these vulnerabilities in the two-year milestones"

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# Challenges:

***Are our actions having the expected effect?***

# Challenges

What scientific, fiscal or policy-related developments or lessons learned (if any) have changed your logic or assumptions about your Outcome?

- Fiscal challenges associated with monitoring recommendations
- Uncertainty of climate science
- Lack of quantitative endpoint

PT Comment – yes, sustainability of existing networks are challenged, there were many more metrics of interest identified by the community than present investments support. Options: Information needs must change? technology for cheaper data gathering? New monitoring strategy?

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# Adaptations:

***How should we adapt?***

# Based on what we've learned, we plan to…

What (if anything) would you recommend changing about your management approach at this time? Will these changes lead you to add, edit or remove content in your work plan?

- **Modify work plan format and narrow the work plan focus into four main areas:**
  - Shoreline condition and response;
  - Climate change on BMPs;
  - Inland and urban flooding;
  - Stream health condition

- **Potentially narrow the focus of the work plan to report on those activities that the Climate Resiliency Working Group directly impact**

# Cross-Outcome Considerations

Continue to focus on climate change impacts to:

- Black Duck
- Brook Trout
- Diversity
- Fish Habitat
- Forest Buffer
- Healthy Watersheds
- SAV
- Stream Health
- Wetlands
- Water Quality

Is this really “focusing” if we deal with 1/3 of the outcomes? It gives the appearance of a long list to me.

Maybe lumping a bit:
* Water Quality
* Living Resources
* Watershed habitat Characterization

Match to final text on the early presentation slide

# What We Want

## To have the Management Board support our efforts in:

- For Management Board (MB) and the Chesapeake Bay Program (CBP) to communicate monitoring priorities to nontraditional partners. These priorities should include climate related monitoring and needs. MB (with input from CRWG) will develop a priority list of data needs for this purpose.
- Promoting utilization of the Chesapeake Bay Program Climate Smart Framework & Decision-Support Tool - Encourage GIT chairs and coordinators to utilize this decision making tool in their workgroup decisions.
- MB accepting this response: Support for data/research needs associated with the "Monitoring and Assessing Impacts of Changes in Weather Patterns and Extreme Events on BMP Siting and Design" STAC Workshop recommendations . "Starting with the 2022-2023 milestones, determine how climate change will impact the BMPs included in the WIPs and address these vulnerabilities in the two-year milestones"
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# Discussion