Insights for Improving Stormwater Management:

Lessons learned from Engagements with Planners in the Chesapeake Bay and Great Lakes Regions

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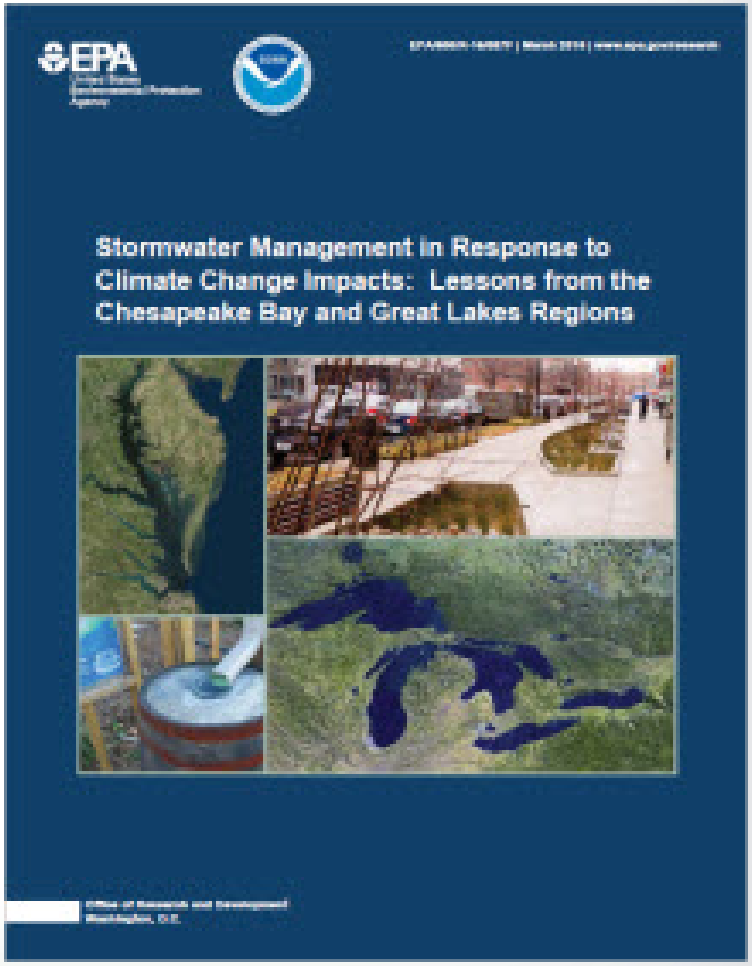
Background

- Changes in rainfall are projected and will affect stormwater runoff
- These changes need to be incorporated into stormwater planning
- EPA and NOAA funded workshops in the Chesapeake and Great Lakes Regions to explore:
  - Impacts of projected climate and land use change on local water conditions
  - Ways to fit adaptation into existing planning processes
- Insights gained will improve our ability to provide useful climate change information



Joint Report Collaborators

- U.S. EPA Global Change Impacts and Adaptation Research Program
- Great Lakes Adaptation Assessment for Cities Project of the Graham Sustainability Institute at the University of Michigan
- ICF International
- Lake Superior National Estuarine Research Reserve
- NOAA Office for Coastal Management
- Old Woman Creek National Estuarine Research Reserve

Local Community Partners

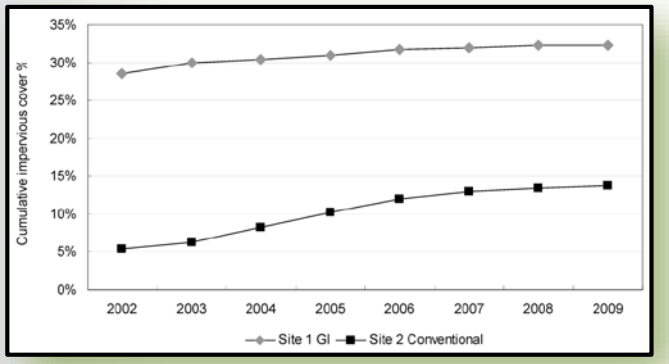
Chesapeake Bay

- Baltimore, Maryland
- Stafford County, Virginia
- York County, Pennsylvania

Great Lakes

- Monroe and Ann Arbor, Michigan
- Cleveland and Toledo, Ohio
- Green Bay, Wisconsin
- Duluth, Saint Paul, and Minneapolis, Minnesota

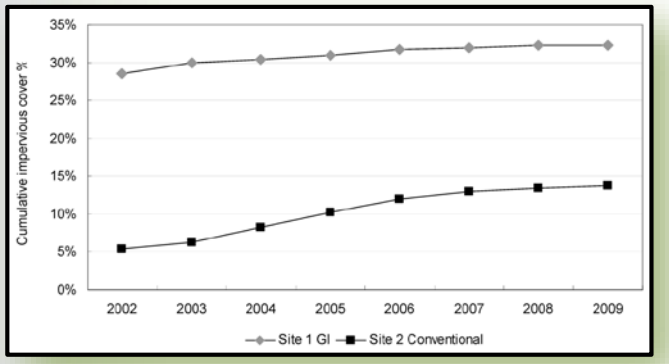
Key Takeaways from Workshops



- Incorporating climate change into planning
- Building local capacity

- Identifying and communicating costs and benefits of green infrastructure
- Implementation within current governance structure

Key Takeaways from Workshops

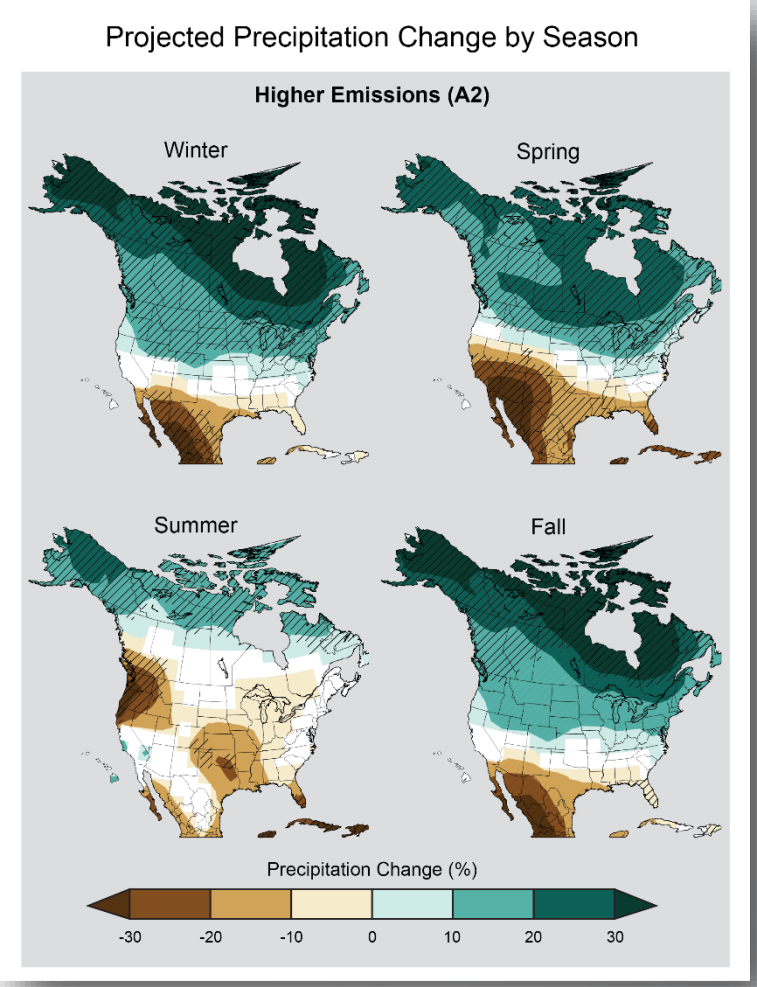


- **Incorporating climate change into planning**
- Building local capacity
- Identifying and communicating costs and benefits of green infrastructure
- Implementation within current governance structure

Incorporating Climate Change into Planning -- Issues

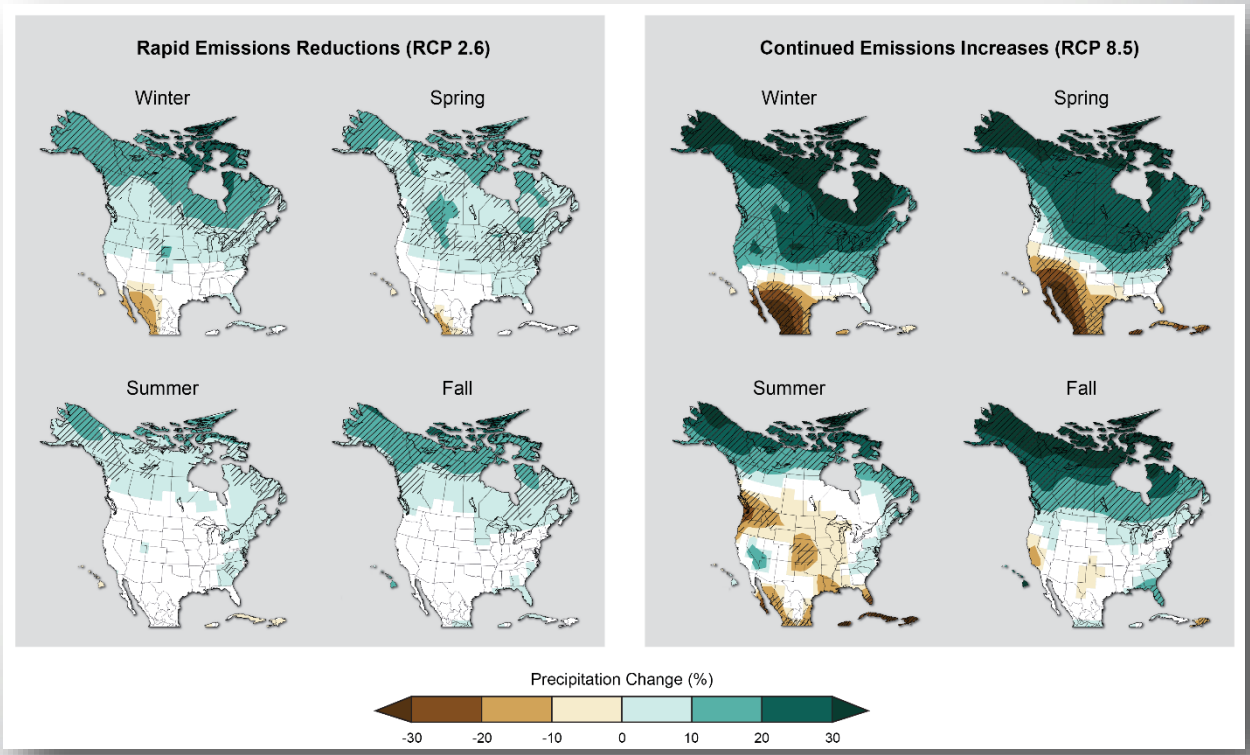
- **Challenge:** Scale of climate change data and relevance to local conditions

- **Observations from the Local Level:**
  - Need for better projections
  - Local conditions and concerns vary
  - Short-term infrastructure decisions are not tied to long-term climate projections
  - Stormwater codes are based on historical data

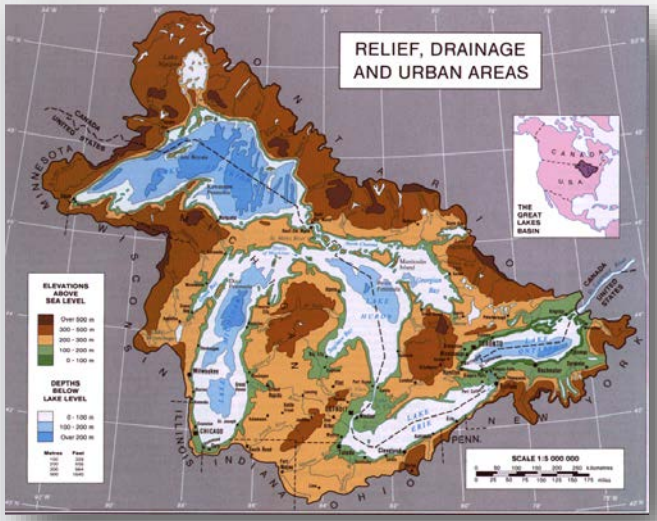


Incorporating Climate Change into Planning -- Issues

- **Challenge:** Projections of future climate change and land use change are uncertain
- **Observations from the Local Level:**
  - Stormwater managers want to know with certainty what they are planning for, but…
  - Climate models produce a range of projections
  - Sources of uncertainty differ by region
  - Interactions of climate change with other stressors adds to unpredictability



Incorporating Climate Change into Planning -- Issues



- **Challenge:** Need reliable, updated land use data
- **Observations from the Local Level:** Outdated or incomplete data make understanding changes in precipitation-driven flooding difficult

- **Challenge:** Educating and coordinating internally and externally
- **Observations from the Local Level:**
  - Need greater interdepartmental cooperation at the municipal level
  - Lack training or experiences that could be shared to provide positive examples of how to adapt

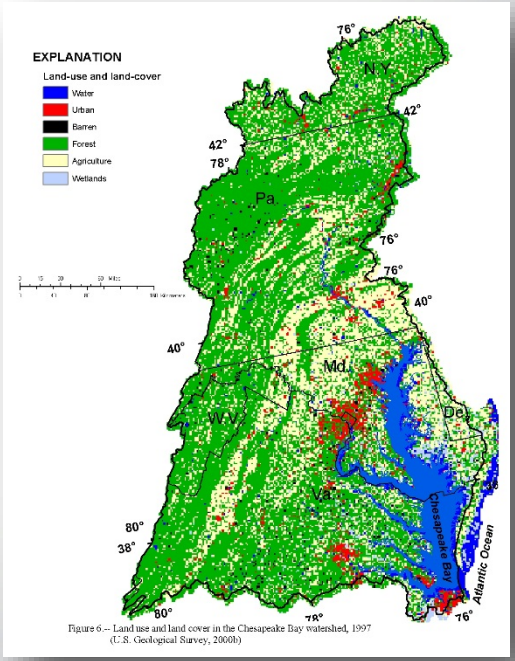


Figure 6.--Land use and land cover in the Chesapeake Bay watershed, 1997 (U.S. Geological Survey, 2000b)

Incorporating Climate Change into Planning – Near Term Solutions

- Discussed the need to **use best available data** and ways to **make that data accessible**
- Recommended starting with what stormwater managers plan for and then **seek agreement on a threshold change** (e.g., the community will prepare for X storm)
- Agreed that they should **use a broad range of scenarios** to develop possible futures rather than a single projection
- Called for **improved databases of land use and development information**
- Recommended using **analytic methods/tools** that enable action in the face of uncertainties
- Expressed the need to **develop networking and educational opportunities** for information exchange

Thank you!

Report url:
https://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=310045

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