



◦ MD-DC Utilities Association Conference

Climate Resilience Planning:

City of Baltimore



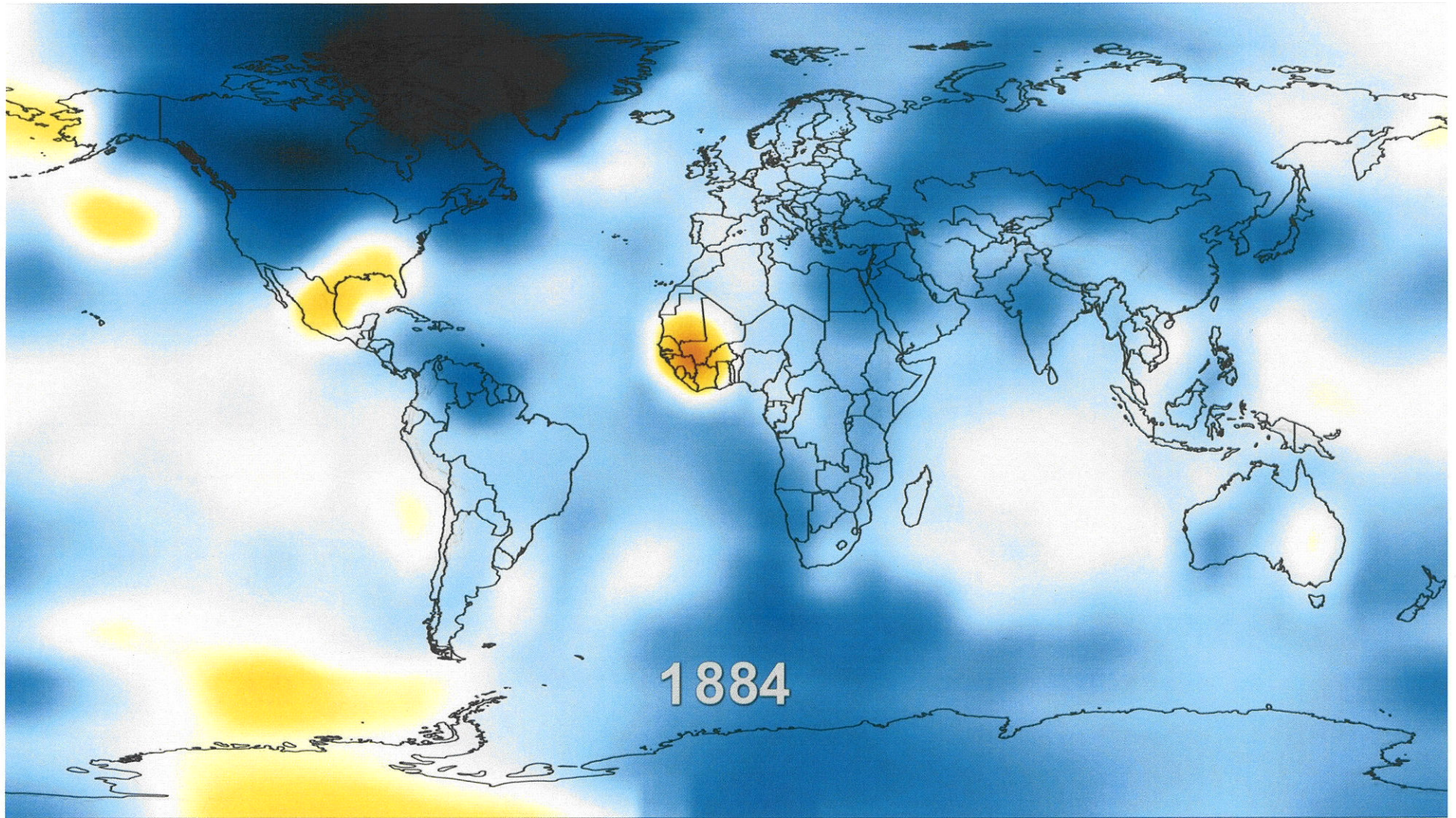
Kristin Baja
Climate and Resilience Planner
City of Baltimore, Office of Sustainability

Overview

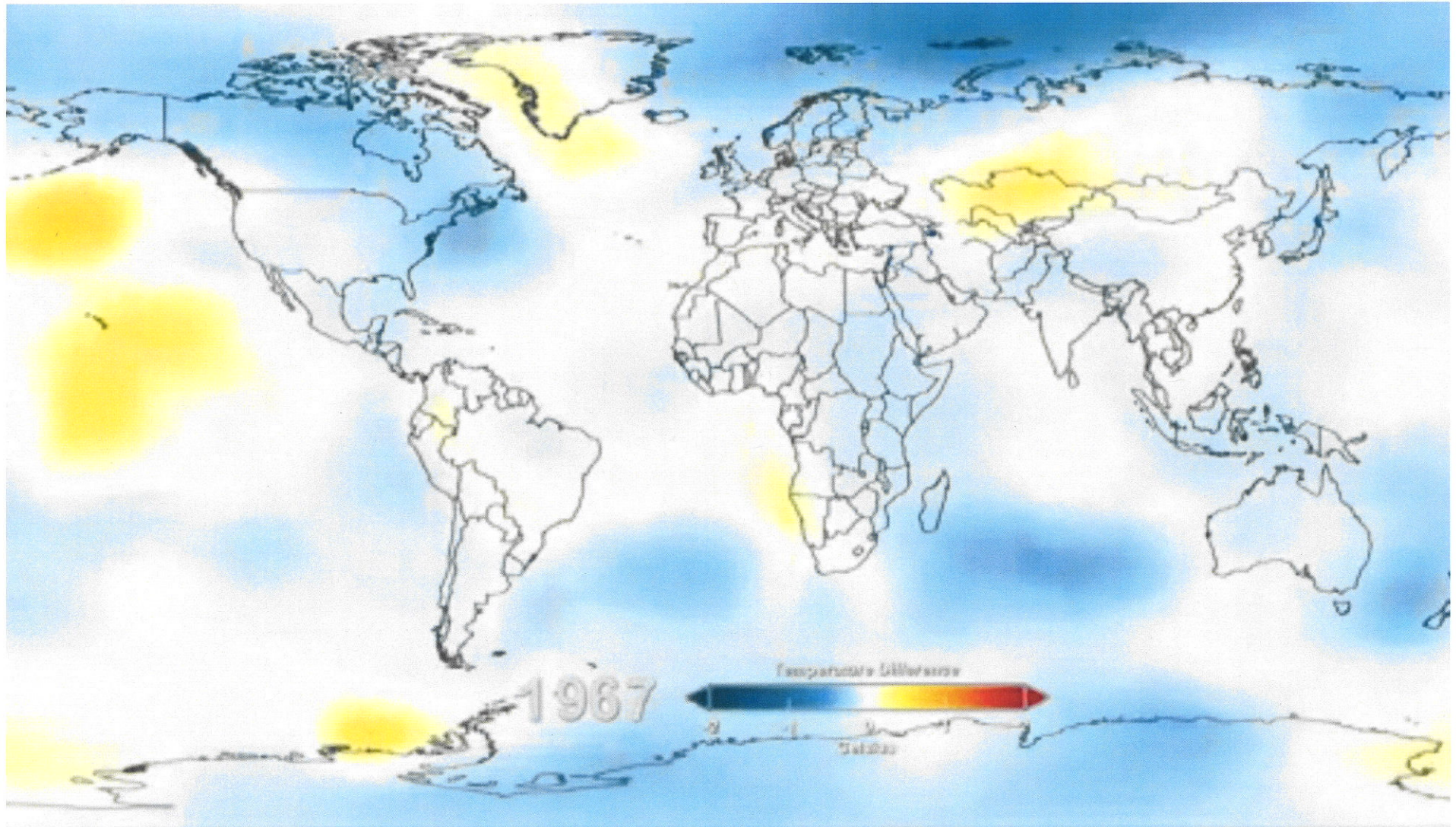
- Climate Change
- Hazards
- DP3 Development
- Implementation
- Communication
- Integration



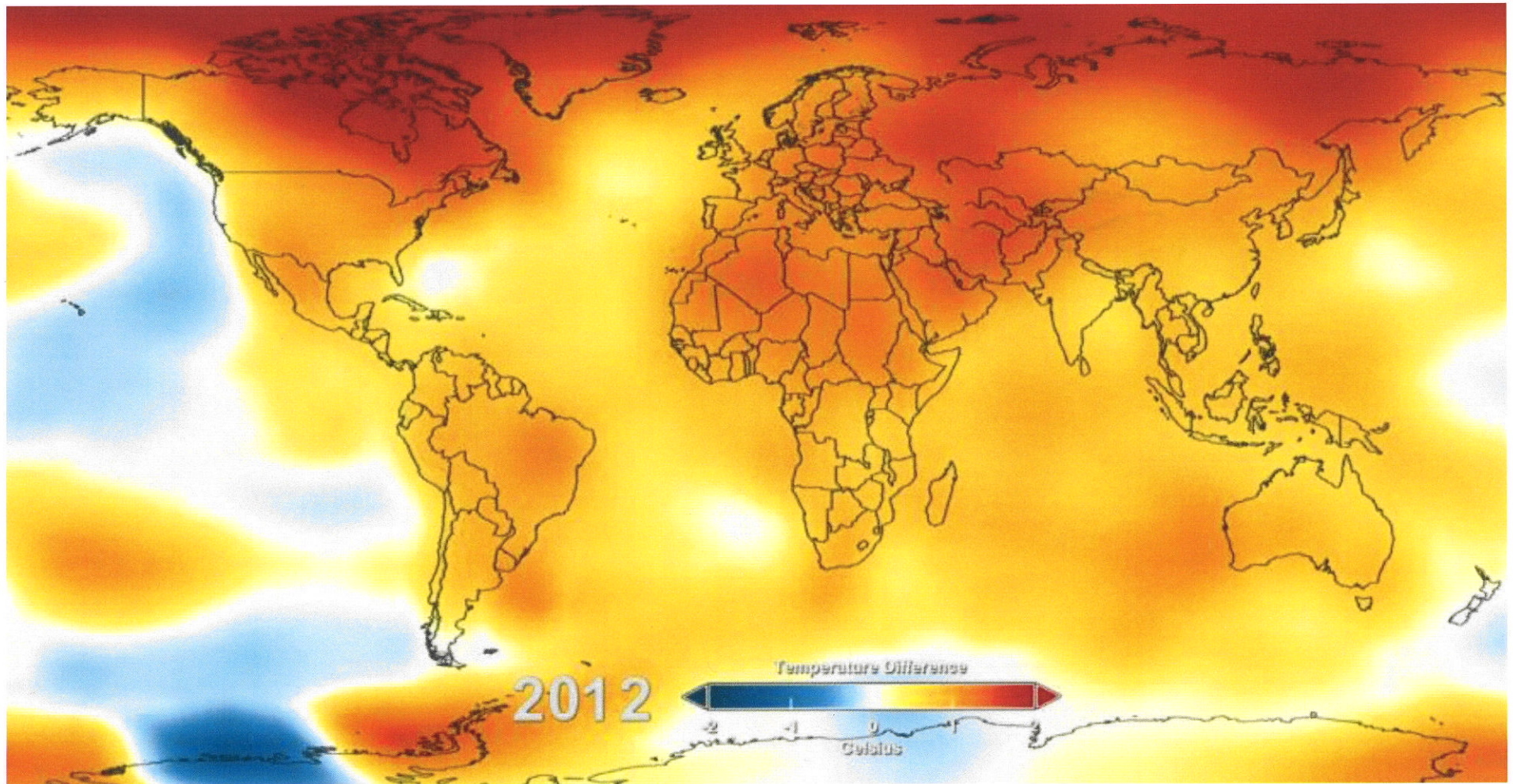
Global Surface Temperatures 1884



Global Surface Temperatures 1967

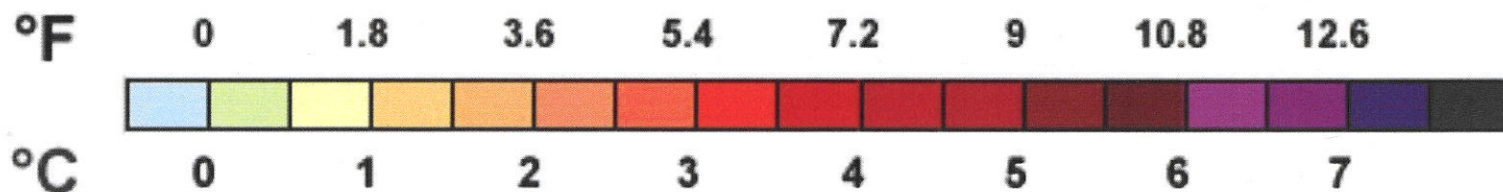
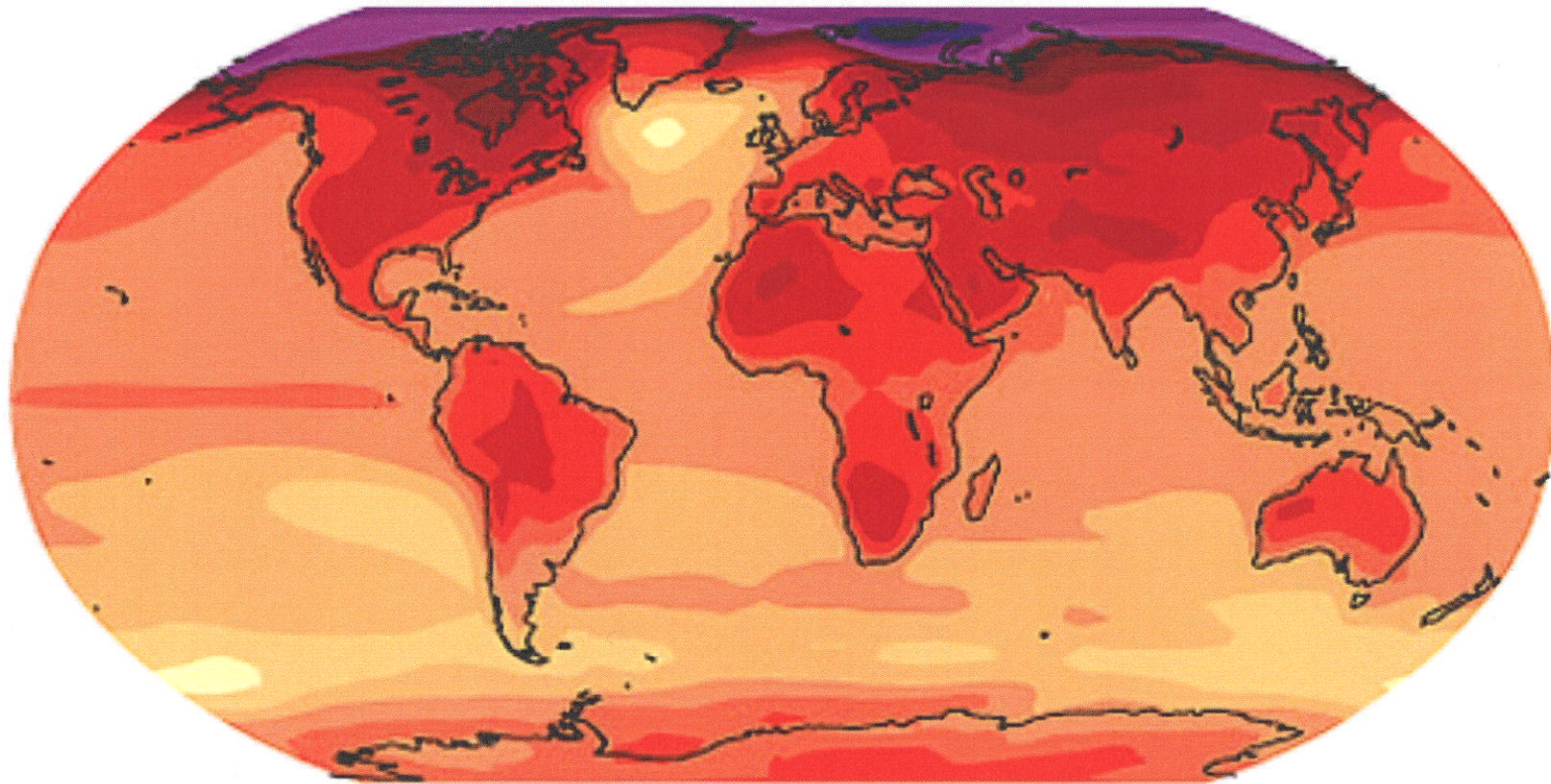


Global Surface Temperatures 2012



Projected Temperature Increases

Middle Emissions Scenario, 2080

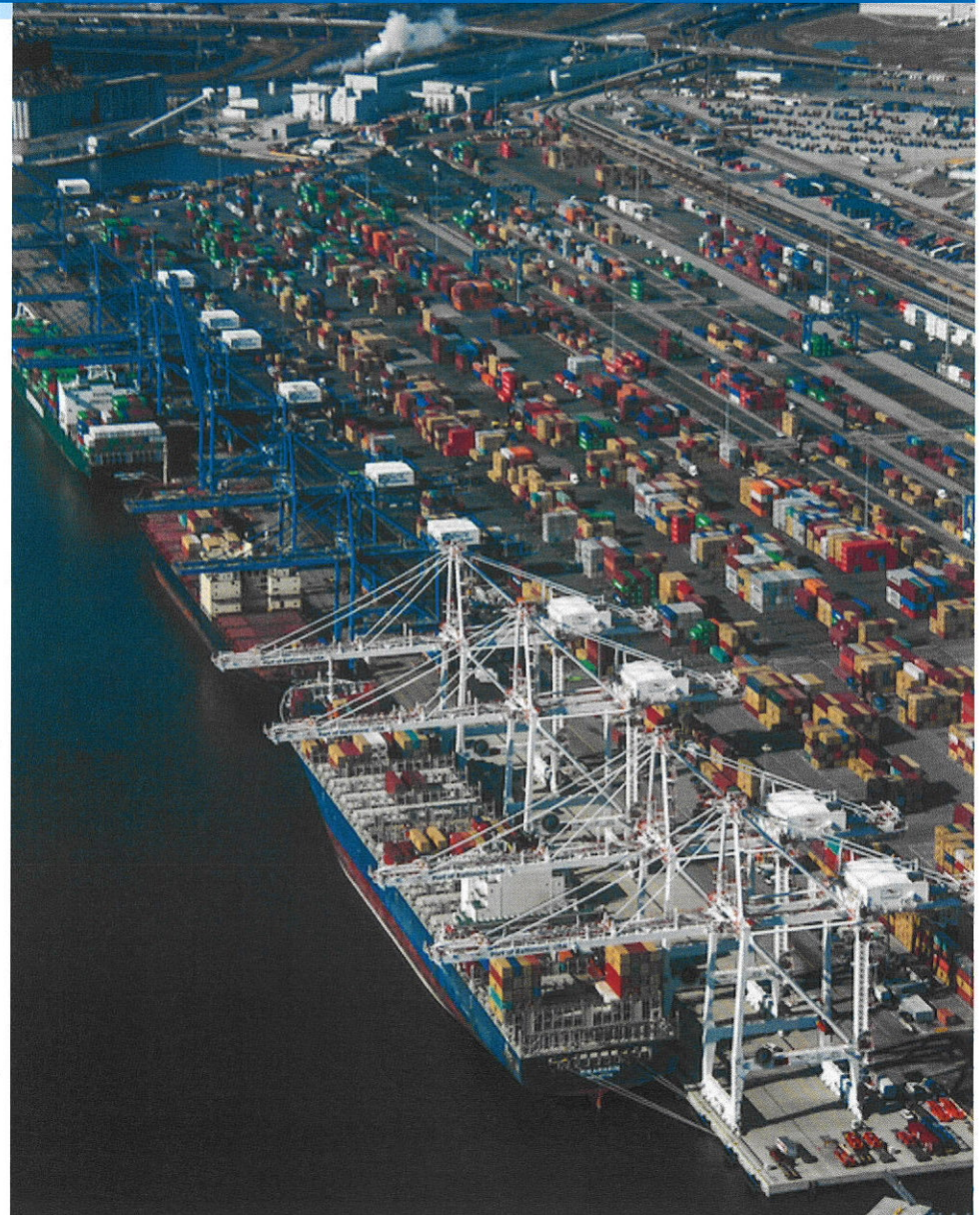


IPCC

Hazard Mitigation



Hazard Mitigation is sustained action taken to reduce or eliminate long-term risks to people and their property from hazards. This is based on hazards we have already seen and know we are likely to see in the future.



Climate Adaptation



Refers to changes made to better respond to new climate conditions, thereby reducing harm and taking advantage of opportunities.



Baltimore's Unique Approach



All Hazard Mitigation Plan

(Current and Historical Hazards)

+

= Resilience

Climate Adaptation Plan

(Adapt to new and predicted climate conditions)

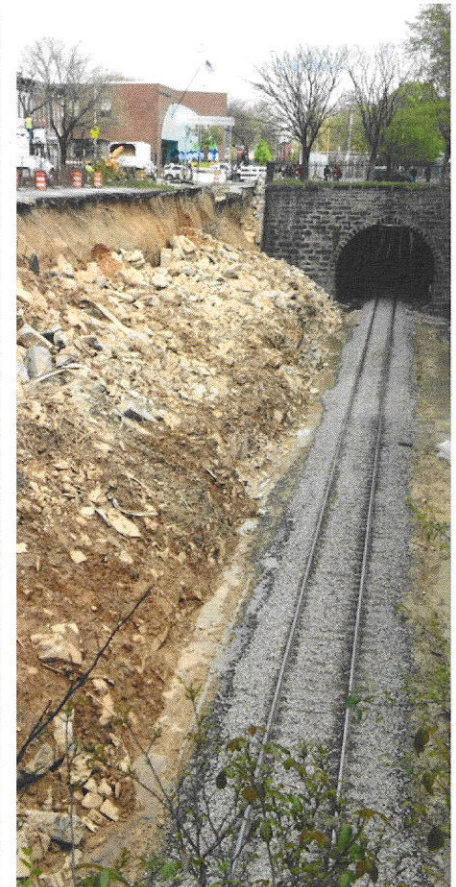




Watersheds and Reservoirs



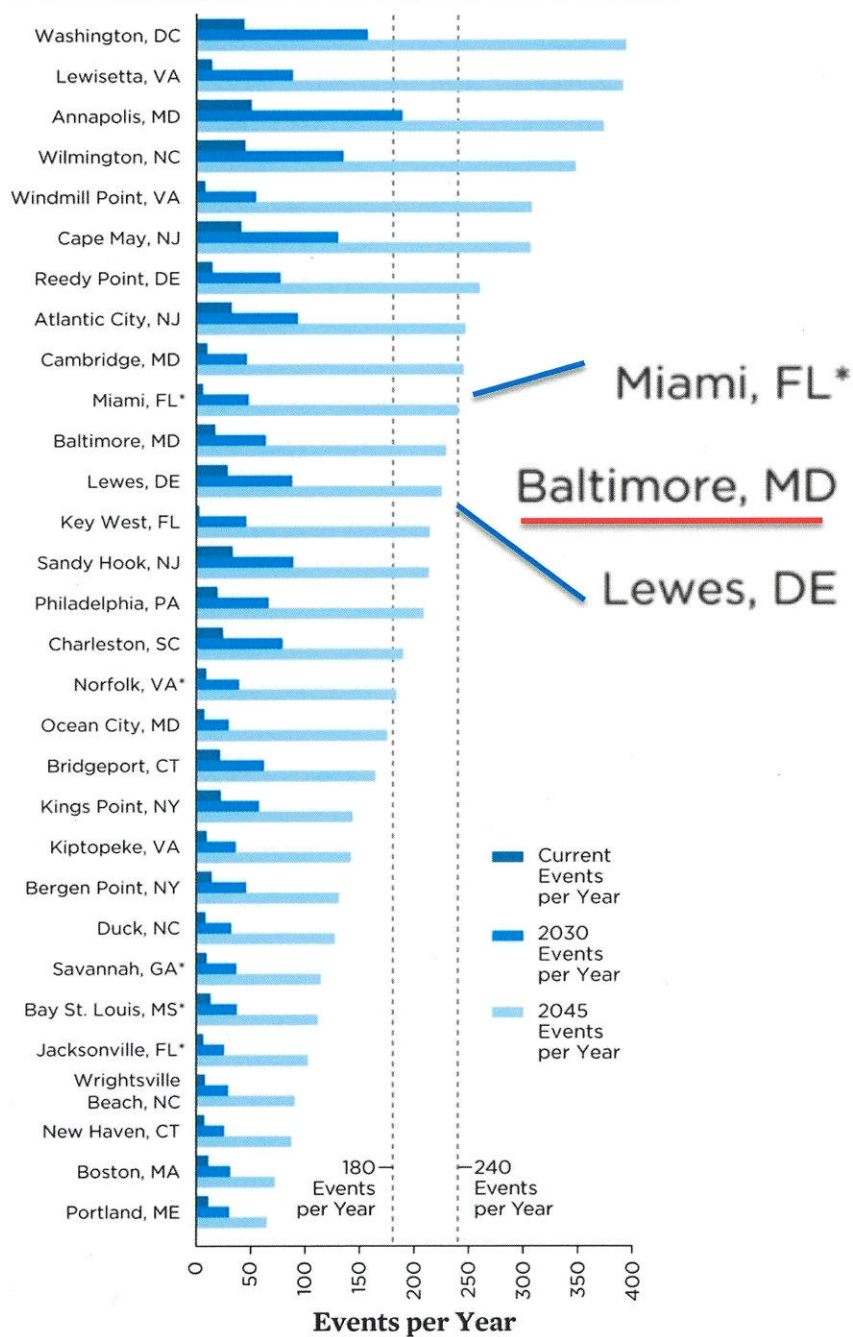
Non-Tidal Flooding



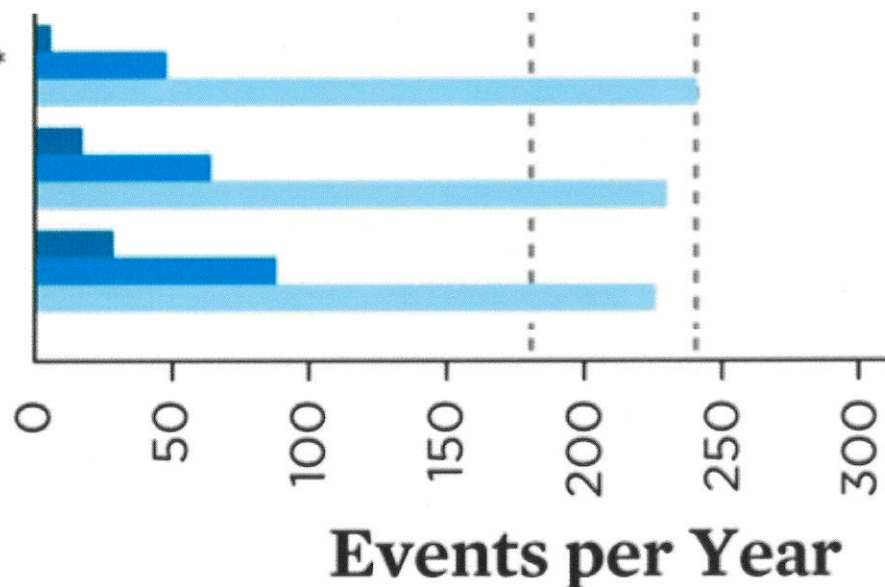
Non-Tidal Flooding



Tidal Flooding Today, in 2030, and in 2045



Tidal Flooding



Union of Concerned Scientists, 2014

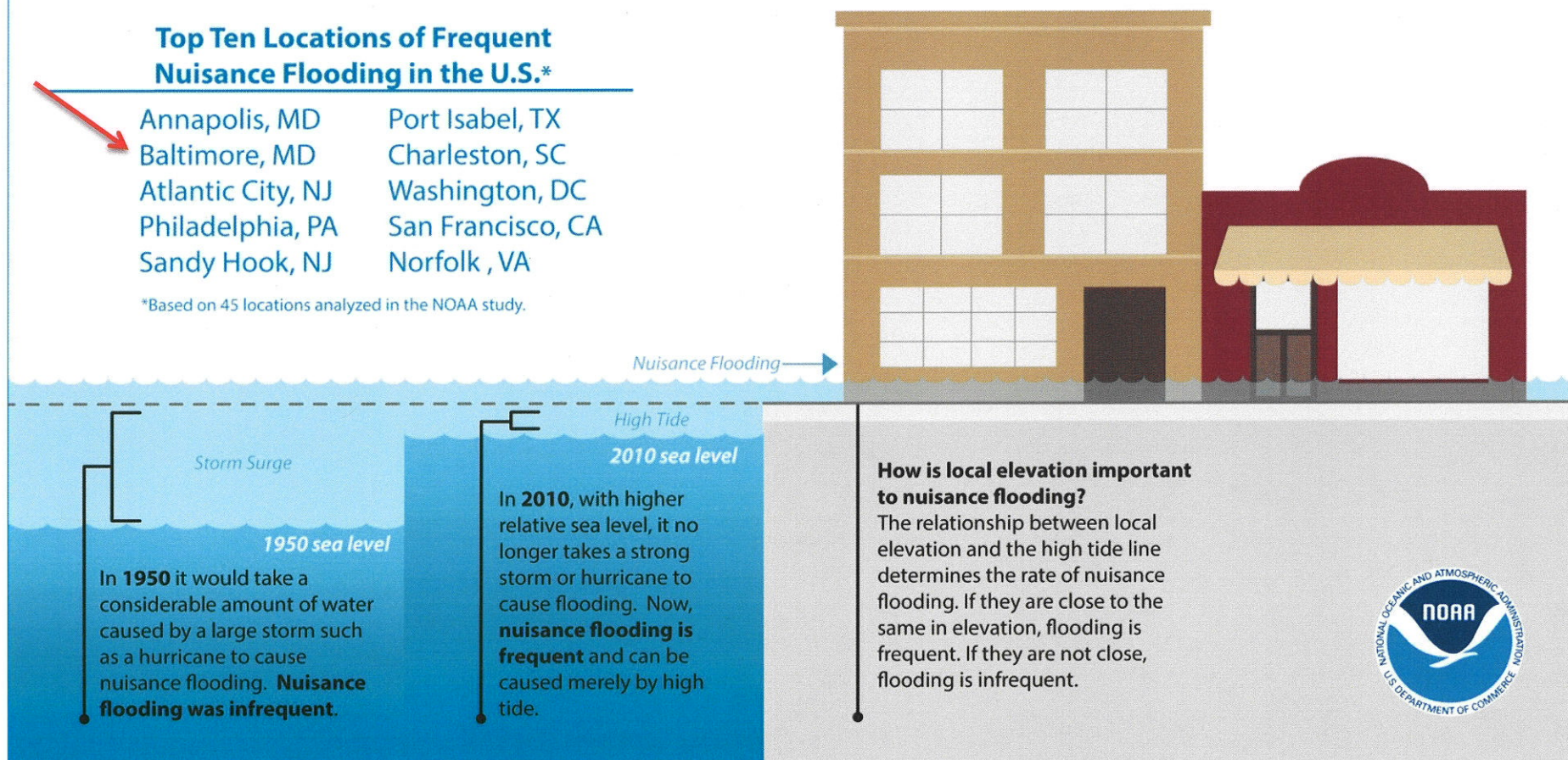
Nuisance Flooding



Top Ten Locations of Frequent Nuisance Flooding in the U.S.*

→ Annapolis, MD Port Isabel, TX
Baltimore, MD Charleston, SC
Atlantic City, NJ Washington, DC
Philadelphia, PA San Francisco, CA
Sandy Hook, NJ Norfolk, VA

*Based on 45 locations analyzed in the NOAA study.





Coastal Storms

There has been a substantial increase in hurricane activity in the Atlantic since the 1970's.

Recent Tropical Storms/
Hurricanes impacting
Baltimore:

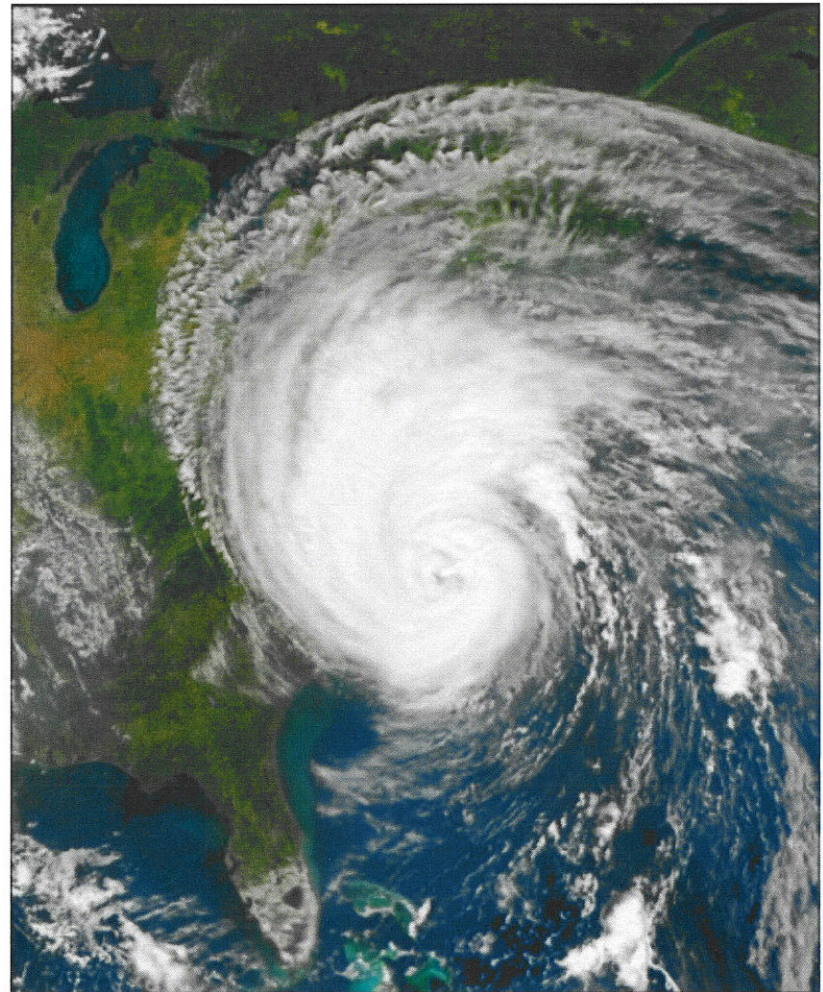
2013 Hurricane Sandy

2011 Tropical Storm Lee

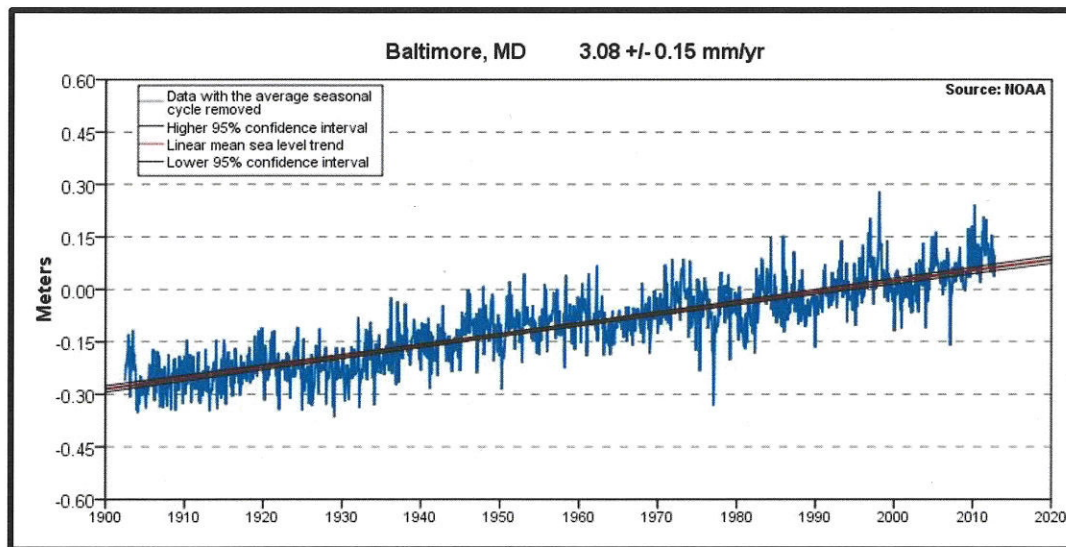
2011 Hurricane Irene

2006 Tropical Storm Ernesto

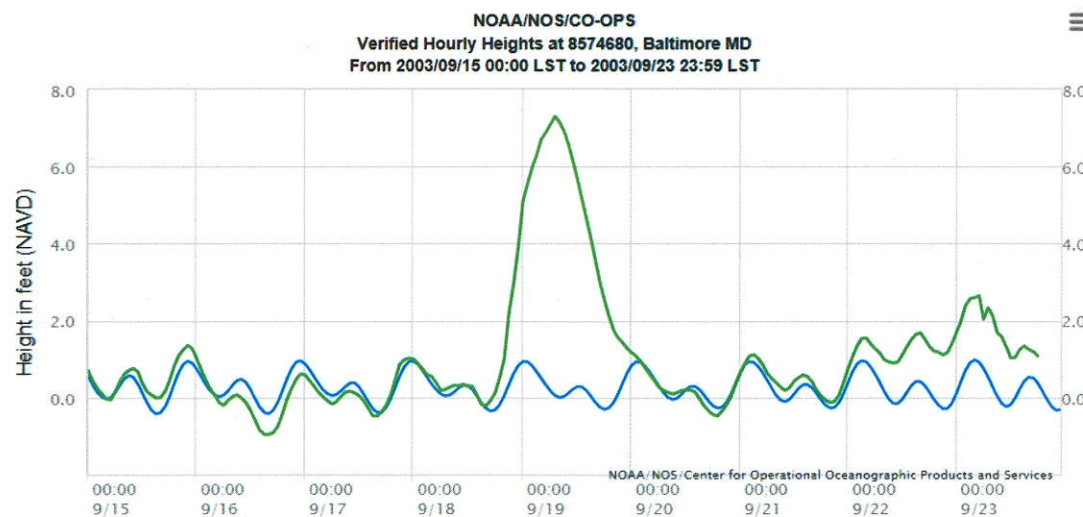
2003 Hurricane Isabel



Storm Surge & Sea Level Rise

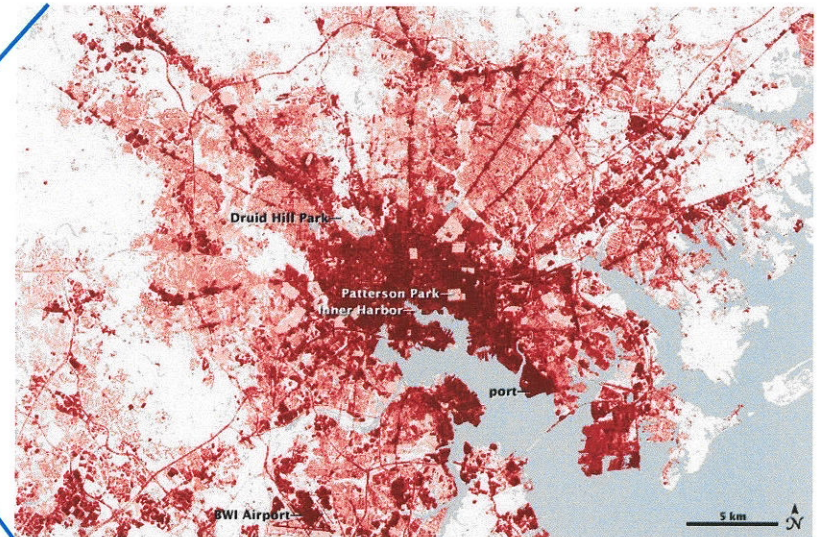
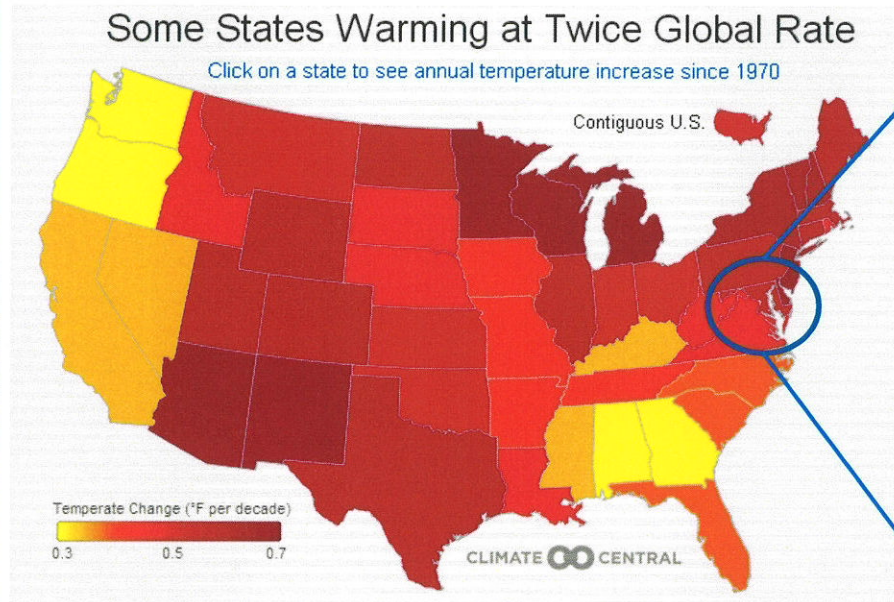


Increase of 30 centimeters over last 100 years. Projected another 30-90 centimeters in next 30 years

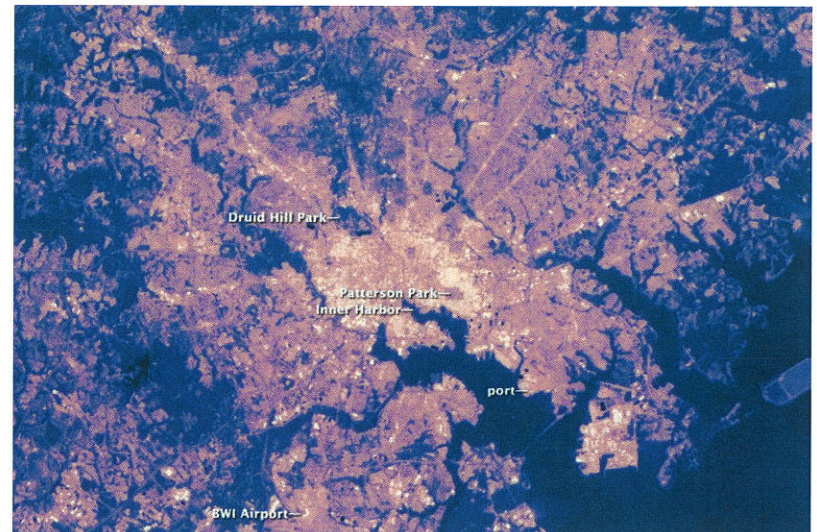


The greatest threat to life actually comes from the storm surge associated with storms

Extreme Heat



The number of days with air temperatures exceeding 90 F is projected to double (and could even triple) by the end of the century.



Quick Review of Hazards



Coastal Storms

more severe

Floods

more extensive

Severe Thunderstorms

more severe

Wind

increase intensity

Winter Storms

less snow, more flooding

Extreme Heat/Drought

more severe and intense

Sea Level Rise

increased threat

Air Quality

lower quality and increase risk