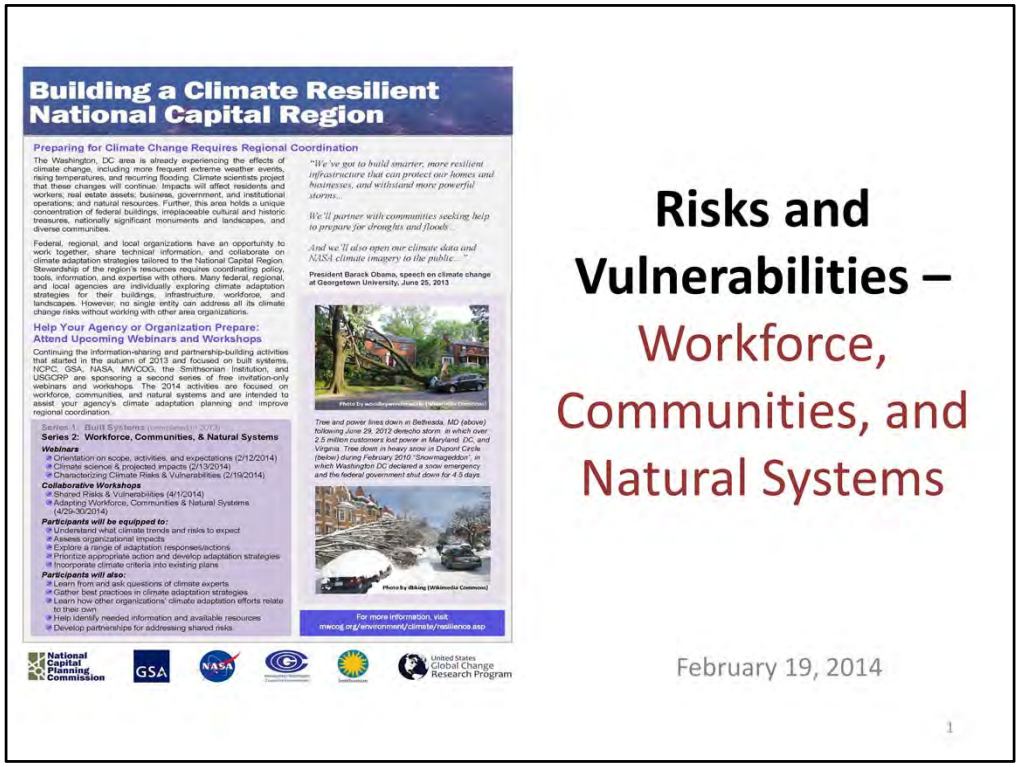


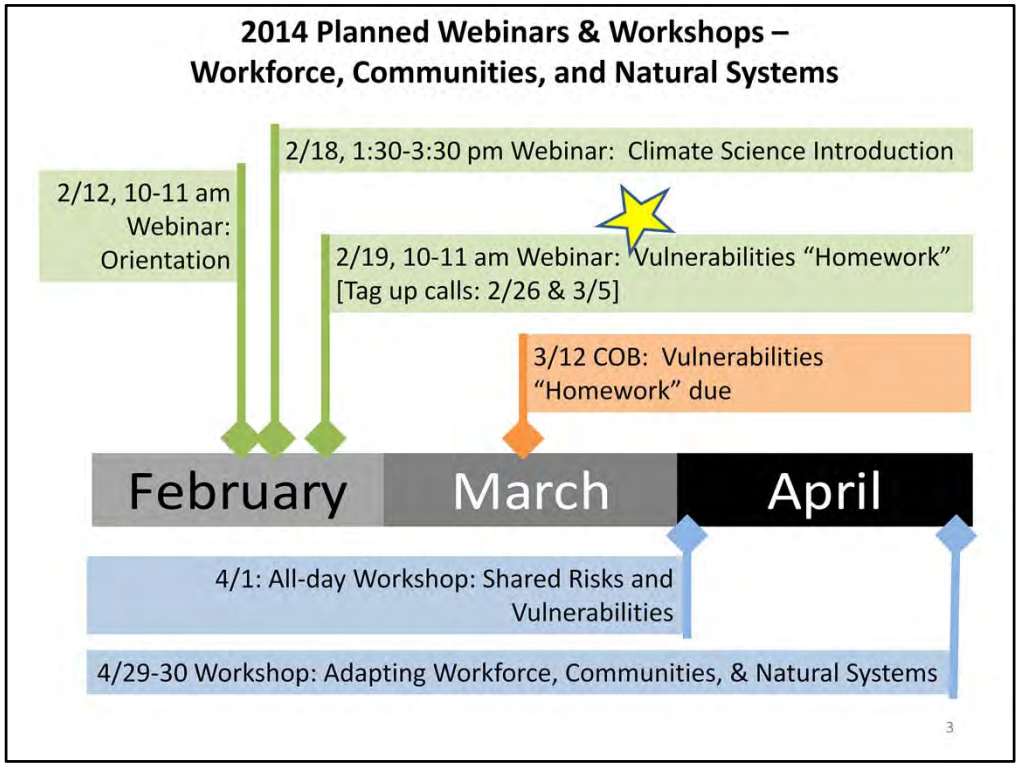
This webinar sets the context for how we'll use input ('homework') from all the participating agencies and organizations to focus discussions in the April 1 and April 29-30 workshops on climate change topics of common concern. This series of workshops focuses specifically on issues relating to the National Capital Region's Workforce, Community, and Natural Systems.

Today's Agenda

- Webinar context
- Homework assignment for Workforce, Communities, and Natural Systems:
  - Setting the stage
  - What do I need to provide?
  - When it is due? To whom?
  - Who can I turn to with questions?
- Answer questions

2

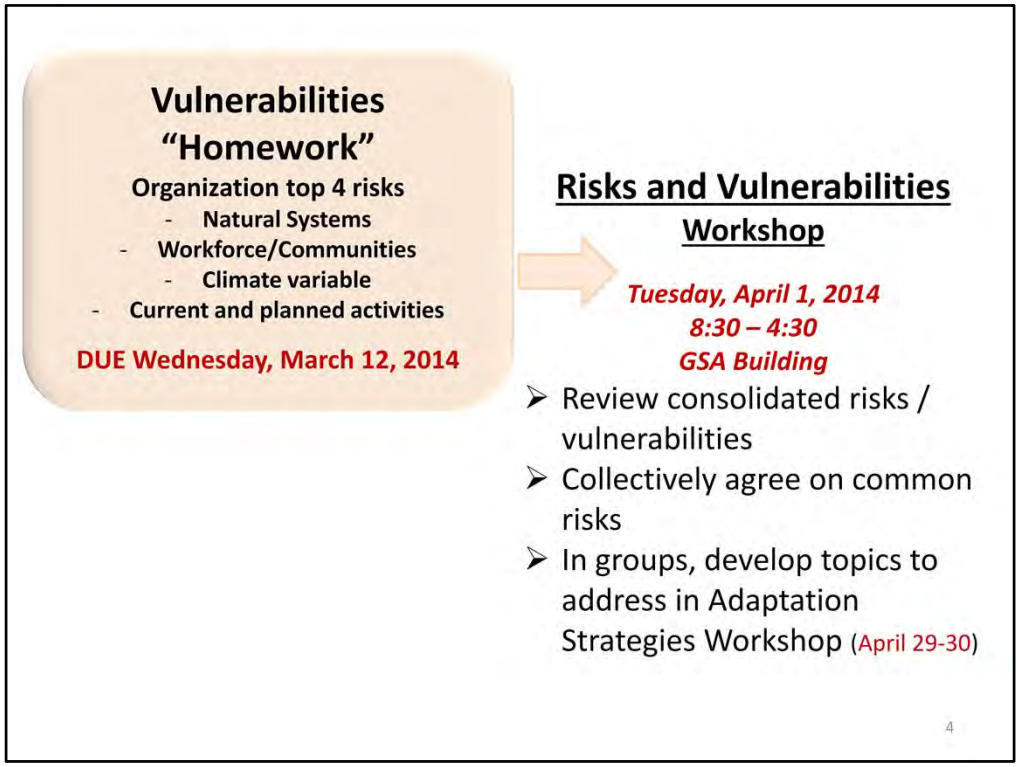
- Webinar context – Orientation Webinar presentation in pdf was sent to Webinar attendees.
- Description of homework assignment due 3/12
- Answer questions



Spring Break Schedules

- DCPS 4/14 thru 4/21
- Private schools – 3/14-24; and 4/16-4/21

- We are posting all this information on the MWCOG website. You can still submit climate science questions via the MWCOG website.



Homework directly feeds into the April 1st workshop, where we'll review our common risks and settle on what we want to work on (the topics) in the April 29th- 30th workshop.

Adapting Natural Systems, and Workforce/Communities Workshop

2 days – April 29 - 30, 2014

GSA Building

Focus: Topics identified by groups at April 1 Risks & Vulnerabilities Workshop

- What are adaptation strategies for long-term sustainability?
- How can we invest wisely together?
- What are the priority activities that should take place:
  - immediately?
  - by the end of 2016?
  - by the end of 2030?

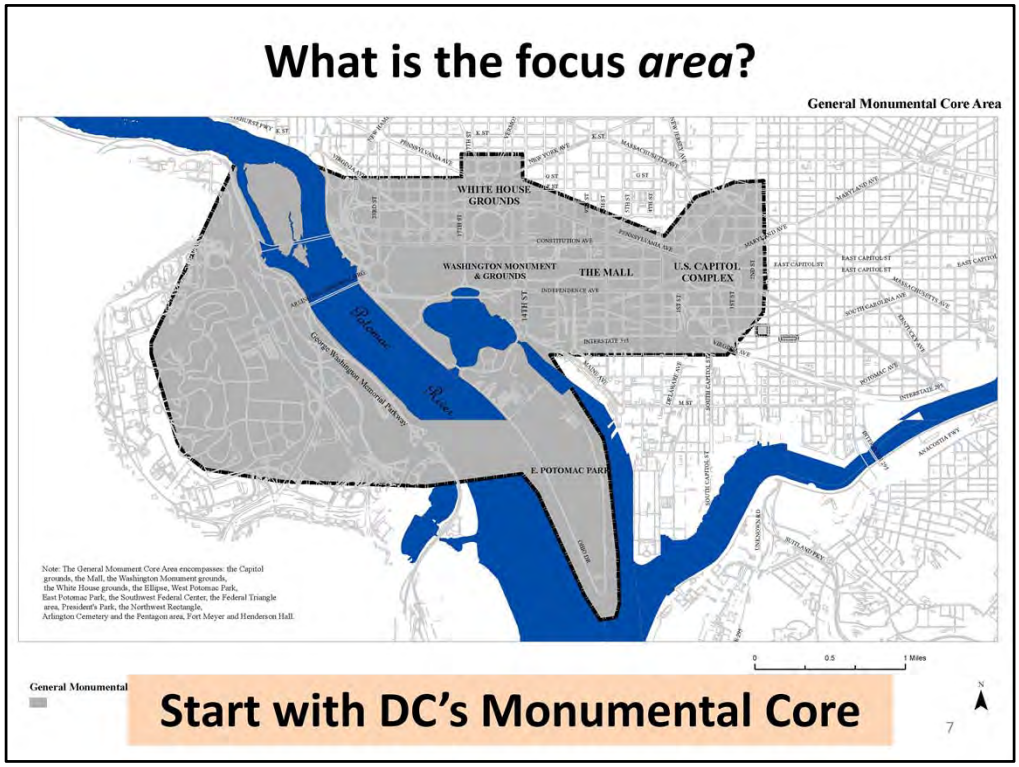
  Both for your agency/org and with the other participant orgs?

Homework Assignment - Setting the Stage

- What is the focus *area*?
- What's the *scope*?
- What *level* of risk or vulnerability assessment are we expected to do?
- What *climate variables* are we looking at?

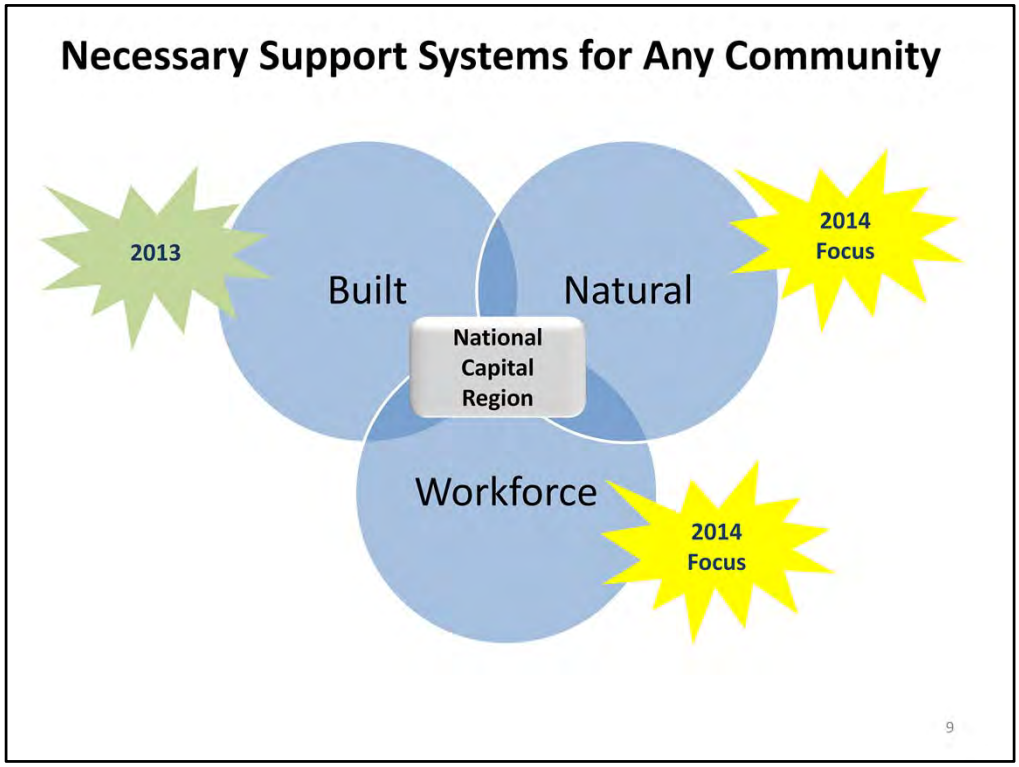
6

- These are the questions we're addressing relative to the homework

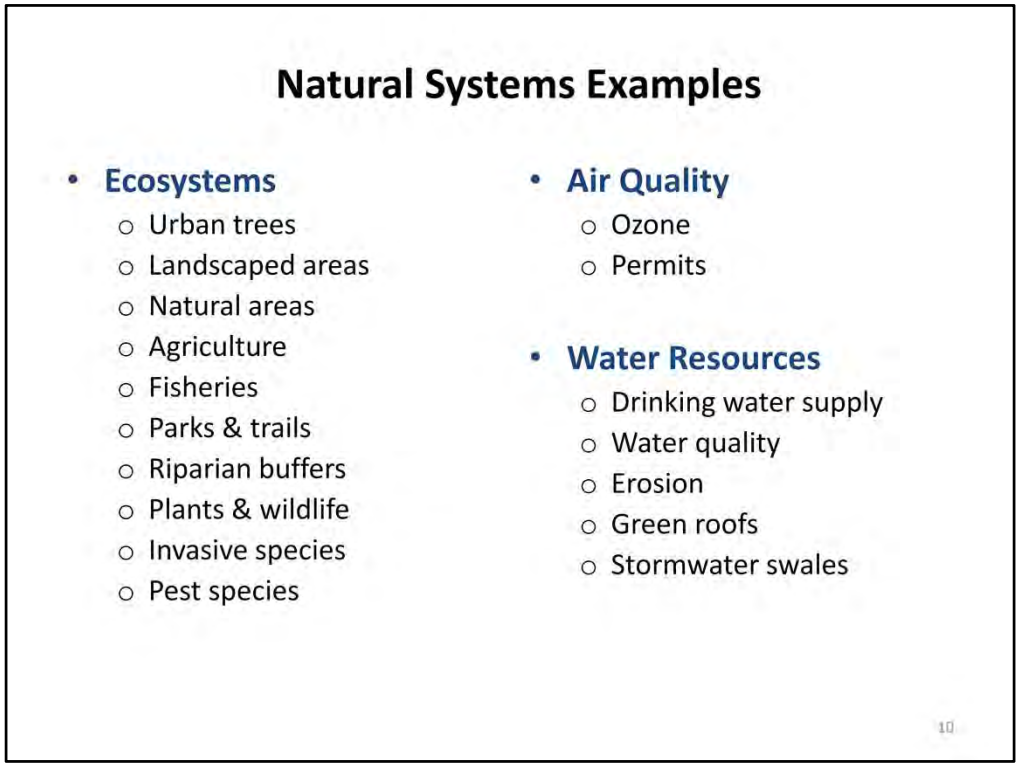


- Focus area can start with the Monumental Core pictured on this map. It's not a neat little rectangle.
- This monumental core is part of a larger context – see next slide.

- Here's a graphic of the larger system, of which the Monumental Core is a part.
- Note that the MWCOG area goes well beyond.
- Important to keep in mind ---- you understand your organization's goals and objectives ---- which of the natural resource, workforce or community systems your organization needs or relies upon might be affected by climate?



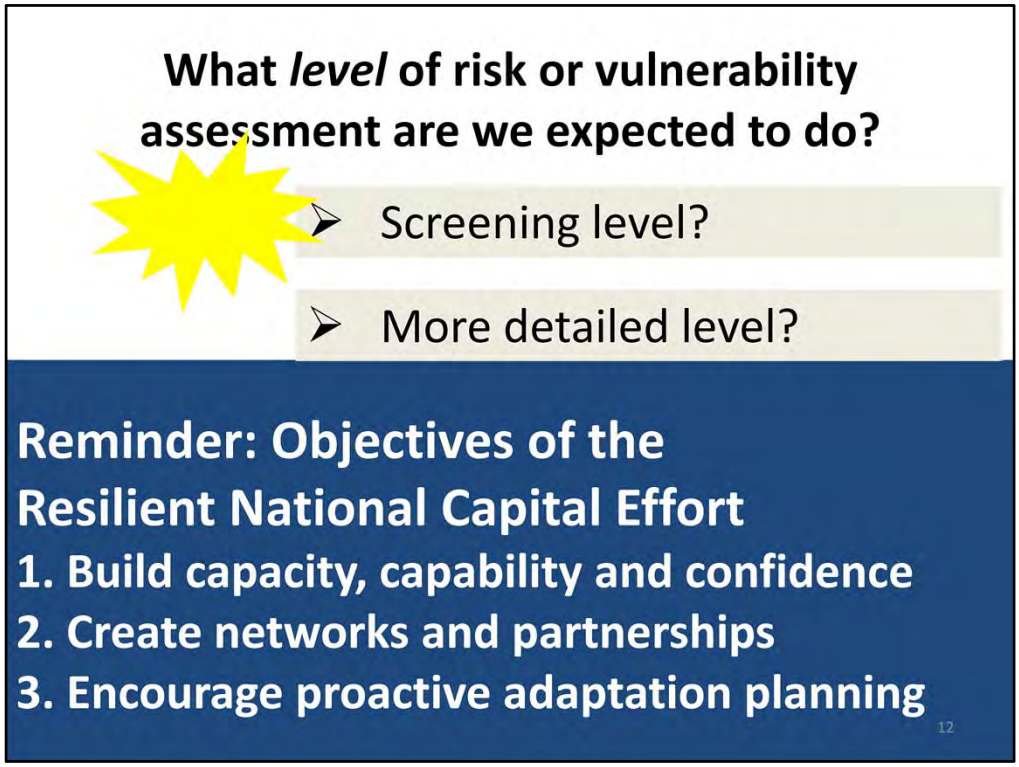
Completed series of webinars and workshops in 2013 focused on Built Systems. 2014 is time to focus on natural, workforce, community systems. We expect the 2014 series to be very different from the 2013 series, which focused on the more tangible Built Assets in the National Capital Region.



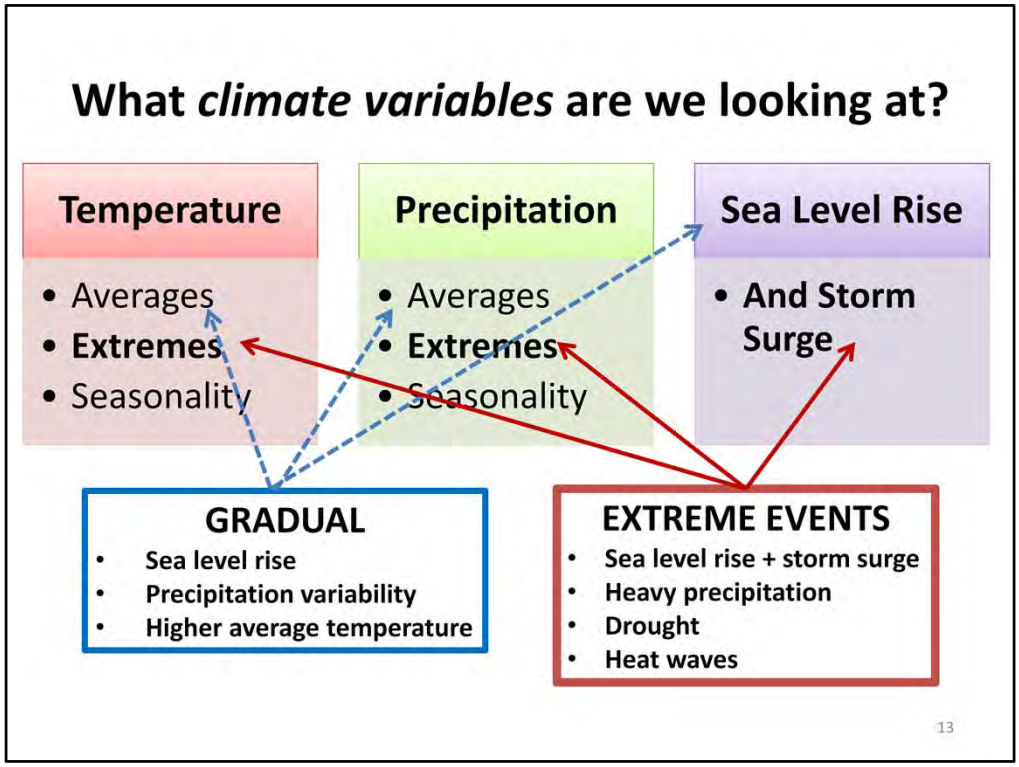
Here are examples of things we like to have – nice landscaped areas, good air quality, good water quality. Climate change may affect these AND may affect how these systems impact your organization's ability to do its work.

These are some aspects of workforce and community systems that may be affected by a changing climate.

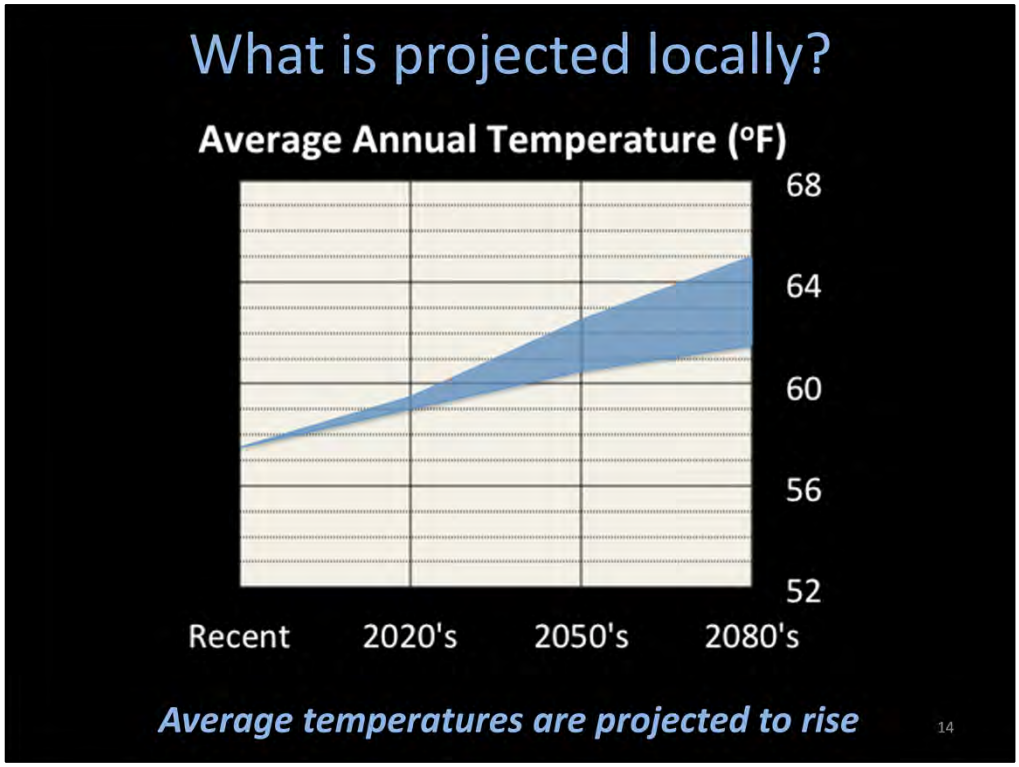
It's important to consider the economic vigor of this area. We have smart, competitive people here. How do we ensure that DC keeps its competitive advantage?



- Looking for a screening level vulnerability assessment.
- Need to remember the three goals for this effort
- We are in the Nation's Capital, which has rich cultural and economic value.
- Let's figure out how we can work together to start adaptation planning. We're not going to get everything figured out, but let's figure out how we can work on this together.
- Some of you may already have more detailed assessments for various assets – that's great; others may have less information – that's fine too.

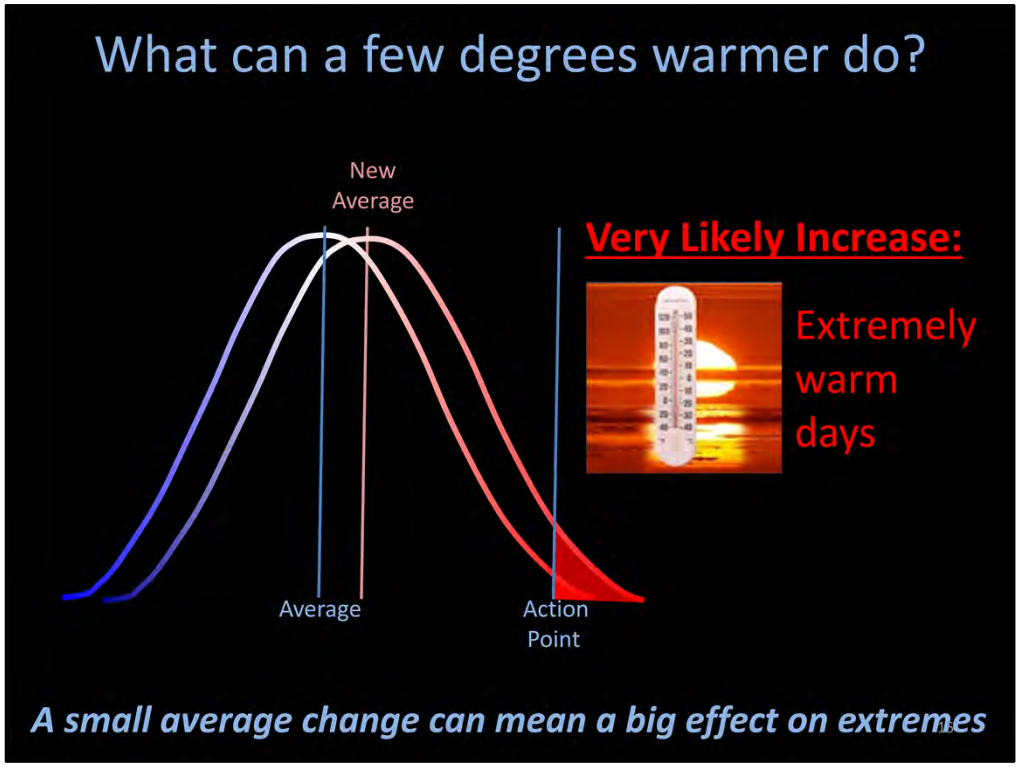


- We're looking at 3 climate variables during this process – temperature, precipitation and sea level rise (combined with storm surge)
- Information about Temperature and Precipitation often comes in 3 forms – annual averages; likelihood of extreme events; and seasonal changes. [The current NASA climate information handout contains all but seasonal change information.]
- We're requesting information in the Homework Assignment relative to the impacts on workforce, community and natural systems from Gradual changes:
    - Sea level rise
    - Increased precipitation
    - Higher average temperature
- We're also requesting information in the Homework Assignment relative to the impacts on workforce, community and natural systems of Extreme Events (See Slide 24):
    - SLR + storm surge (18.1' is the storm surge height to use for this exercise)
    - Heavy precipitation (precipitation in any form)
    - Drought
    - Heat waves



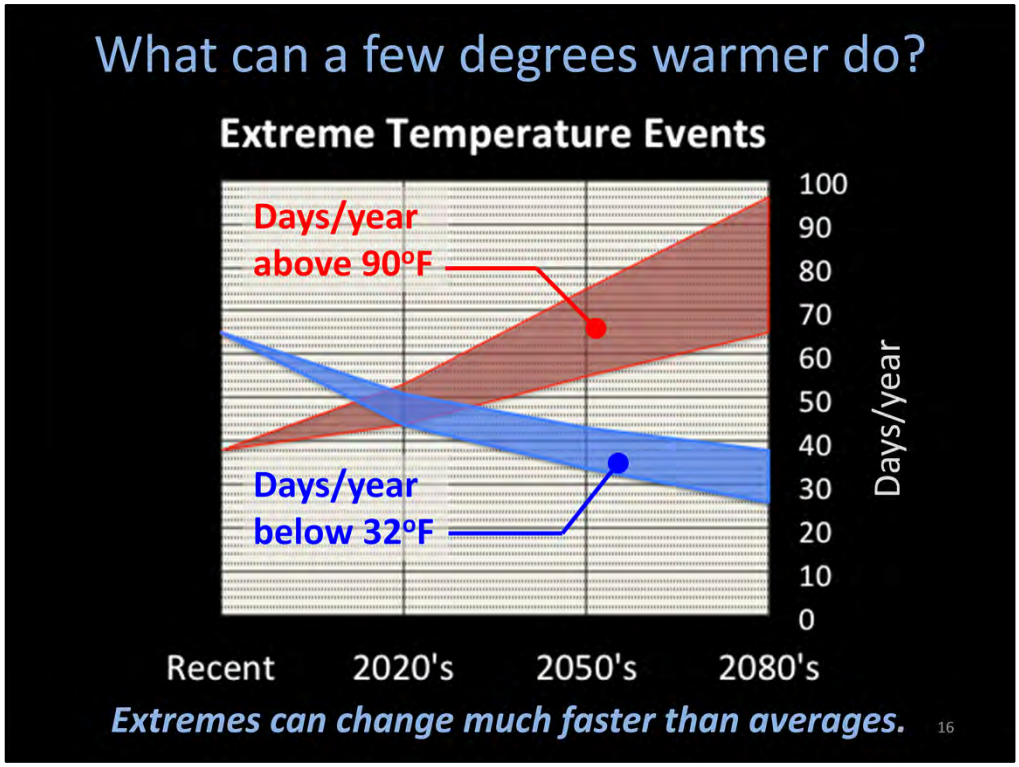
From Climate Science Introduction Webinar (9/20/13 and 2/18/14). Information is in the NASA Washington Metro Area Climate Change Information Handout (http://www.ncpc.gov/climate/

- Average annual temperature projections indicate a faster rise than in the twentieth century.
- Based on 16 Global Climate Models (GCMs) and 3 emissions scenarios. Data is for the Reagan National Airport, Washington DC. Based on the middle 67% of values from model-based probabilities.
- Source: NASA projections for the Washington DC area using a format inspired by a 10 September 2012 NY Times article.
- A NASA Climate Adaptation Mobile App with this information will be released sometime in 2014, and will be updated as new science becomes available.



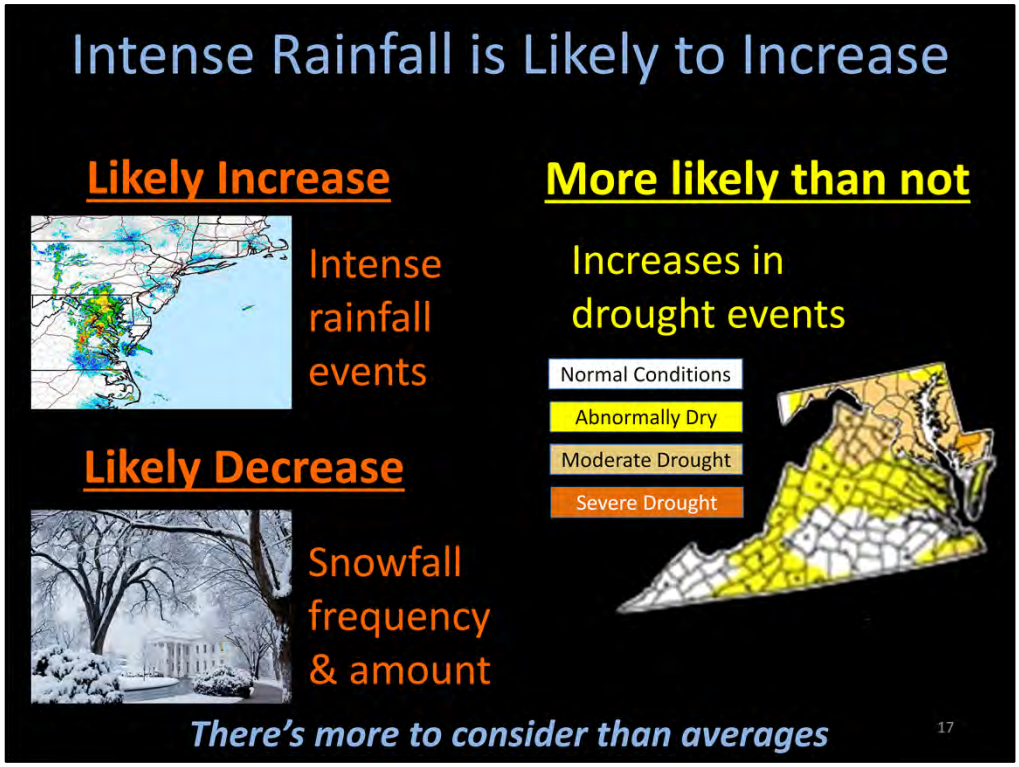
From Climate Science Introduction Webinar (9/20/13 and 2/18/14). Information is in the NASA Washington Metro Area Climate Change Information Handout (http://www.ncpc.gov/climate/

- A modest change in average temperature might not seem very important to institutional stewards, but the change may result in a big change on the number of days above or below extreme temperatures.
- The term "action point" ties to how an organization operates. One example action point is the temperature at which outdoor work is curtailed; another is the point at which air conditioning or heating is needed.
- Maybe the action point is when tracks start to buckle, when planes get stuck on the tarmac. Point at which you cannot work outside.
- A NASA Climate Adaptation Mobile App with this information will be released sometime in 2014, and will be updated as new science becomes available.



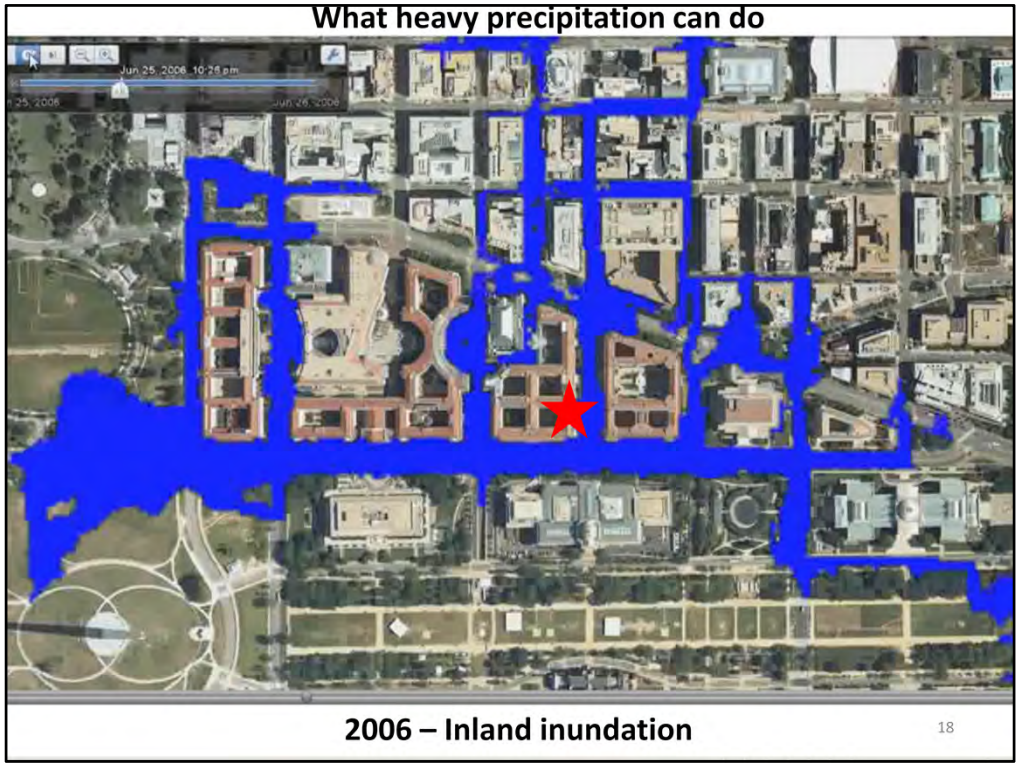
From Climate Science Introduction Webinar (9/20/13) and 2/18/14. Information is in the NASA Washington Metro Area Climate Change Information Handout (http://www.ncpc.gov/climate/

- Compared with recent averages, the number of days over 90 degrees is projected to roughly double by the 2080's.
- On the other hand, the number of days it freezes is projected to be reduced by half in that same timeframe.
- Based on 16GCMs and 3 emissions scenarios. Data is from BCSD dataset.
- Source: NASA projections for the Washington DC area projections using a format inspired by a 10 September 2012 NYTimes article.
- A NASA Climate Adaptation Mobile App with this information will be released sometime in 2014, and will be updated as new science becomes available.

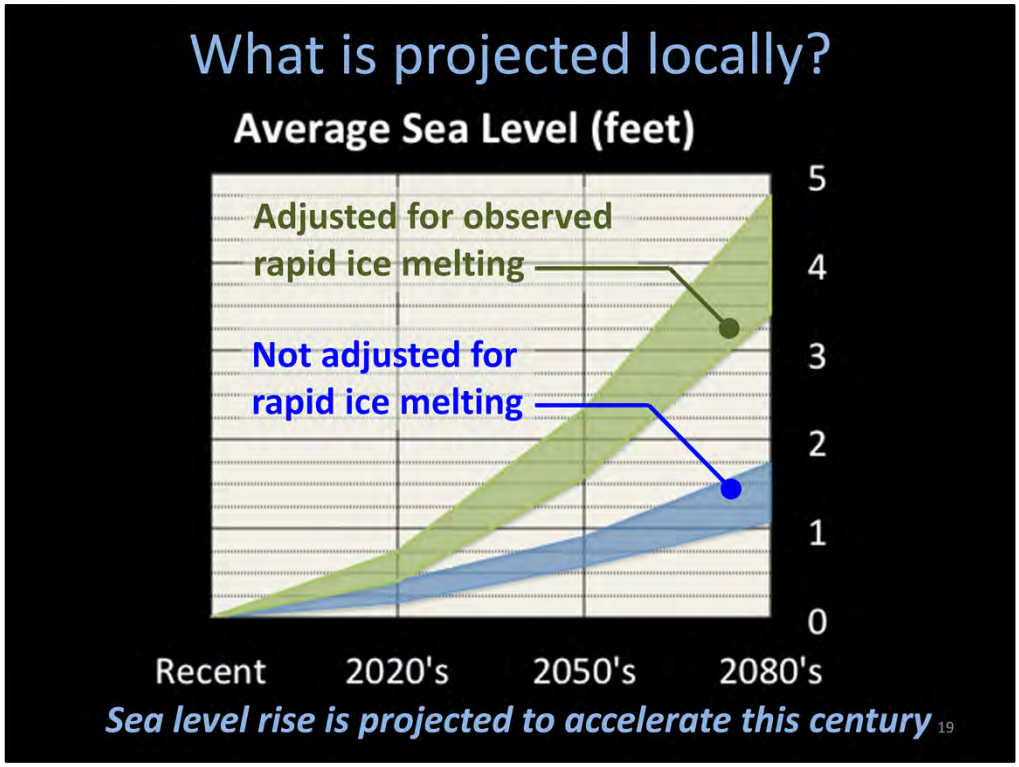


From Climate Science Introduction Webinar (9/20/13 and 2/18/14). Information is in the NASA Washington Metro Area Climate Change Information Handout (http://www.ncpc.gov/climate/

- This slide rounds out the qualitative projections in order of likelihood.
- Droughts and floods likely in the future.
- A NASA Climate Adaptation Mobile App with this information will be released sometime in 2014, and will be updated as new science becomes available.



- This is a depiction of what flooding due to precipitation (not storm surge) can cause – from 2006. map based upon flooding levels as shown on planters.
- While important, this area of the DC was studied at great length after this event (See Slide 18 for some examples)



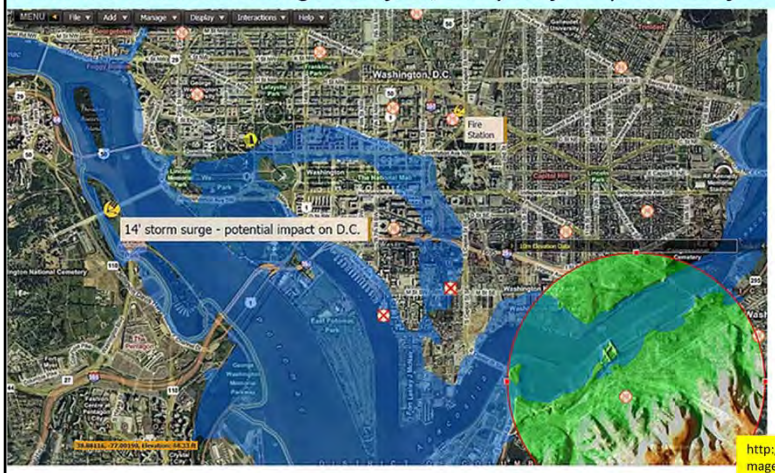
From Climate Science Introduction Webinar (9/20/13 and 2/18/14) Information is in the NASA Washington Metro Area Climate Change Information Handout (http://www.ncpc.gov/climate/

- Sea level rise is expected to continue. Observations of polar ice melting indicate a faster rate of sea level rise, so it's wise to consider this possibility when evaluating impacts.
- Based on 7 GCMs and 3 emissions scenarios. Baseline (recent) is 2000 to 2004. Rapid ice-melt scenario is based on acceleration of recent rates of ice melt in the Greenland and West Antarctic ice sheets and paleoclimate studies. Projections based on the Washington Ship Channel tide gage.
- Note: NASA's internal planning guidance is to plan for the Rapid Ice Melt lower range. In this case, the 3-3.5 feet level.
- Source: NASA projections for the Washington DC area projected sea levels using a format inspired by a 10 September 2012 NYTimes article.
- A NASA Climate Adaptation Mobile App with this information will be released sometime in 2014, and will be updated as new science becomes available.

What about Storm Surge?

For the purposes of this effort,
using the Category III level: 18.1 feet (see Slide 22)

Historical 1933 storm surge 11.3 feet; 100-year floodplain 13.5 feet



http://www.flickr.com/photos/depictionimages/3789318227/in/photostream/

Washington, DC Storm Surge

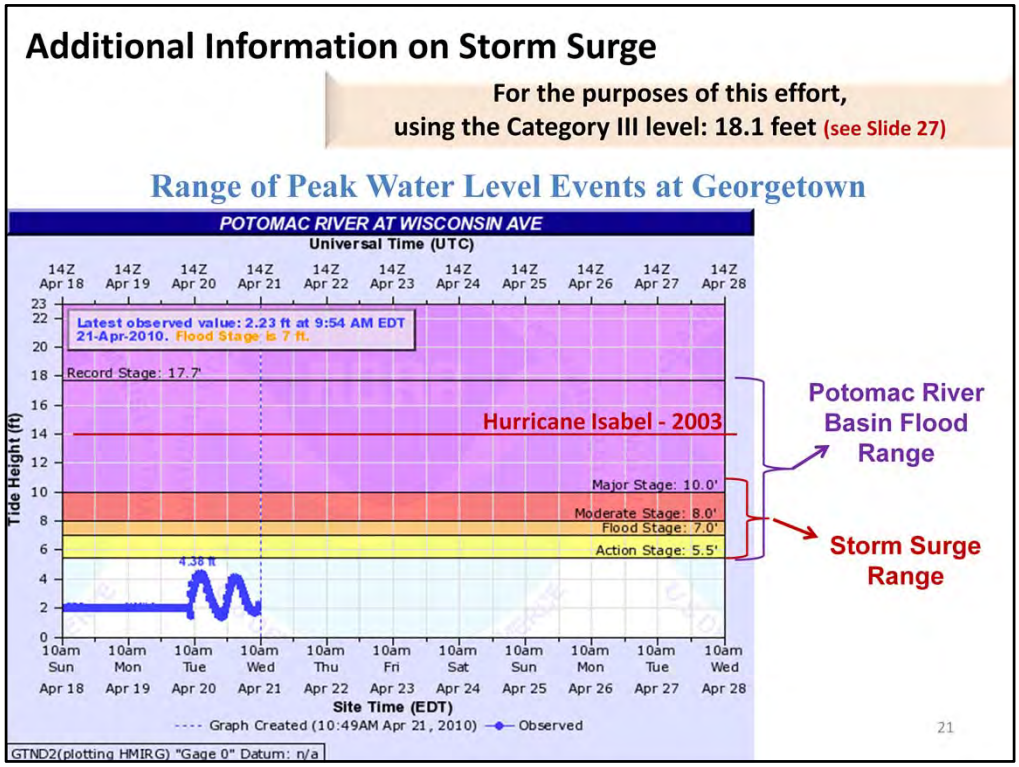
In 1933, the Chesapeake-Potomac Hurricane sent a 11.3-foot storm surge into the heart of Washington, DC. If a 14-foot surge were to happen today, this is what it could look like.

See page 302; http://www.nps.gov/nationalmallplan/Documents/FEIS/Volume%201/5_The_Affected_Environment.pdf

20

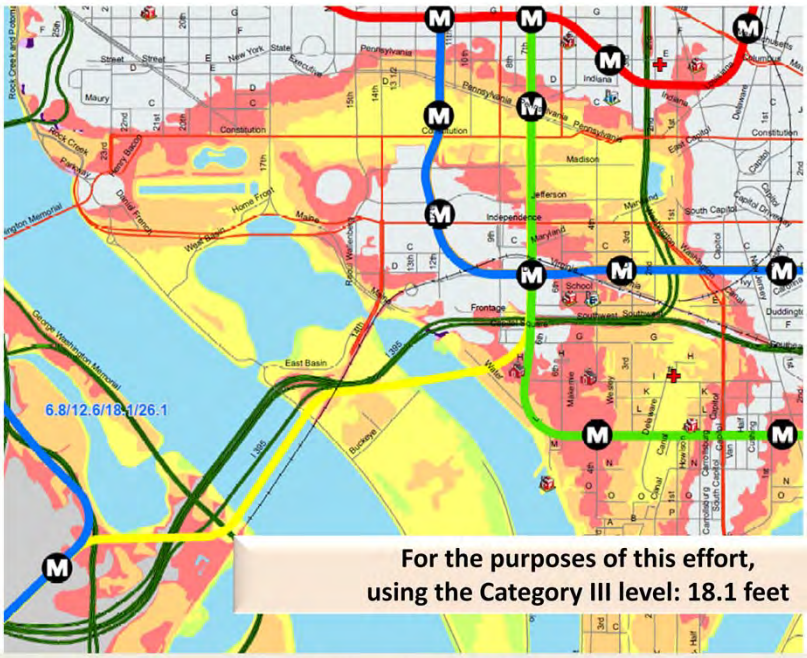
Lots of information relative to storm surge (page 1 of 3).

- This is info from National Park Service EIS and depicts impact of 14’ on DC.
- Historical storm – 1933: storm surge 11.3 feet



Lots of information relative to storm surge (page 2 of 3).

- Depicts height of Hurricane Isabel in 2003 in Georgetown – about 11 feet

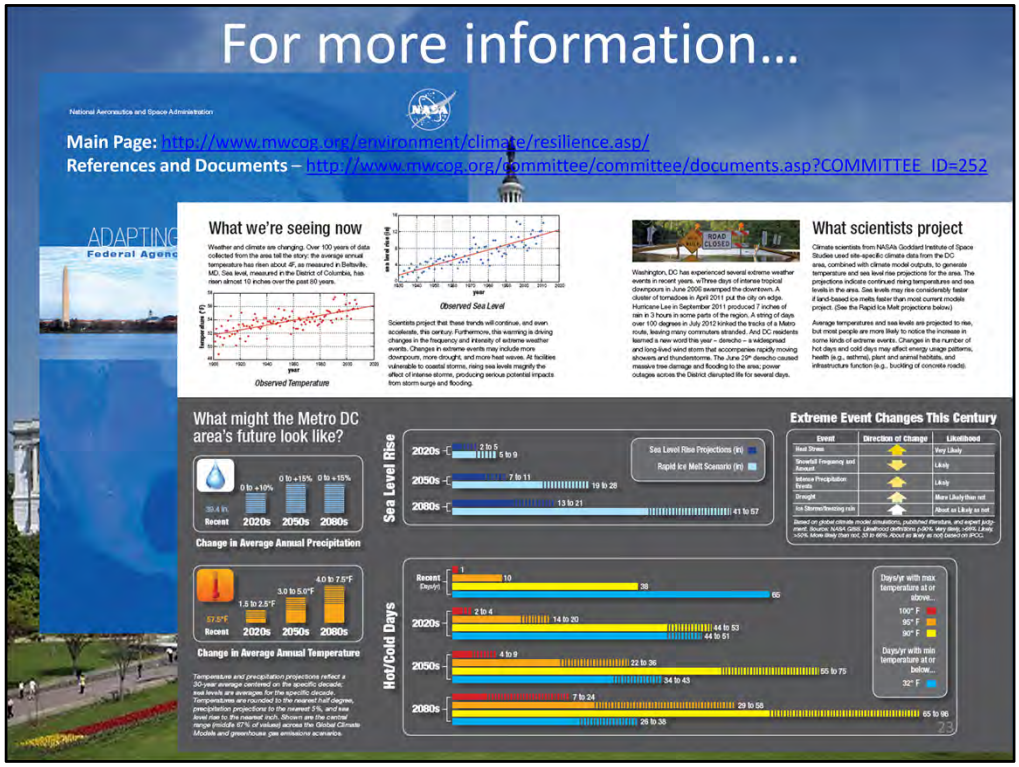


FEMA Hurricane/storm surge study (2009) used NGVD. The adopted datum nowadays is NAVD88. The storm surge heights are 6.8 (green), 12.6 (yellow), 18.1 (orange) and 26.1 feet (red) (NGVD 29) for Categories I, II, III, and IV, respectively.

22

Lots of information relative to storm surge (page 3 of 3).

- This is a 2009 FEMA Hurricane/storm surge study with 3 different storm surge heights.
- For the purposes of this effort, we are going to use the Category III level: 18.1 feet (orange level shown on the map.)
- Let's explore our vulnerabilities for planning purposes at this level.
- Comment during the call: DC is designing their seawall at 17 feet. 14 flood plus 3 feet SLR.



From Climate Science Introduction Webinar (9/20/13 and 2/18/14).

- Cover of NASA handout and core science info
  http://www.mwcog.org/environment/climate/resilience.asp

What do I need to Provide?

Your Org's Top 4 Risks – Natural Resource, Workforce, or Community Systems

- **Name or type of asset / system**
- **Scale of impact**
- **Current and planned responses (work-arounds)**
- **Any other information you feel would be useful for 4/1 Workshop**

Microsoft Excel template

DUE: Wednesday, March 12th

TO: Sarah Lynagh, Leidos

Direct Questions:

- Christina Hudson, Leidos
- Kimberly Gotwals, Leidos

	Timeframe / Scale of Impact		
Climate Variable	**Today**	**2020s**	**2050s**
Gradual			
Sea level rise	minor	minor	minor
Precipitation variability	minor	moderate	moderate
Higher average temperature	major	major	major
Extreme Events			
SLR + storm surge			
Heavy precipitation			
Heat waves			
Drought			

EXAMPLE

Major risk
Moderate risk
minor risk

Derived from: NYC Special Initiative for Rebuilding and Resiliency (SIRR) http://www.nyc.gov/html/sirr/html/home/home.shtml

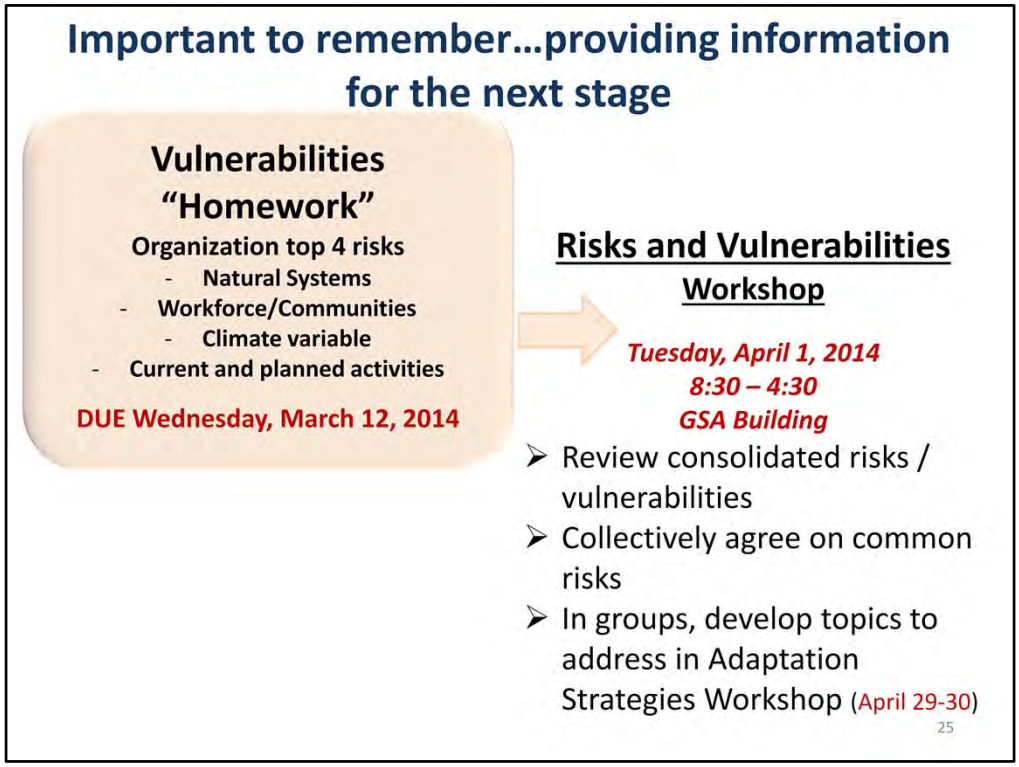
24

What the Homework really is

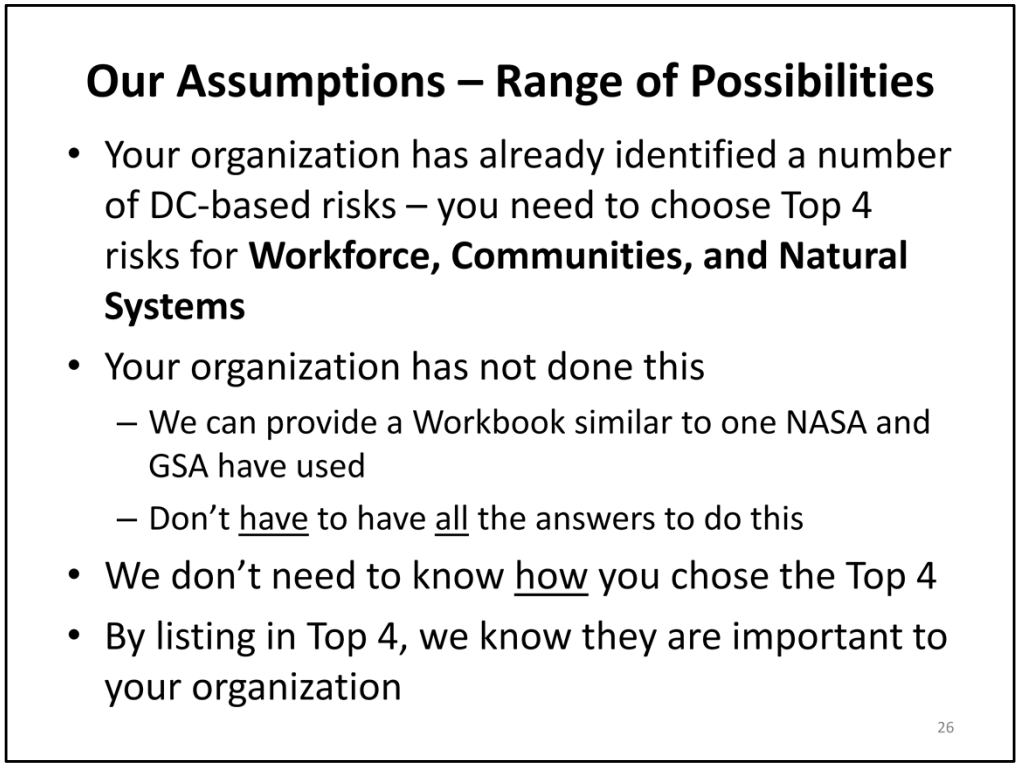
- A description of the top 4 most climate-vulnerable workforce, community and natural systems that are critical to carrying out your organization's goals and objectives; how they are impacted; and current and planned responses.

Questions:

- How are your organization's goals & objectives vulnerable in a light of a changing climate?
- Which 4 workforce, community, natural resource systems are most at risk of impeding your goals and objectives now and in the future?
- Information:
    - Name or type of system
    - Your organization's current and planned responses (or work-arounds)
    - Any other information you feel would be useful for those at 4/1/14 Risks & Vulnerabilities – Workforce, Community and Natural Systems - Workshop
- For each of the top 4 risks, what is the scale of the impact relative to the Gradual and Extreme Events categories listed in the example – today, in the 2020s and the 2050s. Label each minor, moderate or major. The color-coding is automatic.
- We'll send info to help you capture the information about your top risks.
- Given security sensitivities, you don't need to provide a specific address, you can provide a TYPE of system.
- Contact information: located on last 2 slides.



We're expecting 4 sheets on your spreadsheet describing your 4 top risks. We hope to post a completed Natural Resource spreadsheet so you can follow that as an example.



Core Planning Team recognizes that there are a range of possibilities facing the organizations invited to this effort:

- Some may be faced with the challenge of naming only four out of the many you have already identified.
- Some may not have had the opportunity to think about your organization in the face of a changing climate. Now's your chance!
- Your organization may already have a process for identifying vulnerabilities and risks that you wish to use.
- We will post a Reference Document, "Resilience & Adaptation to Climate Risks Workbook," that some might find useful should their organization not have an existing method of identifying vulnerabilities and risks. The Workbook outlines the 8-step process utilized by both NASA and GSA during their respective workshop activities, which can be executed outside of a formal workshop setting.

The Workbook comprises several documents:

- PDF containing:
  A. Characterize Risk of Climate Variables on Systems / Assets / Capabilities section
  B. Develop Potential Adaptation Strategies section
  C. Integration & Implementation Approaches section
  D. Excel Spreadsheet used to document information from Section A – Characterize Risk
  E. Example - completed Characterize Risk spreadsheet

F. Excel Spreadsheet used to document information from Section B – Adaptation Strategies
G. Example - completed Adaptation Strategies spreadsheet
H. Word document used to document information from Section C – Integration
I. Examples – completed Integration documents

- Excel spreadsheets for Sections A and B
- Word document for Section C

Some Questions to Consider

How do climate concerns affect:

- your organization's mission or goals/objectives?

OR

- the way your organization carries out its mission?

For example, will more high heat days affect the services you provide or the way you do your work? If your work is to provide health services, your workload may increase as you have more responses to heat stress incidents. If you have outside workers, their work days may be limited.

27

Changing climate conditions may change:

1. Your organization's mission or goals/objectives
2. The WAY you carry out your current goals/objectives

More Examples

- If you are in charge of **HR policies** - Will more days of inclement weather affect your workforce's ability to get to work or work productively?
- If you are in charge of **urban trees** – Will gradually increasing annual temperatures affect the health of existing trees?
- If you are in charge of designing **green stormwater infrastructure** – Will increased incidences of downpours (or higher temps) affect your design and maintenance requirements?

28

Here are more examples of what you might want to consider in developing your spreadsheets of top risks.

"Definition of Biggest Risk"?

- Up to each organization or agency
- Can be based:
  - on a time issue (something you're facing right now)
  - serious catastrophic failure sometime in the future,
  - some particular mission-critical asset
  - cultural / historical significance

29

Recognition that Top 4 risks from each organization will reflect their perspective and that there are no right or wrong answers

Biggest "Risk" Examples

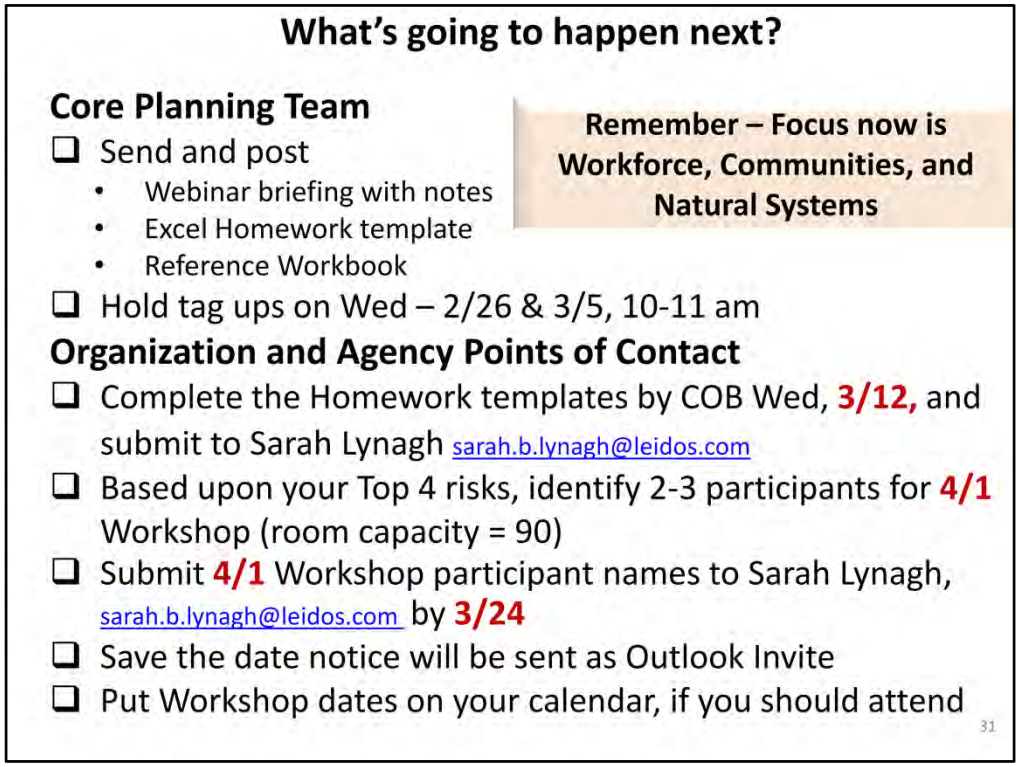
You might identify something as a priority for your organization because:

- the impact is occurring now or very soon, and you need a fix
- the impact is in the future, but it is *critical* to your organization

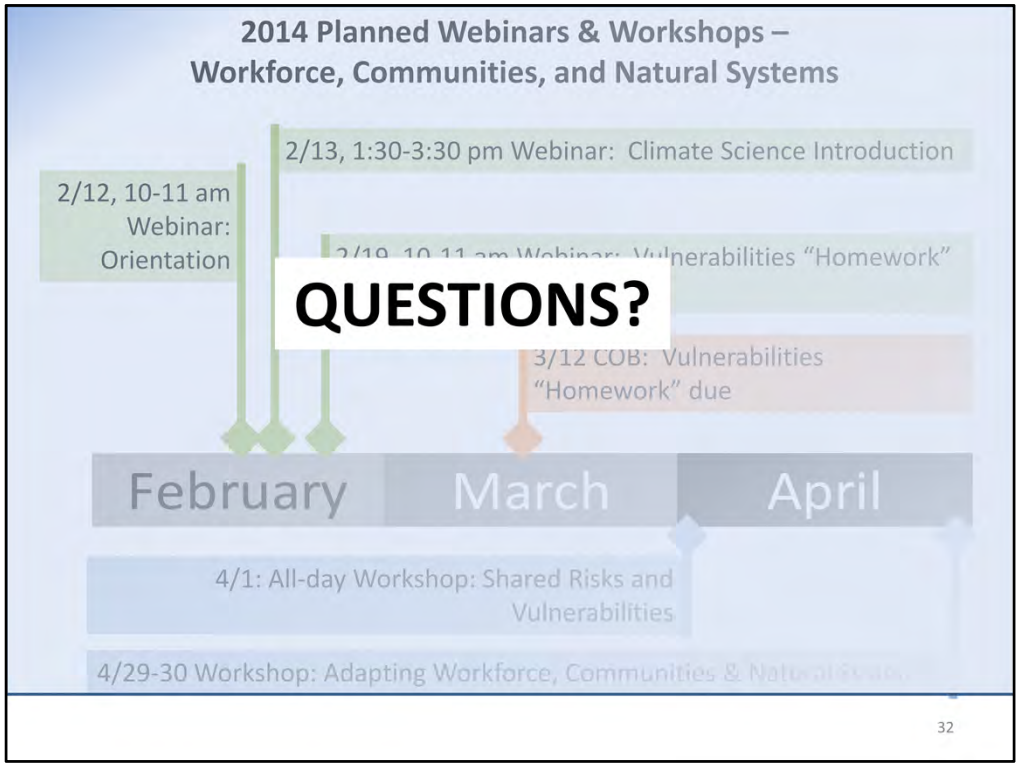
Example: if you are in charge of landscape maintenance, you may have noted that precipitation variability is causing your water irrigation bills to be higher, but you've adjusted (so NOT a top concern); future changes in precipitation may seriously impact your ability to maintain the landscape (so IS a top concern)

30

Climate conditions that you've adjusted to for now may pose a greater risk in the future. In other words, you may use work-arounds for now, but at some point, given the projections for the future, those work-arounds may not be sufficient.



We are posting information to the MWCOG website for you to access.
Please be thinking about the people from your organization who should attend the April 1 and April 29-30 workshops. We will need their expertise to make this effort successful!


2014 Planned Webinars & Workshops –
Workforce, Communities, and Natural Systems
2/13, 1:30-3:30 pm Webinar: Climate Science Introduction
2/12, 10-11 am Webinar: Orientation
QUESTIONS?
3/12 COB: Vulnerabilities "Homework" due
February
March
April
4/1: All-day Workshop: Shared Risks and Vulnerabilities
32

Core Planning Team – Contact Info

- NCPC - Amy Tarce, 202-482-7241, amy.tarce@ncpc.gov
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  Robin Snyder, 202-690-8981, robin.snyder@gsa.gov
- NASA – Kim Toufectis, 202-358-2273, Kim.W.Toufectis@nasa.gov
  Sam Higuchi, 202-358-0149, shiguchi@nasa.gov
- MWCOG – Amanda Campbell, 202-962-3324, acampbell@mwcog.org
- Smithsonian Institution – Ann Trowbridge, (202) 633-6555, TrowbridgeA@si.edu
- USGCRP – Emily Seyller, 202-419-3492, eseyller@usgcrp.gov

33

Contractors on Core Planning Team – Contact Info

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  - Christina Hudson, 571-282-8896, christina.c.hudson@leidos.com
  - Kim Gotwals, 919-401-4643, kimberly.b.gotwals@leidos.com
  - Sarah Lynagh, 571-526-7707, sarah.b.lynagh@leidos.com
  - Erik Tucker, 703-231-9876, tuckerej@leidos.com
- Booz Allen Hamilton *(for NASA Earth Science Division)* –
  - Christine Mataya, 202-294-4833, mataya_christine@bah.com
  - Sarah Burgess-Herbert, 703-624-1989, burgess-herbert_sarah@bah.com

34