

Climate Change Adaptation Measures at US Army Corps of Engineers' Projects

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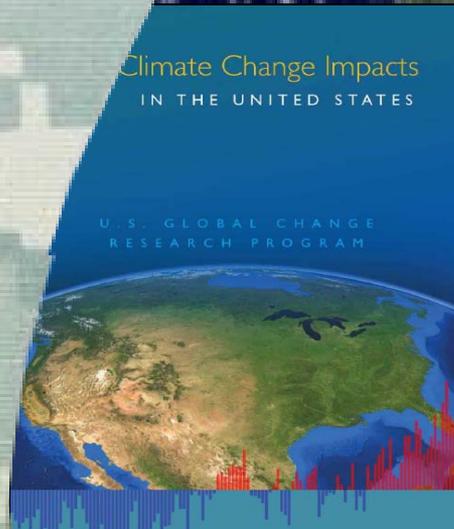
Climate Change Adaptation: Global, National, Agency,
and Project Perspectives

White House Council on Environmental Quality
Green Gov Symposium

6 October 2010 | Washington, DC

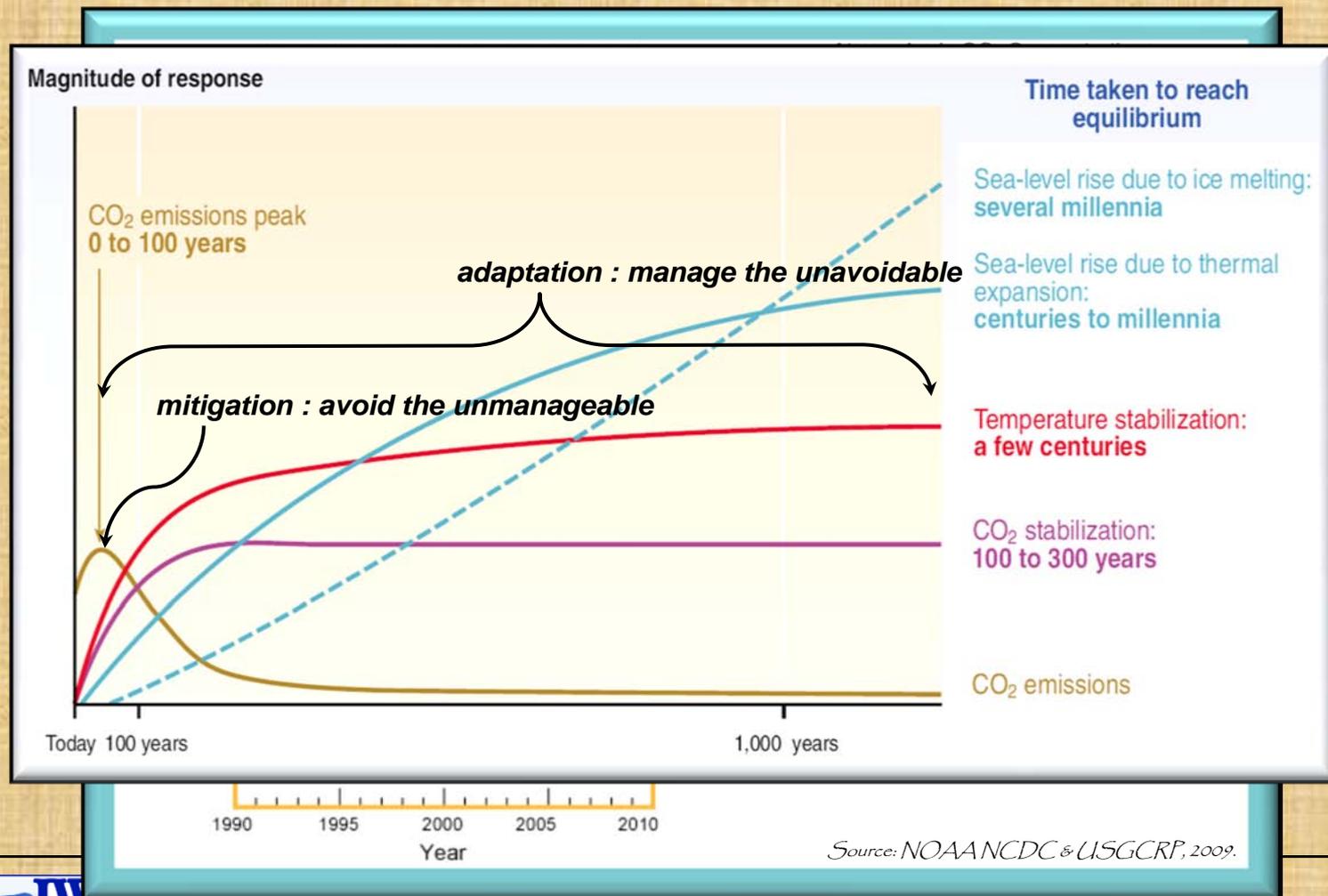


US Army Corps of Engineers
BUILDING STRONG®



Atmospheric CO₂, Temperature, and Sea Level Will All Still Rise Long After Emissions Mitigation Starts

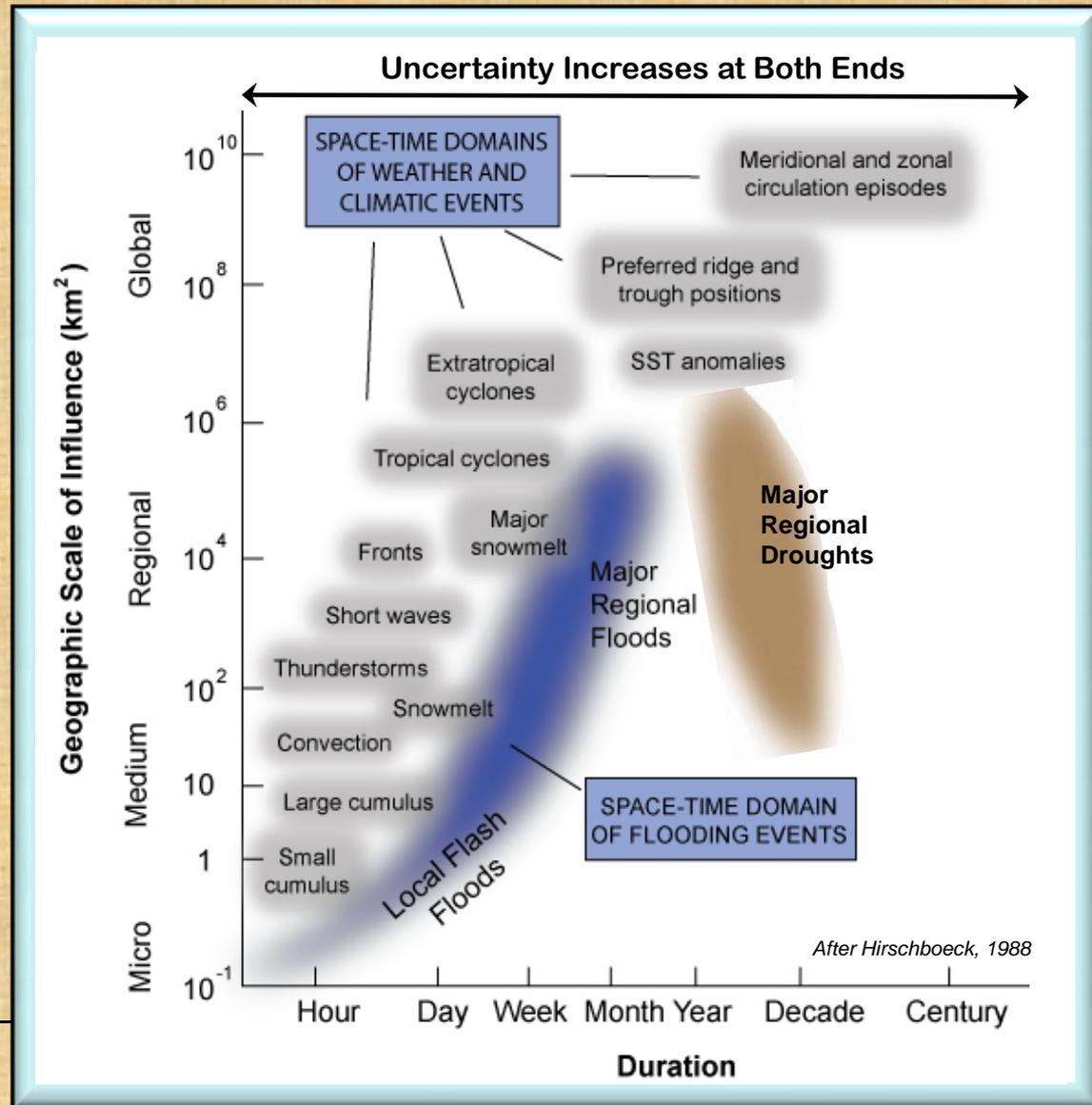
So Adaptation and Mitigation Measures Must Begin Together



Climate & Weather Are Linked, But Scale Differently

This Means
Hydrologic Responses Differ
Over Space & Time, Too

And That Means
Effective Adaptation Responses
Must be Scaled to Match

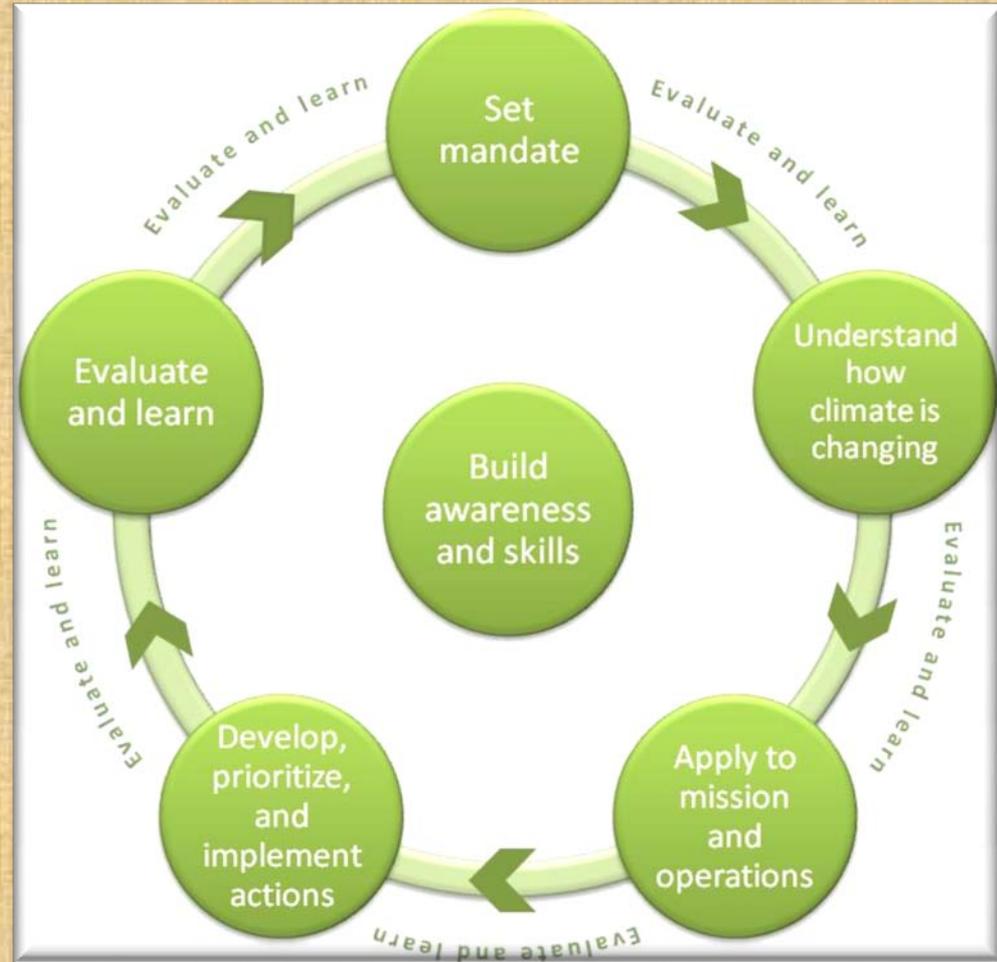


CEQ Multi-agency Adaptation Flexible Framework

1- Adapting Federal agency projects to myriad climate change effects is crucial and requires planning across agencies while retaining individual emphasis on specific missions and performance.

2- No single planning approach will suffice for all agencies: requires a flexible framework of questions and data to help shape planning responses for agency missions and project needs.

3- Implementation of the framework in USACE project pilots will help test for vulnerabilities to climate change effects and will identify opportunities to enhance resilience against future change.



USACE Adaptation Pilot Programs

Desired Outcome: Develop, Test, & Improve Adaptation Implementation Through an Iterative Process with Adaptive Learning

- ◆ Pilots cross USACE business lines and life-cycle phases of typical projects
- ◆ Identify new policies, methods, & tools to support measures at similar projects
- ◆ Implement lessons learned
- ◆ Test & evaluate CEQ-proposed framework
- ◆ Emphasize applicability and effectiveness of framework elements for land- and water-resource management agencies
- ◆ Provide results to CEQ for report to White House
(October 2010)
- ◆ Develop strategies to improve implementation guidance and identify key enabling investments for a possible National Adaptation Strategy



USACE Adaptation Pilot Programs *(cont'd)*

Some Central Questions

- ◆ How to incorporate climate change considerations into **reservoir operating policies**? Pilot at **Coralville Reservoir on Iowa River**; interagency support to the EPA & FEMA Rebuild Iowa project; pilot extended into 2011 for study of integrated water resources management on Iowa-Cedar rivers watersheds
- ◆ How will **beach nourishment cycles** change as climate-change induced back bay flooding changes and sea level rises? Pilot at **Willoughby Spit & vicinity in Virginia**; climate changes effects from storms & sea level change being simulated to explore flooding & overwash effects on selected reaches
- ◆ How will sea level change affect **shoreline protection feasibility**? Pilot at **Encinitas-Solana Beach in California**; exploring outcomes & options of climate-change forced moving baselines for ecological protection

Also : **Drought in the Southeast**; **Reservoir sedimentation in the Midwest**; **Wetlands restoration in central California**; and others . . .



USACE Everglades Adaptation Pilot

Completed Pilot at C-111 Spreader Canal

How is this ecosystem restoration project to restore marsh hydroperiod affected by sea-level change?

How to plan and engineer for shoreline retreat to preserve critical tidal & near-shore ecosystems within regional planning context?



- ◆ Addressed questions & tradeoffs of long-term benefits at the project against regional changes; identified potential changes to shoreline and geographic location shifts to areas perhaps better able to produce desired natural ecosystem services
- ◆ Key Findings: Depth & salinity changes both important; MHHW better than MSL for indicating transition from fresh- to saltwater ecosystems; shoreline retreat can preserve crucial ecosystems; application of concept of dynamic benefits in space & time



Summary

- 1- Climate is changing, & together with other global changes in population size & distribution, urbanization, fuel-use & fuel-switching, etc., will dramatically alter water demands & most human interactions with water resources.
- 2- Earth system lags mean that adaptation & mitigation measures must begin now & together – delay increases costs, & independence will reduce effectiveness.
- 3- Adaptation must be scaled to the local & regional hydrologic events & climate change effects operating at each project – projects can be grouped by common vulnerabilities, but distinct local effects can override commonalities.
- 4- USACE pilots are addressing a wide range of climate change effects that confront multiple aspects of the USACE mission & are integrated with other agencies operating in the pilot regions.
- 5- Project-level adaptation, even in the planning phases, can take several iterations through the CEQ Flexible Framework – this is much more expensive in time & money than agency top-level applications, so has to be budgeted very carefully.



Thanks for your invitation and interest.

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