

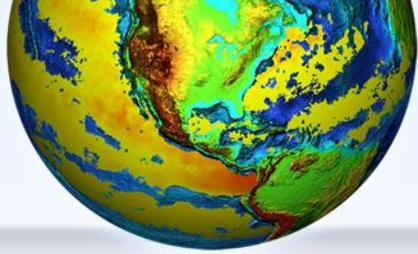
# UPDATE ON THE NOAA CLIMATE SERVICE (NCS)

Doug Kluck ([doug.kluck@noaa.gov](mailto:doug.kluck@noaa.gov))

NOAA NCS Regional Director – Central Region

816-564-2417 cell

816-994-3008 office



# The Rising Demand for Climate Services



Commerce



Coasts



Recreation



Ecosystems



Hydropower



Farming

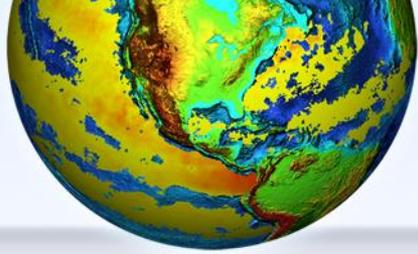


Wind Energy



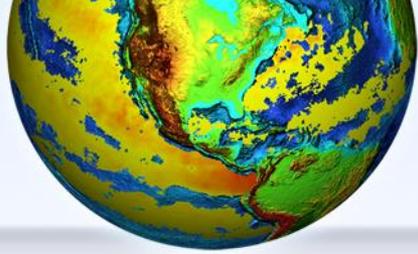
Private Sector

*"All our greatest challenges are pervasive around the globe, and all are local in their solution." -A stakeholder from Missouri*



# Progress Since February

- Interagency collaborations (DOI & USDA)
- Regional Climate Services Directors hired and plans for early activities completed
- Congressional requested National Academy of Public Administration Study complete
- Development of draft reprogramming package
- **Development of Vision and Strategic Framework document**
  - Written by NOAA senior climate science and service managers and practitioners from across the line offices



# NCS Vision and Mission

## •Vision

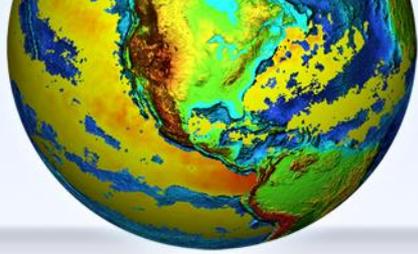
•By providing science and services, the NCS envisions an informed society capable of anticipating and responding to climate and its impacts.

## •Mission

•Improve understanding and prediction of changes in climate and promote a climate-resilient society by:

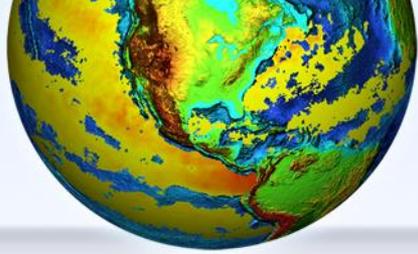
- Monitoring climate trends, conducting research, and developing models to strengthen our knowledge of the changing climate and its impacts on our physical, economic, and societal systems
- Providing authoritative and timely information products and services about climate change, climate variability, and impacts
- Informing decision-making and management at the local, state, regional, national, and international levels

The NCS delivers products and services in collaboration with public, private, and academic partners to maximize social, economic, and environmental benefits.



# NCS Objectives

- Consistent with Climate objectives from NOAA's Next Generation Strategic Plan (public comment period closed)
  - Improved understanding of the changing climate system and its impacts
  - Integrated assessment of current and future states of the climate system that identify potential impacts and inform science, services, and decisions
  - Mitigation and adaptation choices supported by sustained, reliable, and timely climate services
  - A climate-literate public that understands its vulnerabilities to a changing climate and makes informed decisions.



# NCS Core Capabilities Address Societal Challenges

## Examples of Societal Concerns

Energy and water demands, food quality and quantity, reliable infrastructure during extremes of climate, plant and animal range expansion, ocean productivity, and other concerns, as affected by climate variability, global warming, heat waves, cold snaps, drought, fires, heavy downpours, blizzards, floods, sea-level rise, storm surge, sea-ice and glacier loss, snow cover, and other physical variables.



## Basic climate services are provided in these example sectors

Transportation

Agriculture

Energy

Health

## NCS initial priorities to meet societal challenges

Sustain-  
ability of  
Marine  
Ecosystems

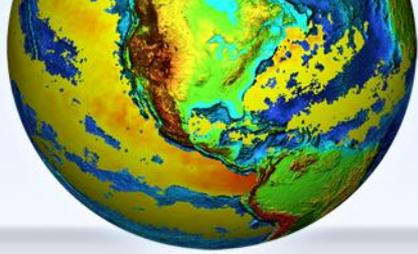
Coasts and  
Climate  
Resilience

Climate  
Impacts on  
Water  
Resources

Changes in  
Extremes  
of Weather  
& Climate

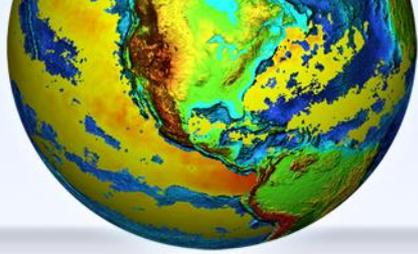
Informing  
Climate  
Policy  
Options

October 4, 2010



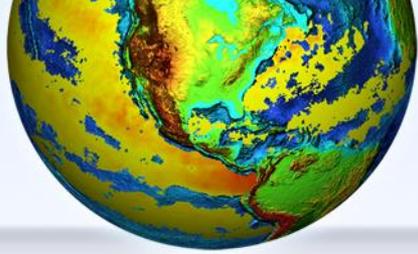
# NCS Core Capabilities

- Observing Systems, Data Stewardship, and Climate Monitoring
  - Measure, capture, preserve, monitor, and provide easy access to the historical record of the global environment.
- Understanding and Modeling
  - Provide credible and authoritative science to advance the understanding and prediction of climate variability and change.
- Integrated Services Development and Decision Support
  - Provide stakeholders with a platform of timely and relevant climate data, models, and information.



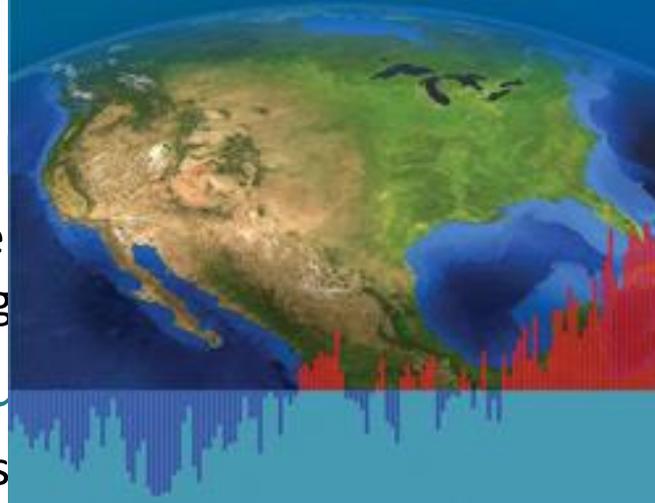
# Initial Societal Challenges

- Climate Impacts on Water Resources
  - Provide coordinated and authoritative information system to guide water resource managers.
- Coasts and Climate Resilience
  - Understand physical processes driving sea-level rise and coastal inundation, and provide best available information to decision makers.
- Sustainability of Marine Ecosystems
  - Improve understanding of, and information about, the impacts of climate on ocean properties critical to managing large marine ecosystems.
- Changes in Extremes of Weather and Climate
  - Develop and deliver information to prepare for and adapt to climate and weather extremes, e.g. droughts, floods, heat waves & cold snaps
- Informing Climate Policy Options
  - Provide sound science to inform climate-related policies, plans and strategies including both adaptation and mitigation.



## Global Climate Change Impacts in the United States

U.S. GLOBAL CHANGE RESEARCH PROGRAM



### • NCS will engage

- National and

- ✓ Broad scope material (e.g.)

- Problem-Focused

- ✓ Often time-sensitive (e.g. Devil's Lake)

- Needs Assessments

- ✓ Help to identify gaps in science, understanding or services, including helping frame & inform other assessments.

Assessments

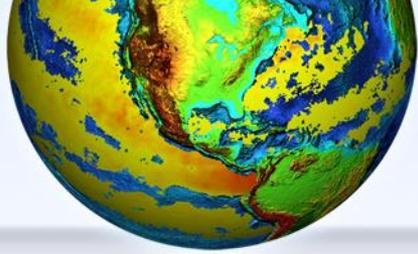
Assessments

ad set of peer-reviewed

Assessments

al and regional levels (e.g.)

<http://globalchange.gov/publications/reports/scientific-assessments/us-impacts>



Pa

- Partners from across the globe both contribute to and benefit from the program
- Other parts of NOAA, the cooperative institutes, the private sector, and the

**USGS**  
science for a changing world

**US Army Corps of Engineers**

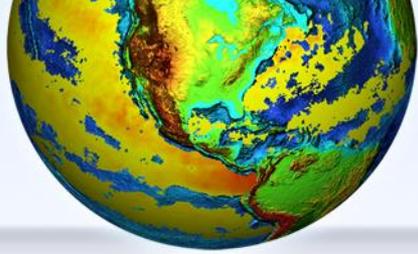
**U.S. DEPARTMENT OF THE INTERIOR**  
BUREAU OF RECLAMATION

**NOAA**

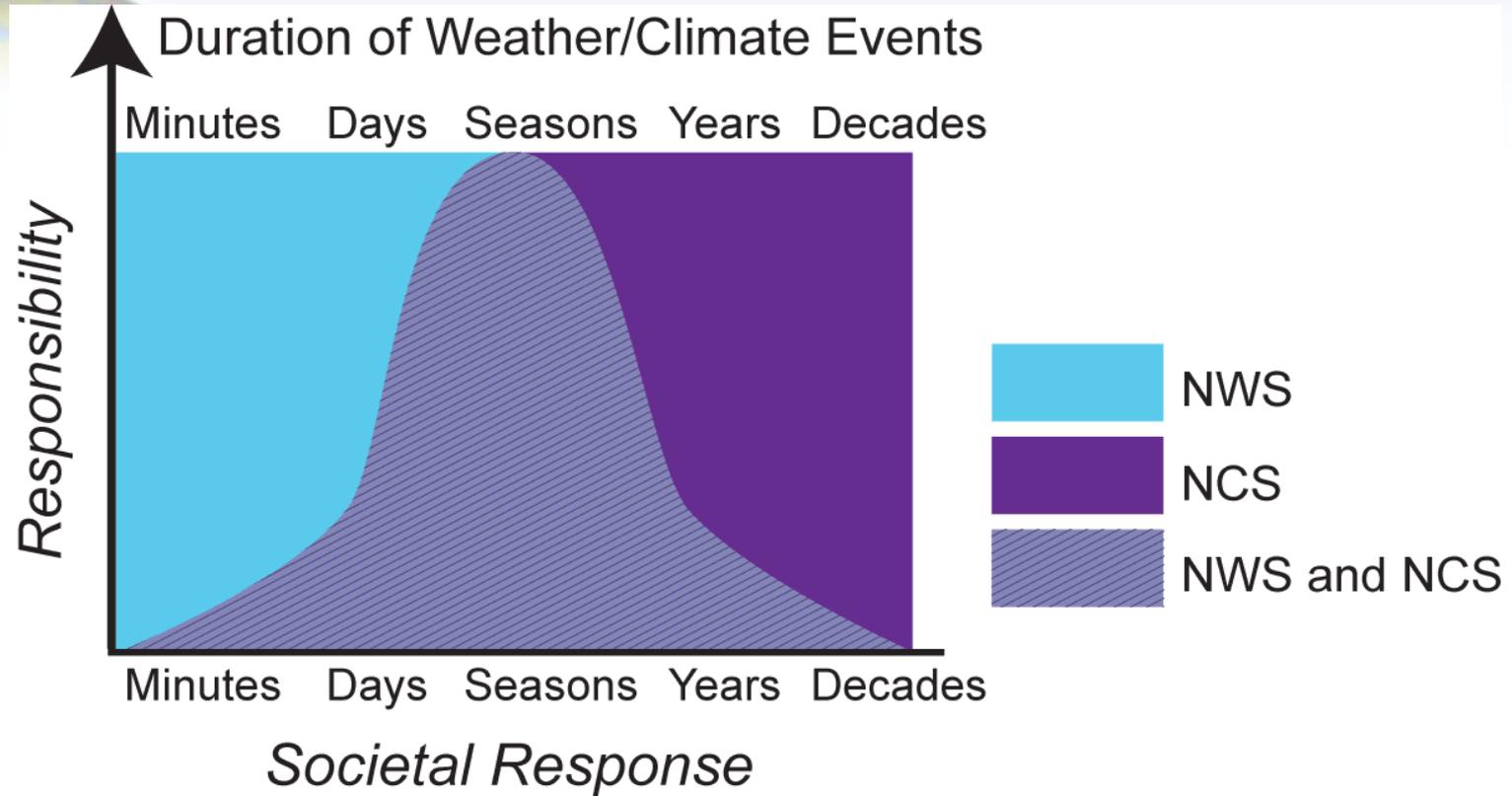
## Climate Change and Water Resources Management: A Federal Perspective

Circular 1331

U.S. Department of the Interior  
U.S. Geological Survey



# NOAA Weather and Climate Services Continuum



## NWS

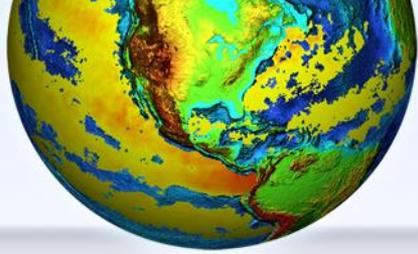
High Freq of Information  
Short Lifetime of Product

## NCS

Low Freq of Information  
Long Lifetime of Product

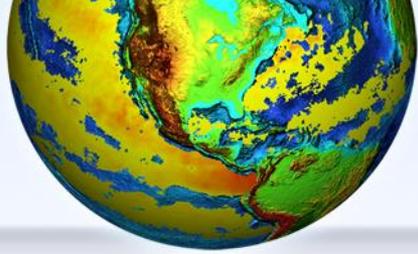


October 4, 2010

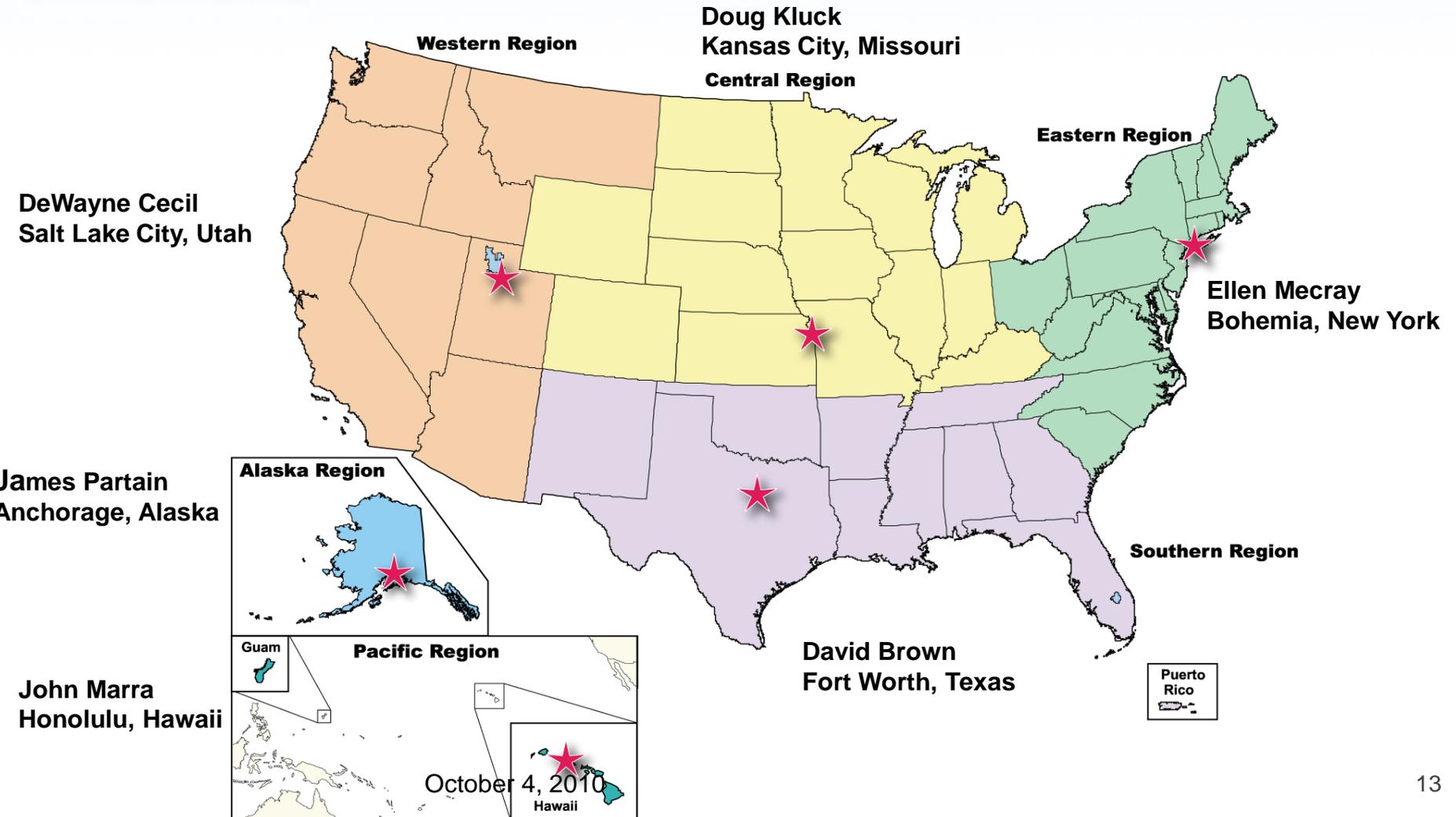


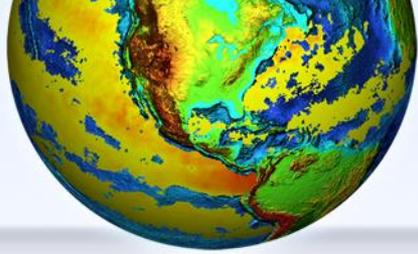
# Next Steps

- Submit a reprogramming package to OMB
- OMB has approved document with few changes
- Next to engage Congress
- Pending approval, implement the NCS, spring 2011



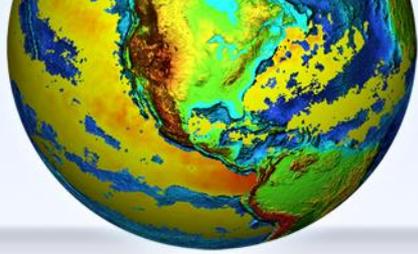
# Regional Climate Service Directors





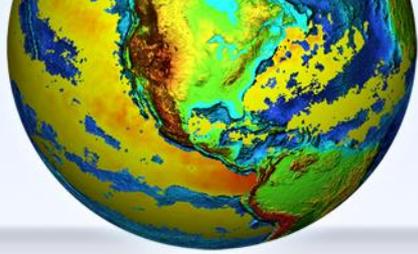
# Regional Priorities

- Organize two regional collaboration groups
  - Plains & Midwest (West & East)
  - Fed, state, RCCs, SCs, tribal, NOAA, academic, RISA, NGO, extension, cities
  - Build consistency, share information, avoid redundancy, leverage each others skills and resources, planning/prioritizing
  - Communication: Calls/Webinars & face-to-face meetings
  - Not necessarily lead but initiate



# Regional Priorities

- Assessments
  - Assessing regional gaps/needs for climate services (began with agriculture but a ways to go with other sectors)
    - USDA - AFRI Grant: Education, Extension & Assessment - 5 yr
  - Contribute to the national USGCRP assessment
    - TBD - but collecting of climate change impacts and adaptation strategies
  - Lead/promote national tribal land assessment of climate change & adaptation response past, current and future
    - Participants: tribal colleges, tribal organizations, feds (USGS, BIA/E, NASA), UCAR, NOAA)
    - Tribal college instructors and students

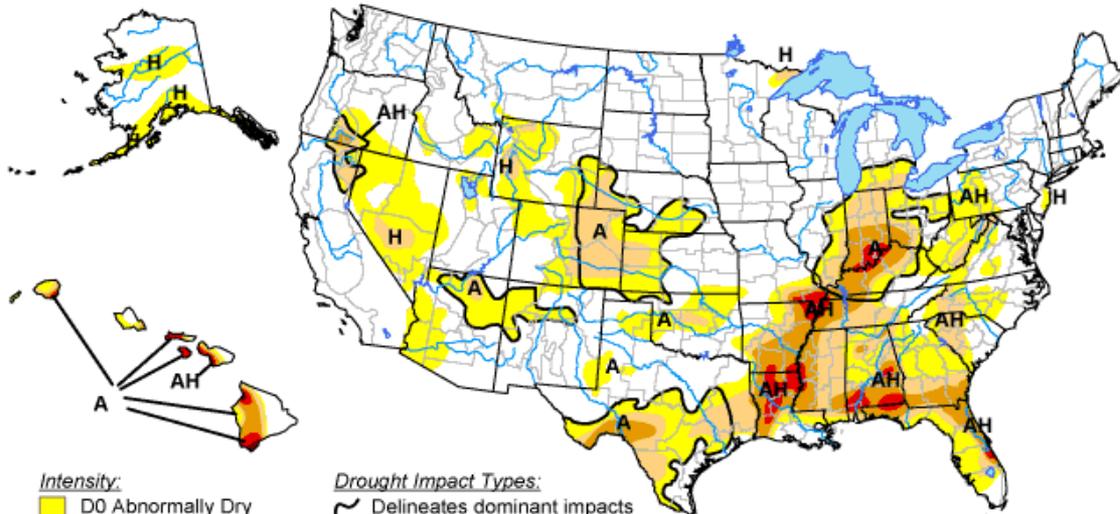


# Regional Priorities

- Contribute to partner initiatives, guidance, resources and time
- Many meetings many outreach opportunities:
  - Climate Prediction Application Science Workshop: Des Moines, March 1-4
  - Missouri River Natural Resources Collaborative: Nebraska City, March 9-10
  - AASC, Asheville, July
  - Regional Assessment meetings
  - Various stakeholder meetings (ICLEI, RISA, RCCs, LCCs, CSCs etc..)

# U.S. Drought Monitor

November 9, 2010  
Valid 8 a.m. EST



- Intensity:**
- D0 Abnormally Dry
  - D1 Drought - Moderate
  - D2 Drought - Severe
  - D3 Drought - Extreme
  - D4 Drought - Exceptional

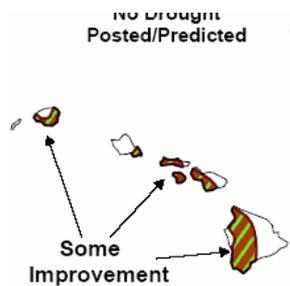
- Drought Impact Types:**
- ~ Delineates dominant impacts
  - A = Agricultural (crops, pastures, grasslands)
  - H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

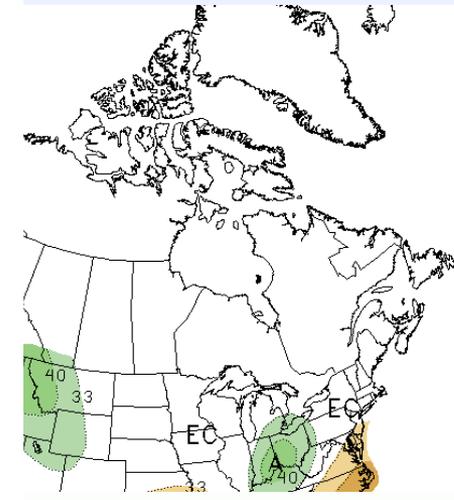
<http://drought.unl.edu/dm>



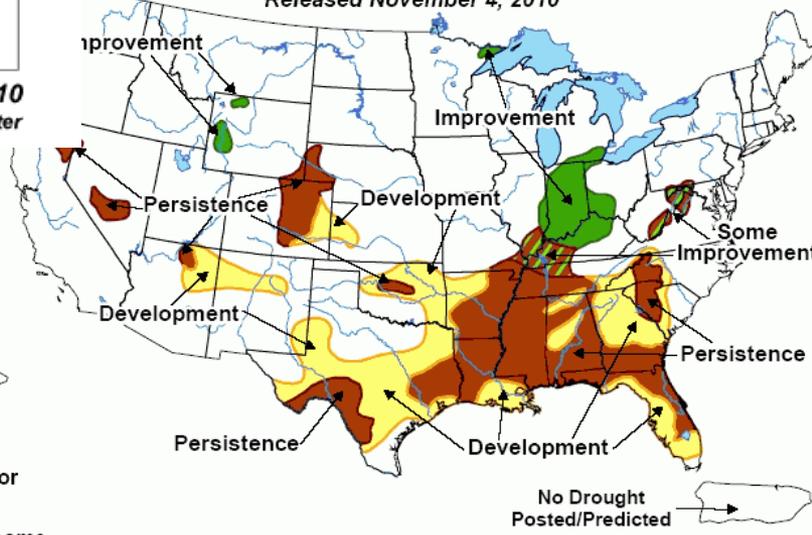
Released Thursday, November 11, 2010  
Author: Mark Svoboda, National Drought Mitigation Center



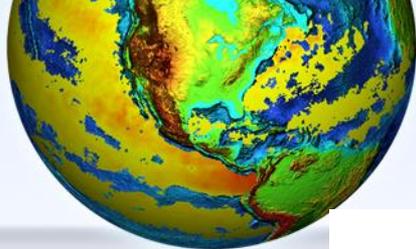
- KEY:**
- Drought to persist or intensify
  - Drought ongoing, some improvement
  - Drought likely to improve, impacts ease
  - Drought development likely



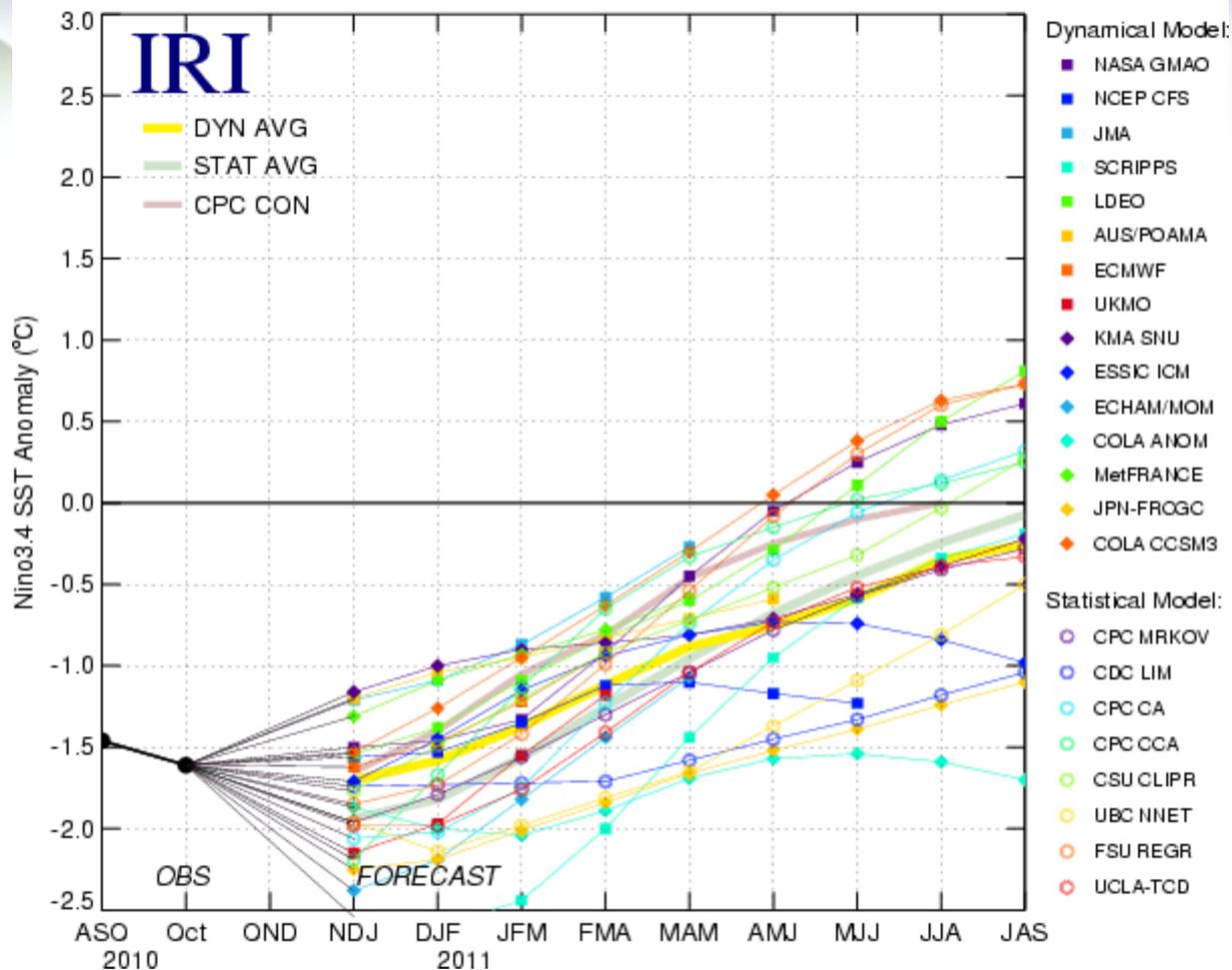
**Seasonal Drought Outlook**  
Drought Intensity Tendency During the Valid Period  
Valid November 4, 2010 - January 2011  
Released November 4, 2010

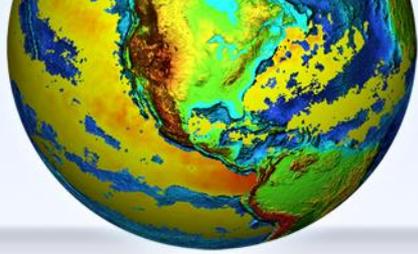


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.



## Model Predictions of ENSO from Nov 2010





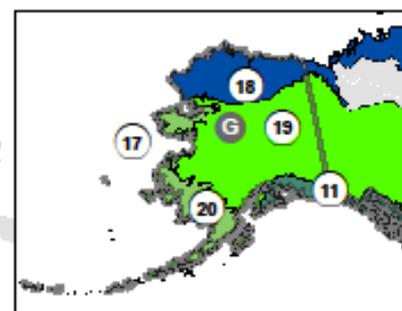
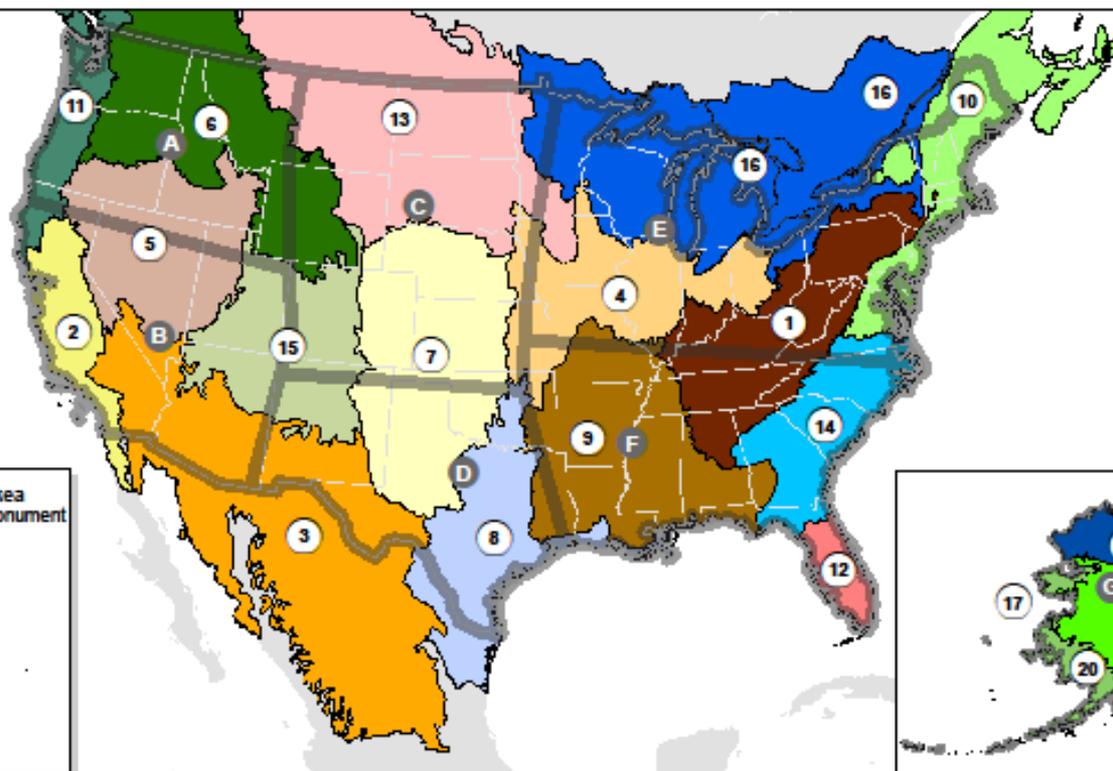
# ICLEI – Local Governments for Sustainability

- <http://iclei.org/index.php?id=about>
- **ICLEI - Local Governments for Sustainability** is an international association of local governments as well as national and regional local government organizations who have made a commitment to sustainable development.
- ICLEI was founded in 1990 as the 'International Council for Local Environmental Initiatives'. The Council was established when more than 200 local governments from 43 countries convened at our inaugural conference, the World Congress of Local Governments for a Sustainable Future, at the United Nations in New York.



# U.S. Department of the Interior

## Landscape Conservation Cooperatives - Climate Science Centers



### Climate Science Centers

- A Northwest
- B Southwest
- C Northcentral
- D Southcentral
- E Northeast
- F Southeast
- G Alaska
- H Pacific Islands

### Landscape Conservation Cooperatives

- 1. Appalachian
- 2. California
- 3. Desert
- 4. Eastern Tallgrass Prairie and Big Rivers
- 5. Great Basin
- 6. Great Northern
- 7. Great Plains

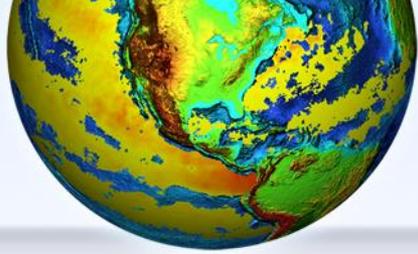
### Landscape Conservation Cooperatives

- 8. Gulf Coast Prairie
- 9. Gulf Coastal Plains and Ozarks
- 10. North Atlantic
- 11. North Pacific
- 12. Peninsular Florida
- 13. Plains and Prairie Potholes
- 14. South Atlantic
- 15. Southern Rockies

### Landscape Conservation Cooperatives

- 16. Upper Midwest and Great Lakes
- 17. Aleutian and Bering Sea Islands
- 18. Arctic
- 19. Northwestern Interior Forest
- 20. Western Alaska
- 21. Pacific Islands
- Unclassified

Albers Equal Area Conic NAD83  
 Produced by FWS, IRTM, Denver, CO  
 Map Date: 03/24/2010



# For More Climate Service Information...

[www.climate.gov](http://www.climate.gov)

- NOAA's New Climate Portal

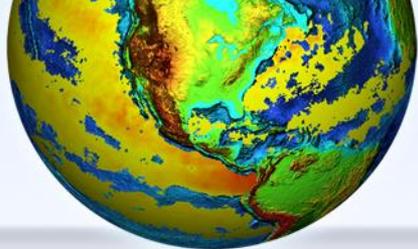
[www.drought.gov](http://www.drought.gov)

[climateservice@noaa.gov](mailto:climateservice@noaa.gov)

- New mailbox to address your questions

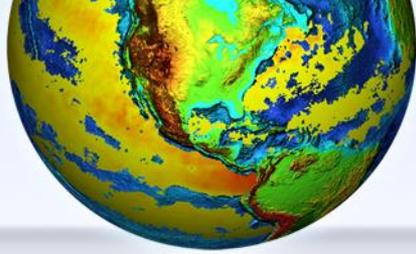
[www.ppi.noaa.gov/ngsp](http://www.ppi.noaa.gov/ngsp)

- NOAA's Next Generation Strategic Plan



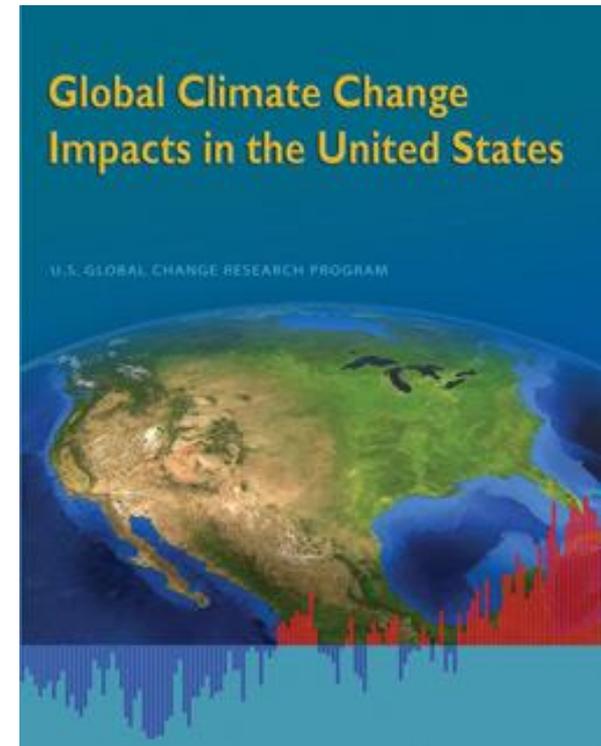
# Questions?

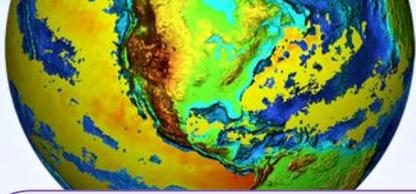
***Thank you!***



# NATIONAL CLIMATE INITIATIVES

- CEQ Interagency Task Force
  - 2009 White House Council on Environmental Quality (CEQ), Office of Science and Technology Policy (OSTP) and NOAA
  - Currently having public listening sessions, report coming soon
- USGCRP National Assessment: multi-agency review of impacts and adaptation strategies
- National Academy of Public Administration Study (NAPA) of NCS completed
  - “strongly supports the creation of a NOAA Climate Service to be established as a line office in NOAA”
  - “is largely in agreement with NOAA about the core elements that should constitute the NCS.”





# Federal Regional Climate Service Enterprise

## *Connecting Science, Services and People*

### State and Local Engagement, Education & Service Delivery

- Weather Forecast Offices
- Sea Grant Education & Extension
- Marine Sanctuaries, Monuments & Estuarine Reserves
- River Forecast Centers
- Data Centers
- DOC Commerce Connect (in development)
- Other agencies (e.g., National Science Foundation, Dept. of Education, Health & Human Services, Dept. of Energy, Dept of Interior, Dept of Agriculture)
- Dept. of Agriculture Extension
- State Climatologists
- Federal Protect Area Programs
- USGCRP Climate Literacy Partners
- Etc...

### Regional Climate Services Partnerships

- NOAA Regional Climate Service Programs
- Weather Service Regions
- Regional Climate Centers
- Coastal Services Center
- River Forecast Centers
- Regional Collaboration Teams
- Data Centers
- Relevant Regional Offices from other agencies (e.g., Environmental Protection Agency, Dept. of Agriculture, Dept. of Interior, Health and Human Services, Dept. of Transportation, Dept of Energy, etc.)

### Regional Climate Science

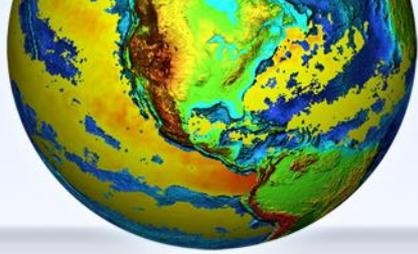
- Regional Integrated Science & Assessments (RISA)
- NOAA Labs
- Sea Grant
- Cooperative Institutes
- Applied Research Centers
- Data Centers
- Other agencies (e.g., National Aeronautics and Space Administration, Dept. of Interior, Dept. of Agriculture, National Science Foundation & other USGCRP agencies)
- Etc...

### USER ENGAGEMENT

- Development, Delivery & Evaluation of Products & Tools
- Understanding and Translating User Needs
- Informing Program Requirements



Government  
Private Sector  
Academia  
NGO's



**NOAA commits to providing critical assets in science and service to a Federal partnership**

Partnership  
Collaboration

**Information Delivery and Decision Support**  
*NOAA uses its national and regional information systems to provide critical data and decision support to Federal agencies.*

**Assessments of Climate Change and Impacts**  
*NOAA is a leader in national and regional climate change assessments. Over 70% of Federal IPCC AR4 WGII contributions were from NOAA.*

**Climate Change Research and Modeling**  
*Internationally recognized models of climate change and its impacts are used to assess future risks and opportunities.*

**Climate Observations and Monitoring**  
*NOAA operates over 90 observational systems that monitor and report on climate change and its impacts.*

**USGS**  
science for a changing world

**US Army Corps of Engineers**

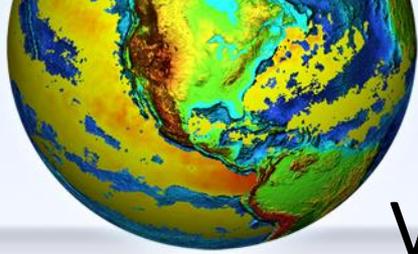
**U.S. DEPARTMENT OF THE INTERIOR**  
BUREAU OF RECLAMATION

**NOAA**

**Climate Change and Water Resources Management:  
A Federal Perspective**

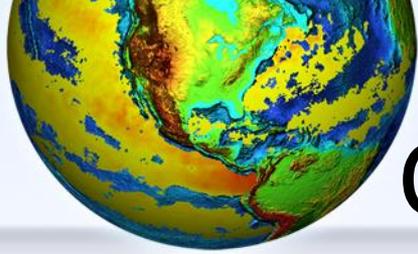
Circular 1331

U.S. Department of the Interior  
U.S. Geological Survey



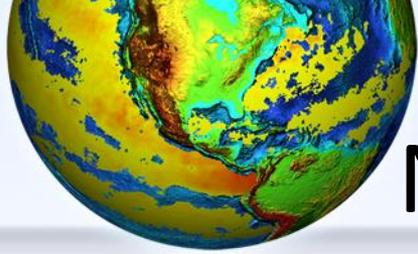
# Purpose of the Vision and Strategic Framework

- Purpose of the document
  - To describe how NOAA proposes to respond to society's growing need for climate services.
  - To outline an approach to achieving the vision.



# Contents of Document

- Chapter 1: Importance of a climate service in NOAA
- Chapter 2: Strategic Framework (core capabilities, societal challenges, importance of assessments)
- Chapter 3: Managing for Success (business practices, partnerships, evaluation of progress)
- Appendix A: core capabilities
- Appendix B: societal challenges
- Appendix C: alignment with National Academy recommendations
- Appendix D: alignment with NOAA Next Generation Strategic Plan



# NAPA Recommendations

## 1. Administration Recommendations

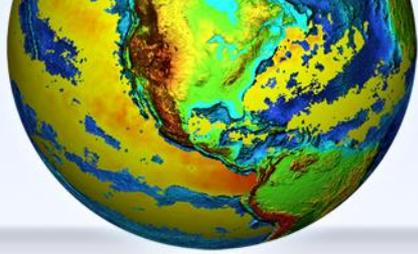
- The Administration should take actionable steps to establish an Interagency climate services framework
- NOAA should be designated the Lead Agency if an Interagency framework is established

## 2. NOAA Organizational Recommendations

- A new Climate Service Line Office is the right organizational design choice
- Science and service assets should be combined within one Line Office
- NAPA's overall proposed Line Office structure aligns with the NOAA-DOC proposal

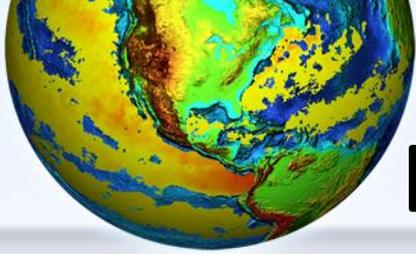
## 3. NOAA Implementation Recommendations

- Establish transitional leadership focused on Implementation and Change Management
- Examples of lessons learned from previous large reorganizations from the defense and security communities



# Initial Regional Priorities

1. Form a stakeholder **steering group** comprised of a diverse set of partners to ensure open and sustained dialogue on regional needs
2. Conduct a **needs assessment** to identify regional vulnerabilities
3. Produce an **Action Plan** that prioritizes the region's information needs
4. Support the **development of the next National Assessment** report in 2013-14
5. Support the development **and the emergence of NOAA's intent to create a new Climate Service** by ensuring there is a two-way dialogue on these important initiatives



# Building Blocks for the NCS

## NESDIS DATA CENTERS

National Climatic  
Data Center

National Oceanographic  
Data Center

National Geophysical  
Data Center

## OAR PROGRAM & LABORATORIES

Earth System Research Lab  
Office of the Director  
Chemical Sciences Division  
Global Monitoring Division  
Physical Sciences Division

Geophysical Fluid Dynamics  
Laboratory

Climate Program Office

## NWS FUNDING TO MANAGE NETWORKS (NO STAFF CHANGE)

Climate Observing Network  
Tropical Atmosphere Ocean  
(TAO)  
Historical Climate Network  
Modernization (HCN-m)  
Modernization of the Hourly  
Precipitation Rain Gauges

**NOS & NMFS  
UNCHANGED**

October 4, 2010

*The physical location of these facilities will not change*