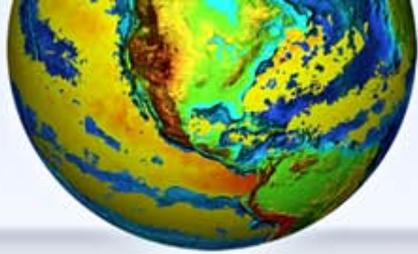


# NOAA CLIMATE SERVICE

Mary M. Glackin  
Deputy Under Secretary  
March 18, 2010



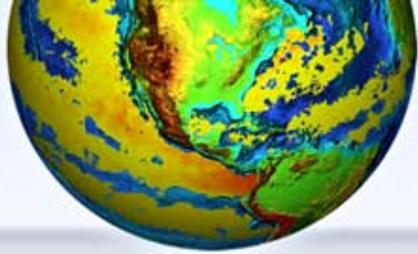


# The Time to Act Is Now

There is an urgent and growing need for reliable, trusted, transparent and timely climate information across all sectors of our economy.

The need is great and growing.

Extensive employee, stakeholder, advisory bodies and many others informed process of determining how to optimize NOAA's world-class science while strengthening service delivery.



# NOAA Climate Service

## VISION

NOAA Envisions an Informed Society Anticipating and Responding to Climate and its Impacts

## MISSION

Inform mitigation and adaptation decisions needed to respond to the impacts of the changing climate\*

- ☑ Support decision makers regionally to globally, on time scales of weeks to decades, in areas including public policy, resource management, infrastructure investment, business development, and decisions of individuals in their daily lives

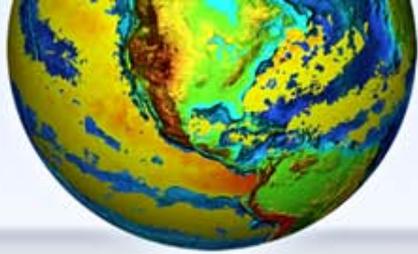
## GOALS

Continue to Build, Evaluate and Evolve NOAA's Core Competencies in Three Key Areas:

- ☑ Deliver Sustained & Effective Services
- ☑ Promote Partnerships
- ☑ Advance Climate Science

decisions of individuals in their daily lives  
investment, business development, and  
resource management, infrastructure

\*Will be revised to reflect science/research mission.



# NOAA's Role in a National Strategy

## International:

- *All nations* must recognize the need for climate services, and continue on the progress made at the WCC-3.
- **NOAA is internationally recognized as advancing the state of climate knowledge, for leadership in GEOSS, and is viewed as critical to developing regional scale impact assessments.**

## National:

- *All agencies* must consider climate change impacts as it relates to their mission areas, and commit to work within a cooperative and collaborative *interagency strategy*.
- **NOAA provides core capabilities to national climate services through NOAA's decades of expertise in observing, monitoring, research, modeling, assessments, and existing service delivery structures.**

## Regional:

- *All agencies* must engage in a *Regional Climate Service Enterprise* to ensure users have the climate information they need.
- **NOAA's regional service capacity, with over two centuries of experience, is delivering services today through public and private partnerships, and is ready to engage in the national climate service strategy.**

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



## Information Delivery and Decision Support

*NOAA uses its national and regional infrastructure to deliver climate services today*

## Assessments of Climate Change and Impacts

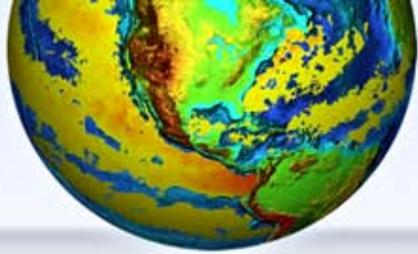
*NOAA is a leader in national and regional climate impact assessments  
Over 70% of Federal IPCC AR4 WG1 authors were from NOAA*

## Climate Change Research and Modeling

*Internationally recognized models of the global climate*

## Climate Observations and Monitoring

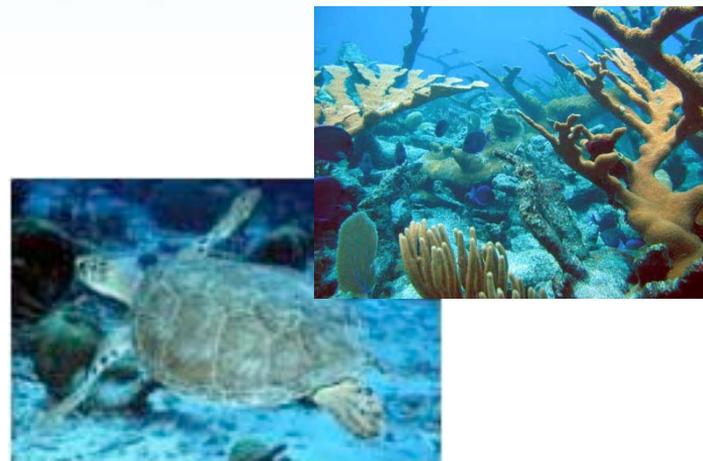
*NOAA operates over 90 observation and monitoring systems  
NOAA is mandated to monitor and provide access to climate data and information*



# NOAA Climate Service Leadership in *Living Marine Resources & Ecosystems*

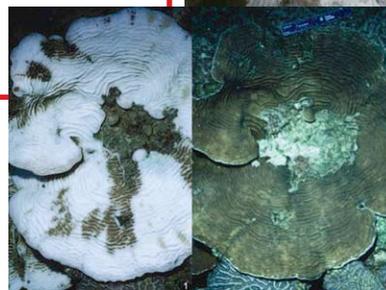
## Living Marine Resources and Ecosystem Issues

- Climate Impacts on Ecosystems/Fisheries
- Endangered Species Act Requirements
- Attribution of Climate Signals impacting ecosystems : Long Term Change & Natural Variability
- Ocean Warming: Impacts on Distribution & Productivity (phenology, production, invasives)
- Physical and Chemical Changes to the ocean (Ocean Acidification Impacts on Marine Biota)
- Impacts of Loss of Sea Ice on Living Marine Resources



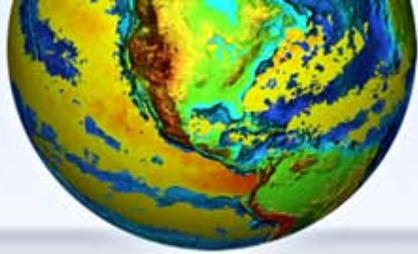
## NOAA Products and Services

- Ocean Warming: Impacts on Distribution & Productivity of Coastal Ecosystems & Fisheries
- Impacts of Loss of Sea Ice on Living Marine Resources
- Physical and Chemical Changes to the Ocean
- Ecosystem Habitat Monitoring and Restoration



## Key Federal Agencies

NOAA, DOI, EPA



# NOAA Climate Service Leadership in *Coastal Regions*

## Coastal Issues

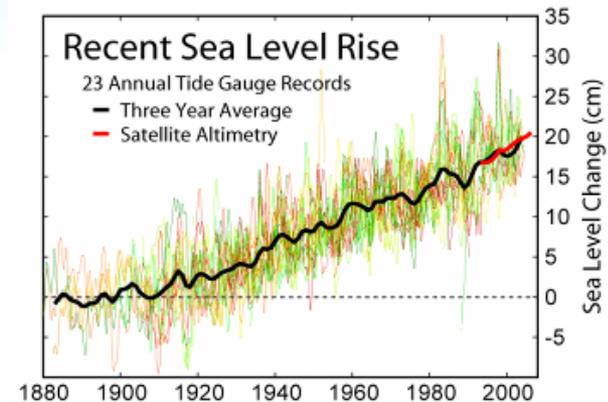
- Sea level rise and inundation
- Precipitation patterns and associated effects on freshwater, nutrient, and sediment flow
- Ocean temperature
- Circulation patterns
- Frequency, track and intensity of coastal storms
- Levels of atmospheric CO<sub>2</sub> and ocean acidification

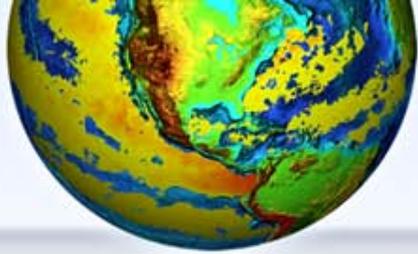
## NOAA Products and Services

- Coastal Inundation Modeling
- Observations and Monitoring of Coastal Areas
- Forecasting of Coastal Storms
- Information for Adaptation Planning
- NOAA sea-level standards have been adopted by the U.S. Army Corps of Engineers for civil works programs.

## Key Federal Agencies

NOAA, DOI, NASA, DOE, Army Corps of Engineers, FEMA





# NOAA Climate Service Leadership in *Water*

## Water Issues

- Precipitation Patterns; Drought and Floods
- Changes in snowpack (quantity and timing)
- River stream flow
- Fire outlooks
- Physical Infrastructure (i.e., dams, reservoirs, water delivery systems)
- Planning (e.g., urban, agriculture, health)



## NOAA Products and Services

- Monitor and Forecast Drought and Flood Related Conditions
- National Integrated Drought Information System ([www.drought.gov](http://www.drought.gov), NIDIS) (Including Stakeholder Engagement)

## Key Federal Agencies

NOAA, DOI, Army Corps of Engineers, USDA, EPA



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





# NOAA's Enabling Contributions to Climate Services

Issue	Key Federal Agencies	NOAA's Products and Services
<b>Energy:</b> <ul style="list-style-type: none"> <li>• Carbon Emissions Issues</li> <li>• Renewable-Energy Development</li> <li>• Seasonal Energy Use</li> </ul>	DOE, NASA , EPA , NOAA	<ul style="list-style-type: none"> <li>• GHG Monitoring</li> <li>• Seasonal Forecasts</li> <li>• Information on Wind and Solar Climatology for Renewable-Energy Infrastructure Planning</li> <li>• Precipitation and Water Resource Information for Hydroelectric</li> </ul>
<b>Transportation:</b> <ul style="list-style-type: none"> <li>• Impacts of a Changing Climate</li> <li>• Infrastructure</li> <li>• Transportation Corridors</li> </ul>	DOT, FAA, NOAA	<ul style="list-style-type: none"> <li>• Navigation Charts</li> <li>• Real-time Tides and Currents for Safe Navigation of Ports</li> <li>• Aviation Sector Planning and Support</li> </ul>
<b>Agriculture:</b> <ul style="list-style-type: none"> <li>• Crop Yields</li> <li>• Drought &amp; Flood Information</li> <li>• Seasonal Crop Forecast</li> </ul>	USDA, NOAA	<ul style="list-style-type: none"> <li>• Forecast of Seasonal Precipitation and Extreme Temperatures</li> <li>• Monitor and Forecast Drought</li> <li>• Climate Normals</li> </ul>
<b>Health:</b> <ul style="list-style-type: none"> <li>• Environmental Stressors</li> <li>• Oceans and Human Health</li> </ul>	HHS, EPA, NOAA	<ul style="list-style-type: none"> <li>• Observing and Understanding of Air Quality Processes</li> <li>• Extreme Weather Forecasts and Predictions</li> </ul>

# 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

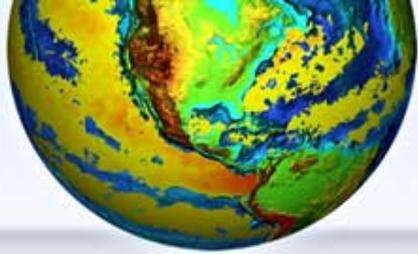
- Regional Integrated Science & Assessments (RISA)
- NOAA Labs
- Sea Grant
- Cooperative Institutes
- Applied Research Centers
- Data Centers
- Other agencies (e.g., National Aeronautics and Space Administration, Dept. of Interior, Dept. of Agriculture, National Science Foundation & other USGCRP agencies)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

### USER ENGAGEMENT

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



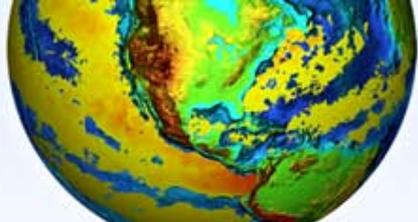
Government  
Private Sector  
Academia  
NGO's



# Meeting the Rising Demand for Climate Services

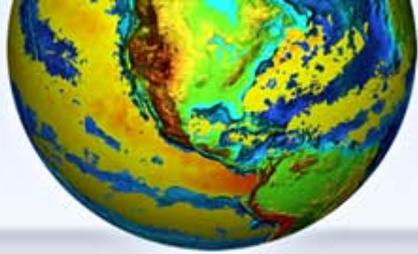
1. NOAA's existing framework for climate was established before climate services were recognized as essential, and is not optimized for climate service delivery.
2. While NOAA has continued to build its suite of climate services within its existing framework, including our interagency approach to delivering drought information services, much of the demand remains unmet.
3. To meet climate service demands, NOAA must direct efforts to develop a framework that will:
  - ✔ Connect users to existing climate products and services, while continuing to develop new authoritative, reliable services;
  - ✔ Transform current science and data into understandable, usable and accessible information;
  - ✔ Actively engage users in service development.
4. NOAA's climate framework must deliver needed climate services while maintaining leadership in observing, research, modeling and assessments

*"If America is to avoid the most damaging effects of climate change, we have to first understand it – and that is where the Department of Commerce is instrumental." - Secretary of Commerce, Gary Locke*



# Design Criteria for NOAA's Reorganization

Goals	Organizational Design Criteria
<p><b>Establish a Climate Service</b></p>	<p><b>Establish Climate Leadership</b></p> <ul style="list-style-type: none"> <li>• Create a single line of accountability and responsibility for performance</li> <li>• Create a senior advocate for climate policy, strategy and budget within NOAA</li> </ul>
	<p><b>Enhance Climate Program Coordination</b></p> <ul style="list-style-type: none"> <li>• Develop effective mechanisms that leverage program execution for climate services from across the agency and with our partners</li> </ul>
	<p><b>Promote User Engagement on Climate</b></p> <ul style="list-style-type: none"> <li>• Create clear points of access for users</li> <li>• Facilitate and improve stakeholder engagement</li> <li>• Integrate user input into service development</li> </ul>
<p><b>Strengthen NOAA Science</b></p>	<p><b>Establish Science Leadership</b></p> <ul style="list-style-type: none"> <li>• Ensure the NOAA Chief Scientist is able to effectively coordinate and integrate NOAA's research</li> <li>• Establish positions and accountability within the line offices for contributing to NOAA's science strategy</li> </ul>
	<p><b>Enhance Cross Line Science Coordination and Engagement</b></p> <ul style="list-style-type: none"> <li>• Develop mechanisms to address key research problems requiring cross disciplinary expertise and coordination</li> </ul>
<p><b>Implement the Administration's Priorities</b></p>	<p><b>Promote Efficient Implementation and Operation</b></p> <ul style="list-style-type: none"> <li>• Minimize organizational complexity</li> <li>• Utilize existing programs to the greatest extent possible</li> </ul>
	<p><b>Position NOAA to meet Current and Future Challenges to NOAA's Critical Mission Functions and Long Term Strategy</b></p> <ul style="list-style-type: none"> <li>• Limit disruptions to the agency during the reorganization</li> <li>• Promote internal and external engagement and support for NOAA's mission areas and strategy</li> </ul>



# Proposed NOAA Climate Service (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

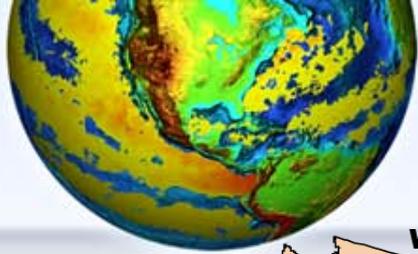
Tropical Atmosphere Ocean  
(TAO)

Historical Climate Network  
(HCN)

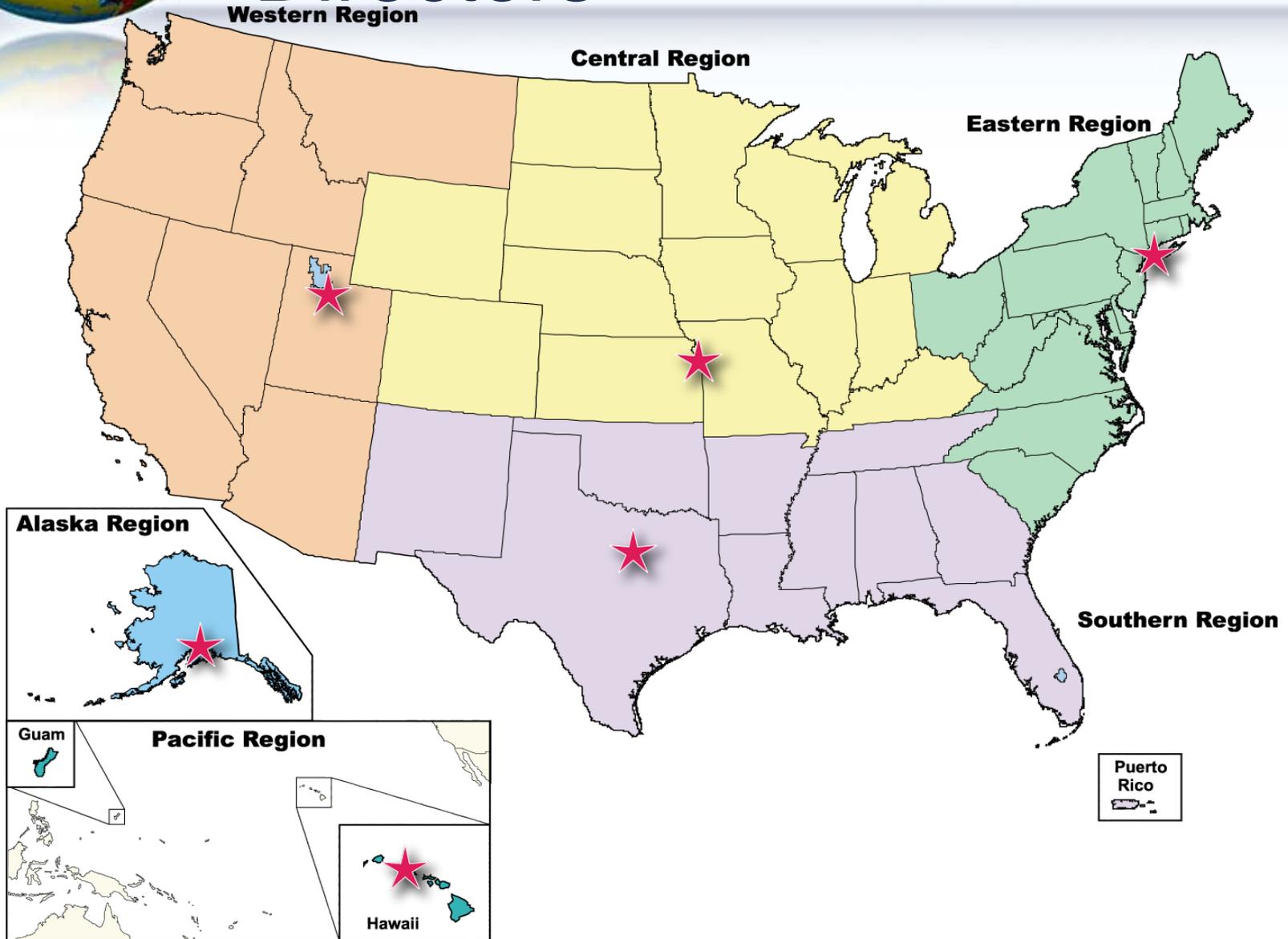
Modernization of the Hourly  
Precipitation Rain Gauges

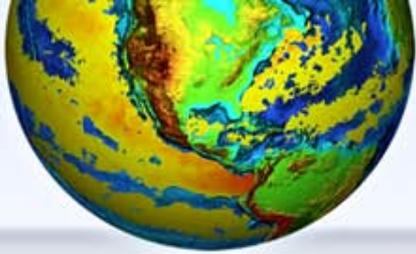
**NMFS & NOS  
UNCHANGED**

*The physical location of these facilities will not change*



# Regional Climate Service Directors





# NOAA Climate Services Portal

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

One-stop access for NOAA's climate information  
Multiple audiences so multiple avenues to access information

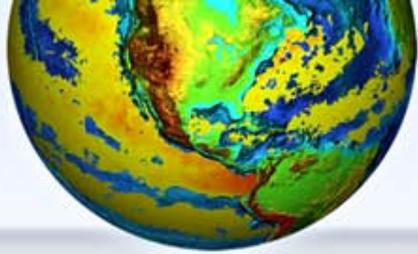
- ✔ ClimateWatch Magazine
- ✔ Data and Services
- ✔ Understanding Climate
- ✔ Education
- ✔ Climate Dashboard

The screenshot displays the NOAA Climate Services Portal interface. At the top, it features the NOAA logo and the text "NOAA CLIMATE SERVICES" with "Development Prototype" in red. Below this is a navigation bar with tabs for "ClimateWatch Magazine", "Data & Services", "Understanding Climate", and "Education".

The main content area is divided into several sections:

- Articles:** A featured article titled "Living with an Uncertain Monsoon" by Esther Conrad, dated Oct 29th, 2009. It discusses the monsoon season in India and the uncertainty of its arrival.
- Videos:** A section titled "Meet NOAA's climate scientists and get their perspectives on climate." featuring three video thumbnails: "Susan Solomon Wins 2009 Volvo Environment Prize", "What is Causing Global Climate Change?", and "What Scientists Know Today About Climate Change".
- Images:** A section titled "Browse images, photos and visualizations of Earth's climate system." with several image thumbnails.

Below the main content area is a "Global Climate" section with a "Climate Change" slider and a "Temperature" graph. Below that is a "Global Climate Dashboard" with a "Climate Change" and "Climate Variability" slider, a "Past Weather" section, and a "News" section with a quote from Tom Karl, Director of NOAA's National Climatic Data Center.



# OAR Offices, Labs & Programs Under NOAA Climate Service Proposal

## Oceanic & Atmospheric Research

### Laboratories & Cooperative Institutes

Air Resources Laboratory

Atlantic Oceanographic &  
Meteorological Laboratory

Earth System Research Laboratory  
•Global Systems Division

Great lakes Environmental  
Research Laboratory

National Severe Storms Laboratory

Pacific Marine Environmental  
Laboratory

Labs & Cooperative Institutes

### Programs & Administration

CFO, CAO, & CIO

Communications Office

Ocean Exploration & Research

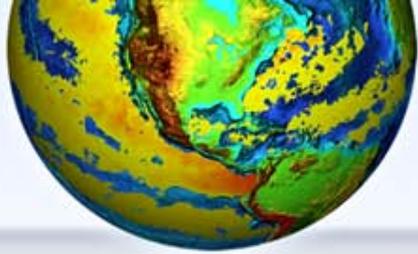
Policy, Planning & Evaluation

International Activities Staff

Office of Weather & Air Quality

Sea Grant

Science Advisory Board Staff



# NOAA's Science

## *Innovation through Integration*

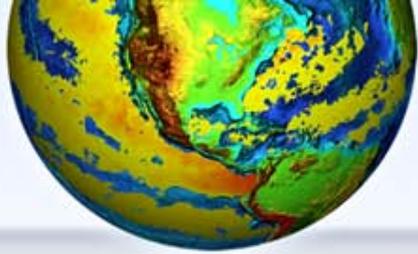
“NOAA’s fundamental responsibility is to ensure that complex policy choices are informed by the best available science. **In every dimension of its work, NOAA will exemplify scientific excellence and integrity.**”

“**Social and natural systems are inextricably linked.** Human health, prosperity, and well-being depend upon the health and resilience of natural ecosystems; human activities modify the coupled human-natural systems. At the broadest level, **NOAA must seek to advance more holistic approaches** to understand and balance human use, sustainability, and preservation of ecosystem resources and functioning.”

Dr. Jane Lubchenco  
NOAA Administrator

### **NOAA's Current and Future Science Challenges**

- Promote multi-disciplinary science (e.g., oceans and human health) while furthering science in core mission areas (e.g., hurricane formation and evolution)
- Integrate natural and socio-economic sciences, particularly on regional scales to inform decision making
- Position NOAA to anticipate the science challenges of the coming decades

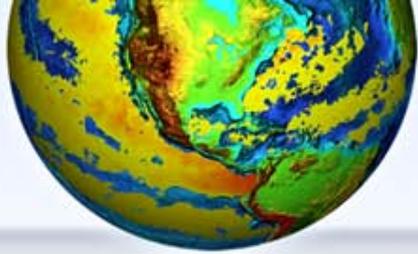


# Next Steps...

A reprogramming package will be submitted to the Department of Commerce this spring and to OMB after that – it will then go to Congress for consideration.

If approved, we can move quickly to begin implementing the reorganization.

We look forward to having NOAA Climate Service up and running by the beginning of FY11.



# For More Information...

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

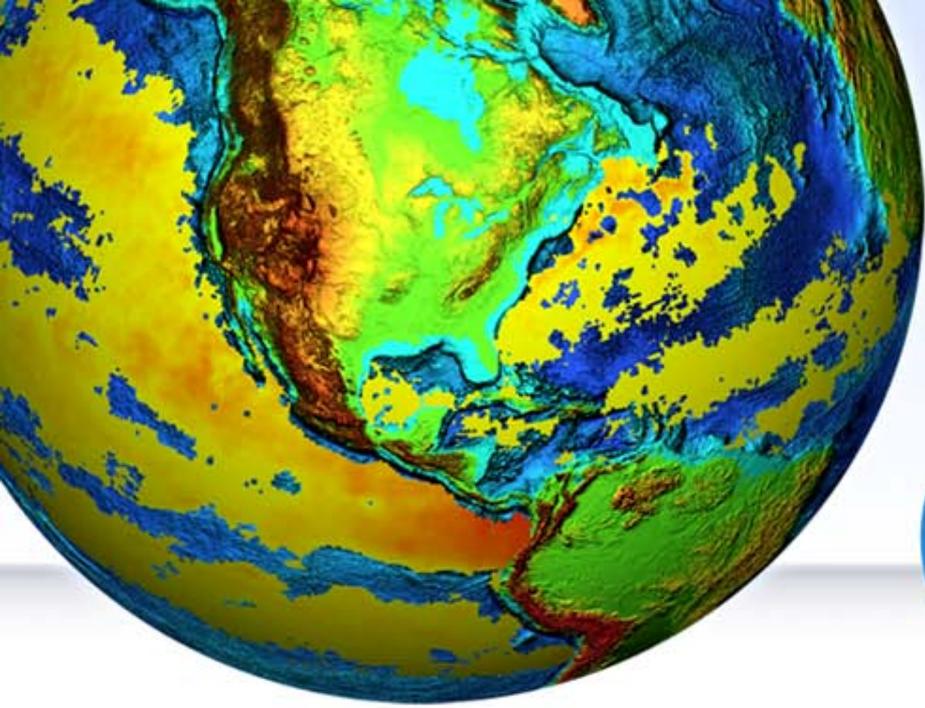
- ☑ Q&As, proposed reorganization chart, a Power Point, climate handouts featuring our science and regional services, and recordings from this Town Hall and a press conference.

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

- ☑ New mailbox to address your questions

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

- ☑ NOAA's new Climate Portal



# NOAA CLIMATE SERVICE

Questions?