

Achieving NOAA's Climate Goal Strategy

Richard D. Rosen, Ph.D.

Acting Director

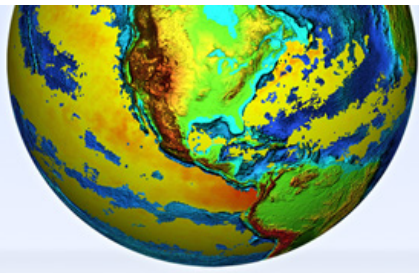
NOAA/OAR Climate Program Office



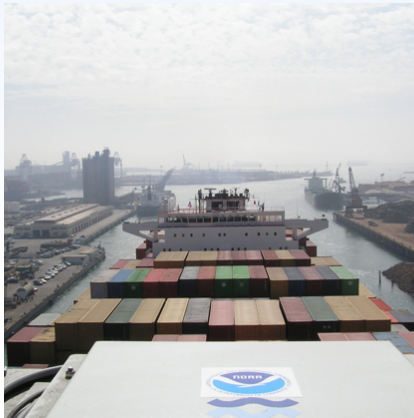
JSC-34

Brasilia, Brazil

27 – 31 May 2013



Rising Demand for Climate Science and Services



Commerce



Coasts



Recreation



Ecosystems



Hydropower



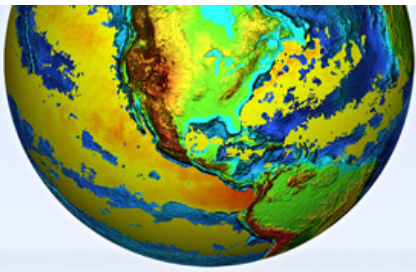
Farming



Wind Energy



Private Sector



NOAA Strategic Plan

improved scientific understanding
 assessments identify impacts, inform decisions
 mitigation, adaptation choices supported
 a climate literate public

CLIMATE ADAPTATION & MITIGATION

improved scientific understanding
 assessments identify impacts, inform decisions
 mitigation, adaptation choices supported
 a climate literate public

CLIMATE ADAPTATION & MITIGATION

NOAA'S VISION OF THE FUTURE:

RESILIENT ECOSYSTEMS, COMMUNITIES & ECONOMIES

Healthy ecosystems, communities, and economies that are resilient in the face of change

RESILIENT COASTAL COMMUNITIES & ECONOMIES

resilient coastal communities
 ocean and coastal planning, management
 safe, sound, efficient marine transportation
 improved coastal water quality
 safe, sound arctic access, management

WEATHER READY NATION

healthy people, communities
 productive, efficient economy

for informed environmental decisions

integrated services for evolving demands of regional stakeholders

HEALTHY OCEANS

improved understanding of ecosystems
 recovered, healthy species
 healthy habitats sustain resources, communities
 sustainable fisheries, safe seafood

international partnerships and policy leadership

a holistic understanding of the earth system through research

accurate, reliable data from integrated earth observations

an integrated environmental modeling system

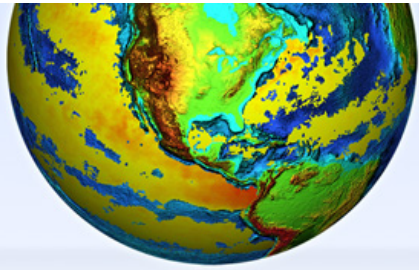
modern information technology

diverse, evolving workforce

modern, safe, sustainable facilities

a high performing organization

ORGANIZATION & ADMINISTRATION ENTERPRISE



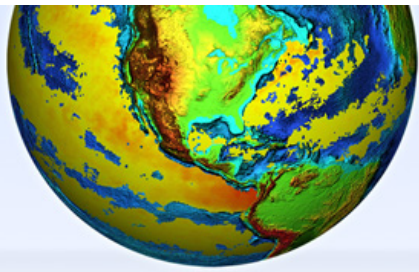
Climate Goal Strategy

NOAA Strategic Plan

Climate Goal: An informed society anticipating and responding to climate and its impacts

Climate Goal Strategic Plan Objectives:

1. Improved scientific understanding of the changing climate system and its impacts
2. Assessments of current and future states of the climate system that identify potential impacts and inform science, service, and stewardship decisions
3. Mitigation and adaptation efforts supported by sustained, reliable, and timely climate services
4. A climate-literate public that understands its vulnerabilities to a changing climate and makes informed decisions



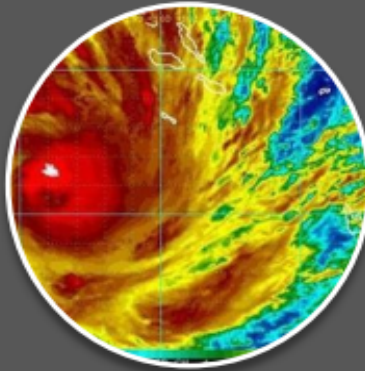
NOAA Line Offices



National
Weather Service
(NWS)



Oceanic and
Atmospheric
Research (OAR)



National
Environmental,
Satellite, Data, &
Information
Service
(NESDIS)



National Ocean
Service (NOS)

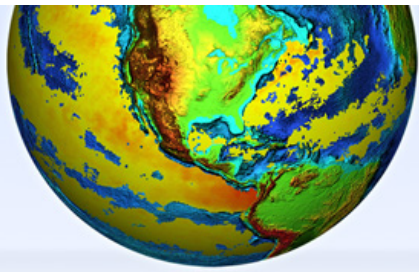


National Marine
Fisheries
Service (NMFS)

SCIENCE

SERVICE

STEWARDSHIP



Climate Goal

AA Climate Goal Board
Robert Detrick, OAR [Champion]
NESDIS
NWS
NOS
NMFS
PPI

Climate Goal Strategy Lead
Director, CPO



Objectives

Improved Scientific
Understanding

Assessment Services

Mitigation and Adaptation
Services

Climate Literacy

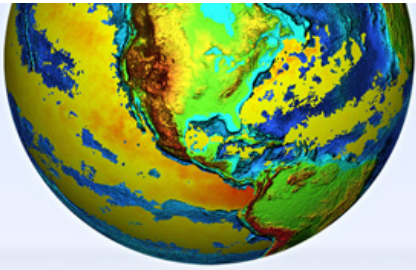
Societal Challenge Projects

Sustainability of
Marine
Ecosystems

Coasts and
Climate
Resilience

Climate Impacts
on Water
Resources

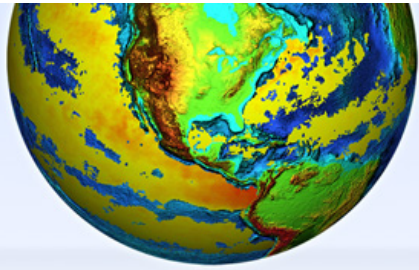
Weather and
Climate
Extremes



Societal Challenge Project: Climate Impacts on Water Resources

Vision: Enable the nation to anticipate and respond to climate-sensitive changes in water resources and water-related hazards.

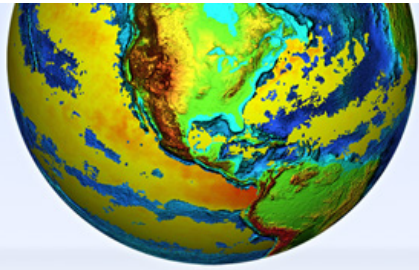
- Improve forecast reliability for droughts and floods given decadal-scale and longer-term forcings including drivers of differences in seasonality under conditions of nonstationarity
- Diagnose the role of precipitation events and land surface conditions in amplifying or reducing the severity of drought and flood impacts
- Develop timely, accessible communication tools to inform preparedness and adaptation in the climate-sensitive water resources sectors
- Employ existing cross-sectoral partnerships to improve coordination for prioritizing and advancing monitoring, forecasts and impacts assessment of surface and groundwater interactions to inform drought and flood risk management from watersheds to coast



Societal Challenge Project: Coasts and Climate Resilience

Vision: Decision makers need a prediction and forecasting system for local to regional predictions of total water level from all sources of coastal inundation.

- Measure the total water level from all sources.
- Provide easily accessible total water level-related information.
- Broaden understanding of climate and coastal inundation-related hazards vulnerability, and synopses of the current state of knowledge.
- Predict or forecast total water level from all sources, including local to regional differences in the rate of change of total water level from coastal inundation.
- Create products that allow decision makers to visualize the potential impacts from coastal inundation across time scales.



FY14 President's Budget: Increases for NOAA Climate

Cooperative Institutes +\$5.3M

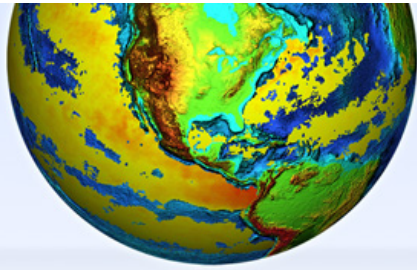
- **Deep Argo Measurements:** Increase pilot deployment of Deep Argo floats
- **Carbon Tracker:** Incorporate wind fields from National Weather Service (NWS) products to allow more precise determinations of carbon dioxide transport, uptake, and release for incorporation into weather models
- **Drought Research and Predictions:** Prototype of a drought prediction system utilizing quantitative and objective assessments of drought conditions

Global Ocean Observing System (GOOS) +\$4.0M

- Support critical ocean observations and analysis
- Support research on near-term changes in the rapidly changing Arctic
- Technology development and deployment of Deep Argo Floats to provide information on sea level rise and global energy balance

Climate Data Records +\$10.0M

- To increase the number of high priority climate data records that are transitioned to operational quality standards
- Develop CDRs for catastrophe risk assessment, develop new CDRs that satisfy state and regional needs, and process new Joint Polar Satellite System (JPSS) data for use by the climate science community



FY14 President's Budget: Increases for NOAA Climate (cont'd.)

National Integrated Drought Information System (NIDIS) +\$1.5M

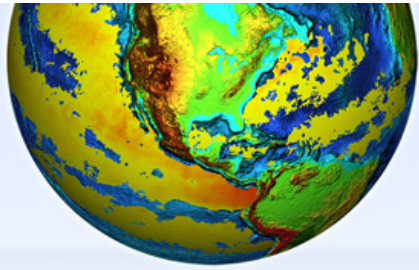
- Support additional competitive research grants and contracts to develop and expand the Develop Regional Drought Early Warning Information Systems (RDEWS) by providing focused drought impacts research and applications development to the Pacific Northwest, the Mid-West agricultural belt, and the Carolinas
- Develop ongoing drought information outlook products, such as information sheets on drought conditions that improve on the national drought monitor by emphasizing local conditions and impacts assessments, improving federal, state, and tribal planning

Assessment Services +\$2.4M

- Support a permanent capability to produce climate assessments at national and regional scales
- Lead and further contribute to the interagency Global Change Information System (GCIS)
- Assess model validity in regions and at the coastal margin and ocean regions of interest to the United States economy

Regional Integrated Science and Assessments (RISA) +\$3.0M

- Increase support of external research teams to develop and utilize new information about impacts of climate on communities, natural and managed resources, infrastructure, transportation and health
- Develop new applied research products for regional networks of information providers, assess how well regional science is used for decision making, and provide research-based decision support for adaptation



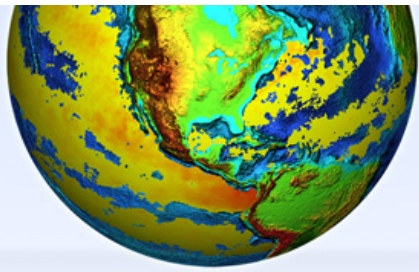
FY14 President's Budget: Increases for NOAA Climate (cont'd.)

U.S. Global Change Research Program (GCRP) - Improved Understanding of Earth Systems and Extremes, Thresholds, and Tipping Points +\$9.0M

- Implement research and other activities in support of the U.S. Global Change Research Program to expand NOAA's capabilities for improved understanding of carbon, extremes, and marine ecosystem tipping points.
 - Enhance the Carbon Observation and Analysis System (CAOS) within the North American Carbon Program
 - Improve the detection, understanding, explanation, and prediction of weather and climate extreme events to support adaptation and prepare society to anticipate and respond
 - Develop and apply Earth System Models (ESMs) and other tools for understanding where, when, and how marine ecosystems may reach critical "tipping points" that could significantly affect the thousands of communities whose economies depend on the seafood industry, coastal tourism and recreation, and other ocean-dependent industries

Improve Models and Predictions +\$6.5M

- NOAA and academic partners, including the Cooperative Institutes, will provide a process-level understanding of the climate system through observation, modeling, analysis, and field studies to support the development of improved climate models.
- Advance the understanding of the global carbon cycle and the role of aerosols and chemically-active greenhouse gases in the global climate system



FY14 President's Budget: Increases for NOAA Climate (cont'd.)

Earth System Modeling +\$7.0M

- NOAA and academic partners, including the Cooperative Institutes, will continue model development to reduce uncertainties in sea level rise projections, terrestrial carbon cycle and future biogeochemical feedbacks on climate; address gaps in the understanding of the Arctic climate system; and augment Decadal Climate Predictions and Abrupt Change.

Climate Model Data Archive +\$1.6M

- Further develop and implement archive and access capability for the next generation climate analyses currently running on supercomputers across NOAA and its collaborators (National Science Foundation, Department of Energy, and others)
- Convey key aspects of complex scientific data in a manner accessible to non-specialists and NOAA's climate information user communities

Impacts of Climate on Fish Stocks +\$10M

- Support extramural research to improve understanding of climate impacts on fish stocks, prey availability, and habitat, with a focus on the Northeast groundfish region
- Competitively award extramural grants through NOAA's Climate Competitive Research line, as well as through partnerships between NOAA and the external scientific community