### NOAA COOPERATIVE INSTITUTE DIRECTORS ANNUAL MEETING

**Tuesday, March 22, 2011 - Presentations**

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**Wednesday, March 23, 2011 - Presentations**

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CLIMATE SERVICE IN NOAA

- NOAA’s FY 2012 Budget Request includes the proposed reorganization of existing NOAA climate programs and activities under one Climate Service Line Office.

A Research Line Office Is Critical

Research Review Team (2004)
Underscored OAR’s predominant mission of research with a “stronger commitment to long-tem, visionary research for all of NOAA’s areas of responsibilities”.

National Academy of Public Administration (2010)
“All parts of NOAA benefit from OAR’s work to incubate fundamentally new approaches to mission-centered science, a capability best sustained by maintaining a nimble, freestanding OAR line office.”
**OAR’s ROLES**

**Integrate and Strengthen Science**

OAR AA will be the Senior Advisor to the incoming NOAA Chief Scientist.

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- Long-term mission-focused research
- Multi-disciplinary subject matter expertise
- Rapid response capability
- Sustained infrastructure
- Human capital
- Promote collaborations with internal & external scientific community

**Grand Science Challenge**

OAR AS NOAA’S LONG-TERM VISIONARY AND INNOVATION ENGINE

Holistic, integrated Earth system approaches to understand the processes that connect changes in the atmosphere, ocean, space, land surface, and cryosphere with ecosystems, organisms and humans over different scales.

*As identified at the NOAA Science Workshop (April 2010) + NGSP*
OAR: NOAA's Long-term Visionary & Innovation Engine

innovate • incubate • integrate

Past & Present
- Ocean acidification, ozone hole, ocean exploration, coastal forecasting
- Climate science and services, Mauna Loa Observatory, tsunami warning system, Easy-To-Deploy® buoys, NEXRAD Radar, Unmanned Aircraft Systems (UAS), Sea Grant Extension,
- Hurricane track and intensity forecast improvement. Advanced Weather Interactive Processing System (AWIPS), Cooperative Institutes, Sea Grant

Opportunities
- Computer technology—Graphical Processing Units
- Ecological forecasting
- Improving fish and bi-valve stock assessments
- Gliders and autonomous underwater vehicles (AUVs)
- Water cycle forecasting
- Multi-function Phased Array Radar (MPAR)
- Advances in weather forecasting.
- Sensor development
- Socio-behavioral-economic sciences
- Renewable energy
- Ecosystem functioning with special emphasis on Arctic & Gulf of Mexico
- Earth System modeling and predictions

INNOVATION @ OAR
Earth System Modeling & Prediction

GPU Technology
INNOVATION @ OAR

Filling Observational Gaps

Unmanned Aerial Systems

Atmospheric Rivers
A key to understanding West Coast extreme precipitation events

INNOVATION

Observations: AUVs/Instrumentation
INNOVATION @ OAR
Weather System for the Future

Warn-on Forecast

INNOVATION @ OAR
Alternative Energy

Improved wind, cloud and aerosol forecasts
INNOVATION @ OAR

Ocean Acidification

Ecosystems: Animal-borne sensors
INNOVATION @ OAR
Aquaculture

Aquapod aquaculture technology
SBIR/OAR

Out-of-cycle spawning for yellow perch
Wisconsin Sea Grant

INNOVATION @ OAR
Socioeconomic & behavioral science
Highest Priority Areas for OAR

- Next-generation forecasts
  - Hurricane Forecast Improvement Project (HFIP)
  - Multi-function Phased Array Radar (MPAR)
  - Aviation weather
  - Increase lead time to an hour
- Ecosystem understanding
  - Ocean acidification monitoring and research
  - Ocean exploration and research
  - Fisheries tools and applications
- Earth system modeling
  - Integrated climate/environmental models
  - Integrated ecosystem-stock assessment modeling

Next Steps: OAR Strategic Plan
CI Program Operations 2011 Update

Philip L. Hoffman
Cooperative Institutes Program
Director - OAR

Where we’re going

• The Year in Review
  – Dollars (but not Donuts)
  – People
  – Productivity
• Competitions
• Looking Ahead
  – What Do I think you are saying
  – Where do I think we need to go
CI Funding ($M) *includes Congressionally directed and shadow award funding

CI Staff Receiving ≥ 50% Salary Support
CI Peer-reviewed Publications

Competitions

- Cooperative Institute for Satellite Meteorology – award completed
- Southeastern Regional Cooperative Institute for Atmospheric and Marine Studies – award completed
- A Cooperative Institute to Support NOAA Research Facilities in the Pacific Northwest – award completed
- A Cooperative Institute for Southwestern U.S. Marine Ecosystems, Climate, and Ocean Studies – award completed
- A Cooperative Institute to Support NOAA Research Facilities in the Area of Marine Resources – Reviews completed
- A Cooperative Institute to Improve Mesoscale and Stormscale High-Impact Weathers Forecasts, Watches, and Warnings through the Use of and Enhancement of Weather Radar – Reviews completed
- A Cooperative Institute to Support NOAA Facilities in Boulder, Colorado – discussions w Boulder lab completed
- Pacific Islands Cooperative Institute – prospectus completed
What I think you are saying

- Task 1
- Federal budget
- Program Operations
- NOAA Relationship with CIs

So, now that I’m back . . .

- Communications – It’s not just a two way street.
  - Face Time
  - Calling Honolulu . . .
- CI Process study – Lets use Systems Engineering to see what we can improve
- The CI Handbook – From Interim to Final in a few short months (!)
- Competitions – They’re not just for looks
Cooperative Institutes Committee Update

Briefing to the CI Directors/Administrators meeting

Beth Turner, Ph.D.
Acting Chair
Research Council
Cooperative Institute Committee

3/23/2011

Major Activities of CIC

• Funding competitive awards through CIs
• Non-degree granting institutions
• Guiding Principles for CIs
• Regional CI report requested by Congress
• Task I, Task I, Task I
**Funding Competitive Awards**

- Attach a cover letter to the proposal stating their desire to have the proposal associated with the CI.
  - Specify the name of the cooperative institute, the CI cooperative agreement number, and the NOAA-approved research theme and task that applies to the proposal.
- The proposal will use the F&A rate associated with main CI agreement.
- If the proposal is selected for funding, NOAA will notify the university that a separate award will be issued with its own award number.

**SACs for Competitive Awards funded through CIs**

- The award will include 2 Special Award Conditions (SACs):
  1. The existing University/NOAA MOA would be incorporated by reference into the terms of the competitive award, and
  2. Any performance report(s) for the competitive project must follow the timetable of the funding program and be submitted directly to the funding program. Report(s) will be copied to the CI’s administrator when due, to be attached to the main cooperative agreement progress report as an appendix. This will allow the CI to coordinate all the projects submitted through the CI, since the terms of these awards will specify that this is a CI project via the MOA.
Next Steps on Competitive Awards

- Incorporate CI language into new FFOs
- Finalize SAC language for GMD incorporation into new awards
- Educate NOAA research funding offices of new policy

Eligibility of Non Degree-Granting Institutions

- Eligibility is limited to non-Federal public and private non-profit universities, colleges and research institutions that offer accredited graduate level degree-granting programs in NOAA-related sciences.
Consortia with non-academic membership

• If the proposed CI is comprised of multiple institutions, the following participation conditions shall apply to the consortium:
  – CI Member: must meet the degree-granting requirement
  – CI Partner: may include any organization that supports the consortium. Partners generally do not meet the degree-granting requirement.

• NOAA will make a single award to the lead institution of the consortium, where the CI will be established/resident. The lead member institution will manage sub-award relationships with the other member institutions.

“Guiding Principles” for CIs

• NOAA CIs provide a long-term institutional relationship between NOAA and external academic partners to support research directly linked to NOAA's mission, particularly where NOAA does not have sufficient internal capabilities or capacity.
• NOAA CIs support graduate education and professional scientific training of a workforce well-versed in NOAA disciplines, and provide opportunities for students to interact with NOAA scientists.
• NOAA CIs promote strong collaborations between NOAA and academic scientists, particularly when groups of CI and NOAA scientists are needed.
• NOAA CIs provide a mechanism to allow external partners to address emerging needs and evolving NOAA research priorities.
• NOAA CIs are established competitively to institutions with outstanding national and international expertise in NOAA-relevant disciplines.
• NOAA CIs promote long-term relationships at the highest level between university administrators and NOAA leadership.
Principle 1

• NOAA CIs provide a long-term institutional relationship between NOAA and external academic partners to support research directly linked to NOAA’s mission, particularly where NOAA does not have sufficient internal capabilities or capacity.
  – Long-term: not dependent on project-by-project funding
  – Institutional: between NOAA and institution for large themes
  – Directly linked to NOAA mission: Special Authority for CIs

Principles 2 & 3

• NOAA CIs support graduate education and professional scientific training of a workforce well-versed in NOAA disciplines, and provide opportunities for students to interact with NOAA scientists.
  – Graduate student and post-doc support through CIs
  – Direct involvement of NOAA scientists at many CIs

• NOAA CIs promote strong collaborations between NOAA and academic scientists, particularly when groups of CI and NOAA scientists are needed.
  – Relates to Special Authority, academic partners can provide research directly in support of NOAA mission
Principles 4, 5, 6

• NOAA CIs provide a mechanism to allow external partners to address emerging needs and evolving NOAA research priorities.
  – Not tied to specific research project, allows for more flexibility and “nimble” response to emerging needs within thematic areas
• NOAA CIs are established competitively to institutions with outstanding national and international expertise in NOAA-relevant disciplines.
  – Review and re-competition to provide performance feedback
• NOAA CIs promote long-term relationships at the highest level between university administrators and NOAA leadership.
  – Signed by NOAA Administrator and university President, not grants or sponsored program office

Congressional Report on Regional CIs

• Submitted Oct 2010
• Summarized # CIs, funding by CI, total funding
• Outlined regional CIs – history and current status
• Planned competitions to replace current regional CIs
  – CIMAS, JIMO, and JISAO
• 2011 re-competition plans (CIMRS and JIMAR)
• NOAA has no plans to compete additional regional CIs, unless another NOAA program determines that creating a regional CI would be the most beneficial way of providing NOAA with capabilities that do not currently exist at one of the other CIs.
CIC Activities re. Task I

- Solicited Task I info from CI directors
  - Amounts currently spent on Task I activities
  - Amounts supported by NOAA vs amounts supported by institution
  - Recommendations from directors on how much they thought Task I should be
- Analyzed Task I across CIs
  - % devoted to Task I vs. total amount CI receives
  - Bounds of Task I amounts (upper/lower limits)
  - Breakout of costs associated with Task I activities
- Developed set of options for NOAA Research Council deliberations

Director recommendations for guidelines to determine Task I funding

- NOAA should pay for ½ of total Task I expenses
- Minimum amt of $250K (single institution)
- Minimum amt of $500K (multi-institution)
- Personnel-based
  - e.g. 50% Director, 10% Associate Director, 100% Business Administrator, 50% Administrative Assistant, 100% Education and Outreach Coordinator
- Education and Outreach are currently an unfunded mandate
- Many CI directors mentioned visiting scientists/post-doc support (at each institution for multi-institution CIs)
  - No one “right” amount or formula to use in determining what each CI’s Task 1 funding levels should be.
Many options investigated, some rejected

- *Status Quo* not presented as an option
- Option 1 is a linear relationship that would be budget neutral
  - All agree that Larger CIs need Larger Task 1.
- Option 2 uses sliding % scale to calculate Task I
  - Not linear, Smaller C.I.s spend more Task I percentage-wise than larger C.I.s.
- Option 3 combines linear and sliding scale
- Annual increase to correspond with salaries?

Next steps

- Data verification process with CIs
- Definition of Task I elements (as requested by the Research Council)
  - In collaboration with CI directors
- Presentation to Research Council
  - Task I defined elements
  - Recommended “floor” Task I amount
  - Recommended approach to secure Task I funding
NOAA’ Science Strategy and Priorities: An Address to Cooperative Institutes

Paul Doremus
Program Planning and Integration
March 23, 2011

Agenda

• Reasons for Strategy
• Changes from Prior Plan
• Next Generation Strategic Plan
• NOAA’s Science and Technology Enterprise
• Annual Priority: Strengthen Science
• External Developments
• Organizational Resilience
Reasons for Strategy

**Alignment and Collaboration:** to enable NOAA business lines, staff, and external partners to work together with a common understanding of priorities, roles, responsibilities, and intended results

**Investment Decisions:** to make well-reasoned, transparent investment choices based upon Administration and stakeholder priorities and upon NOAA’s distinctive capacity to address them

**Stakeholder Support:** to demonstrate to DoC, OMB, and Congress the alignment of NOAA programs’ resource requirements with services requirements and with Administration and stakeholder priorities

**Performance Management:** to monitor and evaluate agency performance (i.e., quality, efficiency, and effectiveness of efforts to achieve societal outcomes) and adjust strategy accordingly
Science & Technology Enterprise

Long-term scientific and technical challenge to NOAA:

Develop and apply holistic, integrated Earth system approaches to understand the processes that connect changes in the atmosphere, ocean, space, land surface, and cryosphere with ecosystems, organisms, and humans over different scales.

Strategic Objectives:

- A holistic understanding of the earth system through research
- Accurate and reliable data from sustained and integrated earth observing systems
- An integrated environmental modeling system

Long-term scientific and technical challenges

- Acquire and incorporate knowledge of human behavior to enhance understanding of the interaction between human activities and the Earth system
- Understand and quantify the interactions between atmospheric composition and climate variations and change
- Understand and characterize the role of the oceans in climate change, and variability and the effects of climate change on the ocean and coasts
- Assess and understand the roles of ecosystem processes and biodiversity in sustaining ecosystem services
- Improve understanding and predictions of the water cycle from global to local scales
- Develop and evaluate approaches to substantially reduce environmental degradation
- Sustain and enhance atmosphere-ocean-land-biology and human observing systems
- Characterize the uncertainties associated with scientific information
- Communicate scientific information and its associated uncertainties accurately and effectively to policy makers, the media, and the public at large.
Strengthening NOAA’s science means developing policies and practices that promote scientific and technological excellence and enabling scientists within NOAA to thrive and pursue the research necessary to inform our service and stewardship responsibilities.

**FY ‘11 focus:**
- NOAA science conference, workshops
- NOAA scientific integrity and conduct policies
- A more robust science career track
- Diversify NOAA’s scientific staff
- Training module for scientific code-of-conduct
- A NOAA-wide ecosystem science plan
- Capitalize on capabilities not resident within NOAA

**FY ‘13-17 focus:**
- Develop and implement a NOAA-wide ecosystem research agenda
- Advance the scientific understanding of ocean acidification and its impacts
- Design and transition future forecast systems
- Ecosystems and Oil Spill Impacts
- Develop a NOAA-Wide Environmental Modeling Enterprise

**External Developments:**

**The Context for Strategy Implementation**

- **Economy**
  - Signs of recovery in corporate productivity, profits, and market performance
  - Weak job creation; high unemployment likely to persist

- **Politics and Policy**
  - Changed complexion of Congress
  - Emergence of deficit as a central political issue
  - Deficit commission broadens the discussion about the range of potential solutions
  - Initial step: FY 12 PB investment themes; 5 year freeze on discretionary spending

- **Bottom line**
  - High fiscal uncertainty; downside risk far exceeds growth potential
  - Premium on operational efficiency, eliminating redundancy, optimizing base
  - Premium on sound value proposition; case for non-military discretionary spending strongest in areas related to R&D / innovation, infrastructure, public safety
Organizational Resilience

• NOAA must become a **resilient organization** in the face of certain (though unpredictable) political and economic changes

• Within a dynamic social-technical-ecological system, NOAA must strengthen its strategic alliances and form new partnerships where needed

• Key alliances and partnerships will include:
  – Cooperative Institutes
  – Sea Grant colleges
  – Other academic institutions
  – Private sector firms, including small businesses (e.g., SBIR)
  – Federal agencies such as NASA, NSF, DOD
  – Science agencies of other countries
  – Professional societies

NOAA Strategy for Cooperative Institutes
Strategy Execution and Evaluation:
Key Elements

- Next Generation Strategic Plan (NGSP): the long view
- Annual Guidance Memo (AGM): initial implementation of the NGSP
  - Focuses execution and planning on administrator’s strategic priorities
  - Specifies fiscal constraints for planning FY 13 – 17
- Implementation Plans (IPs): what can be accomplished
  - Align organization to strategy: Explain allocation of base resources, and present needs and issues that must be addressed to advance AGM priorities
  - Focus Execution: Form basis of Annual Operating Plans, performance reviews, and subsequent evaluations
  - Justify Resources: Provide strategic justification for all activities anticipated to be contained in LO/SO budget submissions, based on fiscal assumptions
- Corporate Portfolio Analysis (CPA): implementation choices
- Budget: what will get done
- Execution and Evaluation

Objective:
A holistic understanding of the Earth system through research

Over the next five years, evidence of progress toward this objective will include:
- Increased understanding of climate, weather, oceans, ecosystems, human activities, and their interrelationships;
- Improved understanding of the processes contributing to, and impacts of ocean acidification, changes in ocean temperature and freshwater input, and sea level change;
- Improved understanding of ecosystems (e.g., Gulf of Mexico, Arctic, Great Lakes) and the effects of human activities on the ecosystem, and coastal communities and economies;
- Increased investigation and assessment of unexplored and ecologically, economically and culturally important coastal and oceanic regions;
- Research on ecosystem impacts, processes, dynamics and biodiversity transitioned to enable ecosystem approaches to management and coastal community resilience;
- Social, behavioral, and economic research advanced and transitioned into NOAA’s delivery of climate, weather, ocean, and coastal services;
- Meteorological, atmospheric, climatic, and oceanic research advanced and transitioned to NOAA’s production of enhanced weather, climate, and marine forecasts and services, including those supporting renewable energy;
- More effective development and transition of technologies to operational services and stewardship applications; and
- An integrated research agenda supported by portfolio management that promotes transformative research and innovation.
## Administrator’s Priorities: AGM Guidance

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<th>IMPLEMENT NOAA'S STRATEGIC GOALS</th>
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<td>Advance Climate Services</td>
<td>CS</td>
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<td>Define the future of NOAA's weather and water services</td>
<td>NWS</td>
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<td>Ensure sustainable seafood and jobs by eliminating overfishing, rebuilding fish stocks, conserving habitat and fostering sustainable aquaculture</td>
<td>NMFS</td>
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<td>Promote stewardship of oceans and coasts by implementing the National Ocean Policy (NOP)</td>
<td>NMFS</td>
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<td>Promote ecosystem-based management by implementing the National Ocean Policy</td>
<td>NOS</td>
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<td>Promote coastal and marine spatial planning by implementing the National Ocean Policy</td>
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<td>Promote resiliency and adaptation to climate change and ocean acidification by implementing the National Ocean Policy</td>
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<td>Promote improvement in observations, mapping, and infrastructure by implementing the National Ocean Policy</td>
<td>OMAO, NESDIS</td>
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<td>IMPLEMENT NOAA ENTERPRISE OBJECTIVES:</td>
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<td>Strengthen science</td>
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<td>Strengthening NOAA's science</td>
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<td>Develop and implement a NOAA-wide ecosystem research agenda</td>
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<td>Ecosystems and Oil Spill Impacts</td>
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<td>Develop a NOAA-Wide Environmental Modeling Enterprise</td>
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<td>Continuously improve internal business operations and services</td>
<td>WFMO</td>
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<td>Developing Future Talent</td>
<td>WFMO</td>
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<td>Reduce Hiring Cycle Time</td>
<td>WFMO</td>
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<td>Increase Program and Acquisition Management Certification</td>
<td>CFO, WFMO, AGO</td>
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<td>Implement NOAAlink</td>
<td>CIO</td>
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<td>Performance Management and Acquisition Review</td>
<td>CFO, AGO</td>
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<td>PLACE-BASED PRIORITIES</td>
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<td>Support recovery in the Gulf of Mexico</td>
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<tr>
<td>Improve understanding, planning, and environmental protection in the Arctic</td>
<td>NOS</td>
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NOAA Science Priorities Part 2:
Implementing the NGSP and Strengthening Science

Richard D. Rosen, Vice Chair
NOAA Research Council
CI Directors Meeting
March 23, 2011

- Overarching Grand Challenge
  - Develop and apply holistic, integrated Earth system approaches to understand the processes that connect changes in the atmosphere, ocean, space, land surface, and cryosphere with ecosystems, organisms, and humans over different scales

- Topic-specific Grand Challenges
  a) Acquire and incorporate knowledge of human behavior to enhance our understanding of the interaction between human activities and the Earth system
  b) Understand and quantify the interactions between atmospheric composition and climate variations and change
  c) Understand and characterize the role of the oceans in climate change and variability and the effects of climate change on the ocean and coasts
  d) Assess and understand the roles of ecosystem processes and biodiversity in sustaining ecosystem services
  e) Improve understanding and predictions of the water cycle at global to local scales
  f) Develop and evaluate approaches to substantially reduce environmental degradation
  g) Sustain and enhance atmosphere-ocean-land-biology and human observing systems

- Cross-Cutting Challenges
  - Characterize the uncertainties associated with scientific information
    - Communicate scientific information and its associated uncertainties accurately and effectively to policymakers, the media, and the public at large.
Science Challenge Workshops

- Council approved a series of workshops with external partners that represent a combination of related topic-specific challenges:
  - Combinations
    - Climate Variability and Change
    - Ecosystem Services and Reducing Environmental Degradation
    - Water Cycle
    - Human Behavior
  - Observing systems and cross-cutting challenges to be addressed within above 4

- The workshops will lead to a NOAA Science Conference and to development of 5 Year Research Plan
  - Addresses overarching grand challenge
  - Inputs provided by white papers from topic-specific workshops

The Workshops and SEE
Science Challenge Workshop Organizing Committees

**Climate Variability and Change**
- **Randy Dole** (N/CS, OAR/ESRL PSD)
- Leo Donner (N/CS, OAR/GFDL)
- Dave Fahey (N/CS, OAR/ESRL CSD)
- Marty Hoerling (N/CS, OAR/ESRL PSD)
- Mitch Goldberg (NESDIS)
- Harold Brooks (OAR/NSSL)

**Water Cycle**
- **Marty Ralph** (N/CS, OAR/ESRL PSD)
- Pedro Restrepo (NWS)
- Robin Webb (N/CS, OAR/ESRL PSD)
- Ralph Ferraro (NESDIS)
- Dave Jorgensen (OAR/NSSL)

**Ecosystem Services and Reducing Environmental Degradation**
- **Bob Wood** (NOS)
- Mark Fonseca (NOS)
- Doran Mason (OAR/GLERL)
- Kenric Osgood (NMFS)
- Mark Eakin (NESDIS)
- Richard Feely (OAR/PMEL)

**Human Behavior**
- **Linwood Pendelton** (PPI)
- Social Sciences Committee

Improving How NOAA Conducts Science

- Established Ad-hoc Committee on Science Management:
  - Complete draft NAO on scientific integrity
  - Review Workshop findings on Management/Business Practices, Workforce, Infrastructure, and External Partners to identify issues that can be advanced in near term, with recommendations on 'ways forward':
    - Identify on-going/proposed related activities
    - Recommend prioritization of outcomes for action
    - Recommend best tool to achieve proposed outcome (NOAA working group, NEP/NEC Action, NAO)
    - Recommend best lead organization
Scientific Integrity NAO

- NAO overseen by NOAA Executive Coordinating Committee
- Distributed to Staff and Unions for Comment
  - Website accessed 689 times
  - 40 individual recommendations from staff
  - 7 comments from union representatives
- Next Steps:
  - Join with Handbook for unified package
  - Coordinate with DoC General Counsel
  - Joint Research Council/Ad Hoc Committee Review
  - Submit for public comment
  - NEP/NEC review and approval

Scientific Integrity Commons

- One-Stop Shop for NOAA staff to find answers to scientific integrity and communications questions
- Hosted on the Research Council Website: http://nrc.noaa.gov/scientificintegrity.html
- Currently in draft – seeking feedback and content suggestions
Ad–Hoc Committee

Membership

Co Chairs: Gary Matlock

Terry Bevels (OAR)
David Novak (NWS)
Cynthia Decker (SAB)
Avery Sen (PP)
Dian Seidel (OAR ARL)
Rob Magnien (NOS)
AR Ravishankara (OAR ESRL CSD)
Randy Dole (OAR ESRL PSD)
Silvia Garzoli (OAR AOML)
Jiayu Zhou (NWS OST)
Stephan Smith (NWS OST)
John Adler (OMAO)
Mike Vecchione (NMFS, NEFSC)
Dana Hanselman (NMFS, AKFSC)
Lisa Balance (NMFS, SWFSC)

John Stein (NMFS, NWFSC)
Tom Minello (NMFS, SEFSC)
Sam Pooley (NMFS, PIFSC)
Jamon Bollock (NOAA GC)
MikeUhart (OAR)
Gabrielle Dreyfus (NOAA Policy)
Linwood Pendleton, Chief Economist

Exec Sec
Derek Parks
Overview

• Background of the Climate Service
• Progress to date
• NAPA Recommendations
• Vision, Mission and Objectives
• Core Capabilities and Societal Challenges
• Assessments
• Partners
• Recent Activities
FY12 Reorganization Proposal

• NOAA requests $346.2M in FY 2012 for a proposed new line office, Climate Service, reflecting a net decrease of $7.1M from the FY 2012 Base level.
• The proposed Climate Service will bring together NOAA’s existing climate research, observations, monitoring, modeling, information product development and delivery, and decision support functions from NOAA’s Office of Oceanic and Atmospheric Research, the National Weather Service, and the National Environmental Satellite, Data, and Information Service, which will be renamed the National Environmental Satellite Service.
• The FY 2012 budget request supports the steps needed to improve our climate services and better understand and characterize the nation’s vulnerability to climate change.

NOAA’s proposal

NOAA CAPABILITIES PROPOSED TO FORM A CLIMATE SERVICE

FROM NESDIS*  FROM OAR*  FROM NWS  NOS & NMFS UNCHANGED

The physical location of those facilities will not change
*Select Administrative functions from NESDIS and OAR will transfer to Climate Service
YPESU DLE UIC SMEESE UR NL

**PROPOSED CLIMATE SERVICE**

**HEADQUARTERS**
- Office of the Assistant Administrator for Climate Services
  - Deputy Assistant Administrator for Climate Services

**OFFICE OF CLIMATE RESEARCH**
- Geophysical Fluid Dynamics Laboratory
- Chemical Sciences Laboratory
- Physical Sciences Laboratory
- Global Monitoring Laboratory

**OFFICE OF OBSERVATION, MONITORING & PREDICTION**
- National Climatic Data Center
- National Oceanographic Data Center
- National Geophysical Data Center
- Observation Systems Division
- Climate Prediction Center

**OFFICE OF SERVICE DEVELOPMENT & DELIVERY**
- Regional Climate Services Partnership Division
  - Customer Engagement and Education Division
  - Geospatial Division

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**FY12 Climate Service Budget**

**ORF Climate Observations and Monitoring**
- $138.7M
  - Ocean Observations (COD)
  - Atmospheric Observations
  - Climate Data and Information Services (NCDC)
  - Environmental Services
  - Ocean Data and Information Services (NODC)
  - Geophysical Data and Information Services (NGDC)
  - Observations, Monitoring and Predictions (CPC)

**ORF Integrated Climate Services**
- $31.1M
  - National Integrated Drought Information System
  - Regional Services
  - Assessment Services
  - Communication and Education

**ORF Climate Research Programs**
- $156.6M
  - Modeling (GFDL)
  - Physical Sciences (PSD)
  - Chemical Sciences (CSD)
  - Global Monitoring and Research (GMD)
  - Competitive Research Program (CPO)

**PAC**
- Research Supercomputing (GFDL) $10.4
- Observations/Monitoring (CLASS) $14.0
FY12 CS Budget Changes

- Regional Climate Services +$3.0M
- Assessment Services +$1.0M
- NOAA Climate Services Portal +$1.5M
- Global Ocean Observing System +$1.4M
- Arctic Watch +$3.0M
- Data Center Operations +$2.0M
- Climate Data Records +$8.0M
- Monitoring Atmospheric Carbon Sources +$4.7M
- Carbon Observing and Analysis System +$8.0M
- Earth System Modeling: Urgent Climate Issues +$7.0M
- Water Resources Research to Operations +$7.7M
- International Research Institute (-$6.1M)

Next Steps

- Engage Congress on the reprogramming package
- Pending approval, implement the Climate Service
- Use the draft Vision and Strategic Framework document to guide existing climate service activity in a matrixed managed fashion.
Background: February 8th
DOC – NOAA Announcement

“...NOAA’s intent to establish a new office called the NOAA Climate Service. This would create a single office for climate science and service bringing together the climate assets and capabilities that are currently dispersed in multiple units across the agency."

“We are announcing the intent to reorganize existing assets to make NOAA’s Climate Services more responsive to the needs of those who use our services. While additional funds will be needed to increase NOAA’s core climate capabilities going forward to meet growing demands, the proposed reorganization is independent of new resources.”

“The proposed reorganization would retain the Office of Oceanic and Atmospheric Research recognizing the unique importance of a dedicated science and research enterprise within NOAA.”

- Joint press conference with Secretary Gary Locke and Under Secretary Jane Lubchenco

http://www.noaa.gov/climate.html

Progress Since February

- Completion of National Academy of Public Administration Study requested by Congress
- 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
- Regional Climate Services Directors hired and plans for early activities completed
- NOAA reorganization proposed to Congress in FY12 President’s budget
NAPA Recommendations

1. Administration Recommendations
   • The Administration should strengthen and expand interagency coordination structures
tenasked with aligning Executive Branch climate resources, and designate a lead agency
   • A Climate Service in NOAA would be uniquely qualified to serve the public and private
sectors as a lead federal agency for climate research and services, and to provide an
ongoing accessible, authoritative clearinghouse for all federal science and services
related to climate

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
   • Learn from examples of recent large reorganizations, in particular within the defense and
security communities

Vision and Strategic Framework for the Climate Service in NOAA

• Version 9 is now available at noaa.gov/climate
• How did we get to Version 9?
  • Process began in April of 2010
  • Incorporates comments from
    • A formal public review
    • 10 Webinar Briefings
    • NAPA
    • NOAA’s SAB’s Climate Working Group
    • Numerous meeting presentations.
• V9 as the basis for engagement with Congress
Climate Service Vision and Mission

Vision
By providing science and services, the Climate Service 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 Climate Service delivers products and services in collaboration with public, private, and academic partners to maximize social, economic, and environmental benefits.

Climate Service 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.
Climate Service Core Capabilities Address Societal Challenges

Assessments

CS will engage in three types of assessments

- National and International Climate Science Assessments
  - Broad scope of problems and interest, broad set of peer-reviewed material (e.g., National Climate Assessment)
- Problem-Focused Climate Science Assessments
  - Often time-sensitive, address issues at local and regional levels (e.g., Devil’s Lake)
- Needs Assessments
  - Help to identify gaps in science, understanding or services, including helping frame, and inform other assessments
The Climate Service Enterprise

A key responsibility of the Climate Service in NOAA is to be a foundation for the broader Climate Service Enterprise

- Partners from across the broader climate community both contribute to and benefit from the core capabilities
  - Includes federal, state, tribal and local agencies, NOAA cooperative institutes, other academic partners, the private sector, and the international community

Regional Climate Service Directors

- Doug Kluck
  - Kansas City, Missouri
- DeWayne Cecil
  - Salt Lake City, Utah
- Ellen Mecray
  - Bohemia, New York
- James Partain
  - Anchorage, Alaska
- John Marra
  - Honolulu, Hawaii
- David Brown
  - Fort Worth, Texas
**NOAA Climate Services Portal**

**Climate.gov**

Goal: 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

www.climate.gov

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**Climate Literacy**

- Distributed tens of thousands of copies of the climate literacy guide to educators and citizens
- Support development of a baseline measure of “Americans’ Knowledge of Climate Change”
- Leverage tens of millions of dollars in competitive education grants (e.g., NSF)
- Lead USGCRP climate education working group
- Support professional development for educators on climate science

http://www.climate.gov/#education

Report found that 63 percent of Americans believe that global warming is happening, but many do not understand why.
For More Information…

www.noaa.gov/climate
- NAPA report, Vision and Strategic Framework, Document, Q&As, climate handouts, links to background resources.

www.climate.gov
- NOAA’s Climate Portal
FY 2012 NOAA BUDGET
ENVIRONMENT AND
R&D REQUEST
A Presentation to the Cooperative
Institutes

Maureen E. Wylie
NOAA Chief Financial Officer
March 23, 2011

AGENDA

- NOAA’s Mission
- NOAA Budget Trends & Resources
- FY 2010 R&D Accomplishments
- NOAA Climate Service
- Strengthening Science
- FY 2012 R&D Investment
- Significant R&D Highlights
NOAA BUDGET TRENDS

NOAA Budget FY 2008-2012


PB Enacted CR HR 1 HJ Res 48 Request

DIVISION OF BUDGET RESOURCES

FY 2010 ORF Actuals

FY 2010 PAC Actuals

Labor and Benefits
Contracts
Grants
Other

$ in millions

$ in millions
**FY 2010 R&D ACCOMPLISHMENTS**

- Improved hurricane track models
- Surveyed Cordell Bank biological diversity
- Mapped bluefin tuna spawning sites in the Gulf of Mexico
- Studied the impact of climate change in the Arctic
- Studied the impact of climate change in the Arctic
- Improved hurricane track models
- Surveyed Cordell Bank biological diversity
- Mapped bluefin tuna spawning sites in the Gulf of Mexico
- Studied the impact of climate change in the Arctic

**NOAA CLIMATE SCIENCE AND SERVICES**

**Core Capabilities**

NOAA’s FY 2012 Budget Request includes the proposed reorganization of existing NOAA climate programs and activities under one Climate Service Line Office.

- Observing Systems, Data Stewardship, and Climate Monitoring
- Understanding and Modeling
- Predictions and Projections
- Integrated Service Development and Decision Support
STRENGTHENING SCIENCE

NOAA's request includes $737M across NOAA for research and development, which is 13.4% of NOAA's overall $5.5B budget.

NOAA's Office of Oceanic and Atmospheric Research (OAR) will continue to deliver preeminent scientific advances that result in new knowledge, technology, and improved services for the Nation.
NOAA’s Overall R&D Investments

FY 2012 R&D Budget by Line Office

Sustains core investments and capabilities in:

- Multifunction Phased Array Radar (MPAR)
- Ocean Acidification
- Arctic Watch
- Water Resources Research to Operations
- Carbon Observing and Analysis System
- Earth System Modeling
- Global Ocean Observing System

RESEARCH, CLIMATE, & WEATHER

R&D HIGHLIGHTS

Targeted Investment Highlights | Request | Increase |
--- | --- | --- |
Wind Renewable Energy Research | $2.0M | $2.0M |
Ocean Exploration & Research | $29.5M | $1.5M |
Monitoring Atmospheric Carbon Sources | $5.5M | $4.7M |
Aviation Weather | $38.6M | $26.9M |
FISHERIES, OCEANS, & COASTS
R&D HIGHLIGHTS

Sustains core investments and capabilities in:
- National Catch Share Program
- Species Recovery Grants
- Community Based Restoration Program
- Chesapeake Bay Fisheries & Habitat Monitoring & Restoration
- Regional Ocean Partnership Grants
- Coastal and Marine Spatial Planning
- Coastal Ocean Science
- Competitive Research

<table>
<thead>
<tr>
<th>Targeted Investment Highlights</th>
<th>Request</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisheries Stock Assessments</td>
<td>$67.1M</td>
<td>$15.0M</td>
</tr>
<tr>
<td>Recreational Fisheries Data Collection</td>
<td>$24.4M</td>
<td>$3.0M</td>
</tr>
<tr>
<td>Protected Species Science</td>
<td>$48.7M</td>
<td>$2.5M</td>
</tr>
<tr>
<td>Oil Spill Research</td>
<td>$2.9M</td>
<td>$2.9M</td>
</tr>
<tr>
<td>IOOS Surface Current Mapping</td>
<td>$5.0M</td>
<td>$5.0M</td>
</tr>
</tbody>
</table>

NOAA Budget Information
NOAA Budget Hotline: 202-482-4822
Blue Book and Briefing: http://www.noaa.gov
Budget Questions: AskNOABudget@noaa.gov
BACKUP

CLIMATE SERVICE IN NOAA

NOAA's FY 2012 Budget Request includes the proposed reorganization of existing NOAA climate programs and activities under one Climate Service Line Office.

HEADQUARTERS

Climate Service Scientist

Office of the Assistant Administrator for Climate Services

DEPUTY ASSISTANT ADMINISTRATOR FOR CLIMATE SERVICES

OFFICE OF CLIMATE RESEARCH

Geophysical Fluid Dynamics Laboratory

Chemical Science Laboratory

Physical Science Laboratory

Global Monitoring Laboratory

OFFICE OF OBSERVATION, MONITORING & PREDICTION

National Climatic Data Center

National Oceanographic Data Center

Regional Climate Services

Observation Systems Division

Climate Prediction Center

OFFICE OF SERVICE DEVELOPMENT & DELIVERY

Regional Climate Services Partnership Division

Customer Engagement and Education Division

Grant Division
"All parts of NOAA benefit from OAR’s work to incubate fundamentally new approaches to mission-centered science, a capability best sustained by maintaining a nimble, freestanding OAR line office."

- Long-term mission-focused research
- Multi-disciplinary subject matter expertise
- Rapid response capability
- Sustained infrastructure
- Human capital
- Promote collaborations with internal & external scientific community

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**OAR ORGANIZATIONAL CHART**

**OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH (OAR)**

**HEADQUARTERS**
- Science Advisory Board
- Science Director
- International Affairs
- Chief Financial Officer
- Program Integration & Evaluation
- Communications

**Great Lakes Environmental Research Laboratory**
**Atlantic Oceanographic & Meteorological Laboratory**
**National Severe Storms Laboratory**
**Pacific Marine Environmental Laboratory**
**Air Resources Laboratory**
**Global Systems Laboratory**

**Research Council**
- Deputy Assistant Administrator for Program & Administration
- Assistant Administrator for Oceanic & Atmospheric Research & Senior Advisor to Chief Scientist
- Cooperative Institutes
- National Sea Grant College Program
- Office of Ocean Exploration & Research
- Office of Environmental Modeling & Research
- Office of Research & Technology Applications (ORTA)
- Small Business Innovation Research (SBIR)
NOAA’s MISSION: SCIENCE, SERVICE, & STEWARDSHIP

To understand and predict changes in climate, weather, oceans, and coasts,
To share that knowledge and information with others, and
To conserve and manage coastal and marine ecosystems and resources

Priorities:
- Advance climate services
- Define the future of NOAA’s weather and water services
- Ensure sustainable seafood and jobs
- Promote stewardship of oceans and coasts by implementing the National Ocean Policy
- Strengthen science
- Support recovery in the Gulf of Mexico
- Improve understanding, planning, and environmental protection in the Arctic
- Continuously improve internal business operations and services
New NOAA Mission Statement

Science, Service, and Stewardship

To understand and predict changes in climate, weather, oceans, and coasts,

To share that knowledge and information with others, and

To conserve and manage coastal and marine ecosystems and resources
America COMPETES

America COMPETES - SEC 302 (December 2010)
The education programs developed by NOAA shall …
1. carry out and support research based programs and activities designed to increase student interest and participation in STEM;
2. improve public literacy in STEM;
3. employ proven strategies and methods for improving student learning and teaching in STEM;
4. provide curriculum support materials and other resources that —
   A. are designed to be integrated with comprehensive STEM education;
   B. are aligned with national science education standards; and
   C. promote the adoption and implementation of high-quality education practices
5. create and support opportunities for enhanced and ongoing professional development for teachers …

More America COMPETES

SEC. 303. WORKFORCE STUDY (Cont’d)
The Secretary of Commerce … with the Secretary of Education, shall request the National Academy of Sciences to … investigate—
1. whether there is a shortage in the number of individuals with advanced degrees in oceanic and atmospheric sciences who have the ability to conduct high quality scientific research in physical and chemical oceanography, meteorology, and atmospheric modeling, and related fields, for government, non-profit, and private sector entities;
2. what Federal programs are available to help facilitate the education of students hoping to pursue these degrees;
3. barriers to transitioning highly qualified oceanic and atmospheric scientists into Federal civil service scientist career tracks;
4. what institutions of higher education, the private sector, and the Congress could do to increase the number of individuals with such post baccalaureate degrees;
NOAA Education Programs

NOAA Education Across the Nation
Goal 1: An **environmentally literate public** supported by a continuum of lifelong formal and informal education and outreach opportunities in ocean, coastal, Great Lakes, weather and climate sciences.

Goal 2: A **future workforce**, reflecting the diversity of the Nation, skilled in science, technology, engineering, mathematics, and other disciplines critical to NOAA’s mission.
Areas for Collaboration

- Environmental Literacy
  - Environmental Literacy Grants
  - B-WET
- Future STEM Workforce
  - Educational Partnership Program
  - Student scholarships
  - Mutual interest in the America COMPETES workforce study
  - Developing coursework recommendations for mission critical degrees

Environmental Literacy Grants to CI Schools

<table>
<thead>
<tr>
<th>Top CI Schools Recipients</th>
<th>Project Description</th>
<th>Funding</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado State University</td>
<td>Community Collaborative Rain, Hail and Snow Network CoCoRaHS</td>
<td>$1,835K</td>
<td>2006 &amp; 2010</td>
</tr>
<tr>
<td>University of Wisconsin and University of Maryland</td>
<td>Interpretation of Real-Time Weather and Climate Data for Spherical Displays</td>
<td>$1,160K</td>
<td>2010</td>
</tr>
<tr>
<td>University of Colorado</td>
<td>Science on Sphere</td>
<td>$176K</td>
<td>2006 &amp; 2009</td>
</tr>
<tr>
<td>Oregon State University</td>
<td>Creating Meaningful Experiences with Global Data</td>
<td>$100K</td>
<td>2008</td>
</tr>
<tr>
<td>University of Wisconsin and Hampton University</td>
<td>Science on a Sphere</td>
<td>$500K</td>
<td>2005</td>
</tr>
</tbody>
</table>
B-WET Funding to CI Schools

<table>
<thead>
<tr>
<th>B-WET Recipient Schools</th>
<th>2010</th>
<th>2003 - 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Maryland</td>
<td>$143K</td>
<td>$1,482K</td>
</tr>
<tr>
<td>University of Hawaii</td>
<td>$145 K</td>
<td>$410K</td>
</tr>
<tr>
<td>Louisiana State University</td>
<td>0</td>
<td>$300K</td>
</tr>
<tr>
<td>University of Southern Mississippi</td>
<td>0</td>
<td>$298K</td>
</tr>
<tr>
<td>University of Southern Mississippi</td>
<td>$78K</td>
<td>$78K</td>
</tr>
<tr>
<td>Dauphin Island Sea Lab</td>
<td>0</td>
<td>$295K</td>
</tr>
</tbody>
</table>

EPP-CSC/CI Connections

- CSC Schools that are CI Academic Partners
  - City University of New York
  - Howard University
  - University of Puerto Rico

- CI Schools that are EPP-CSC Academic Partners
  - California State University
  - North Carolina State University
  - State University of New York
  - University of Alaska
  - University of Illinois at Urbana-Champaign
  - University of Maryland
  - University of Miami
  - University of Minnesota
  - University of Puerto Rico
Educational Partnership
Program Accomplishments

Cumulative Degrees Granted

Hollings and EPP Scholars from CI Schools

<table>
<thead>
<tr>
<th>Top 5 CI Schools</th>
<th>2010</th>
<th>2003 - 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Maryland</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>University of Miami</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>University of Wisconsin</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Florida State University</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>University of Rhode Island</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>All CI Schools</td>
<td>36</td>
<td>231</td>
</tr>
</tbody>
</table>
Areas for Collaboration

• Environmental Literacy
  • Environmental Literacy Grants
  • B-WET

• Future STEM Workforce
  • Educational Partnership Program
  • Student scholarships
  • Mutual interest in the America COMPETES workforce study

• Developing coursework recommendations for mission critical degrees (Climate? Ecosystems?)