

Funding Realities at NOAA Climate Program

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June 2, 2009



NOAA CLIMATE GOAL

**UNDERSTAND CLIMATE VARIABILITY AND CHANGE TO
ENHANCE SOCIETY'S ABILITY TO PLAN AND RESPOND**

Three major programs

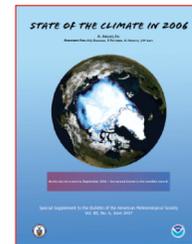
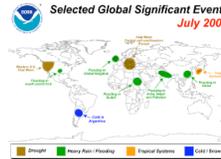
- Observation and Monitoring
- Research and Modeling
- Climate & Societal Interactions



Monitor the state of the climate

Observations and Monitoring

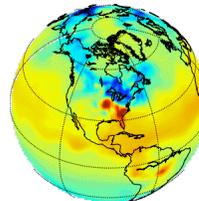
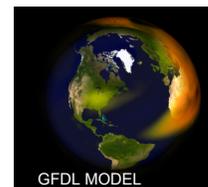
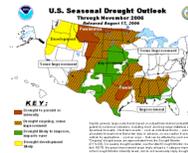
- Climate System Observations -
 - Ocean
 - Atmosphere
 - Arctic
 - Carbon
- Data Management and Information –
 - NOAA's Comprehensive Large Array-data Stewardship System
 - State of the Climate Report
 - Climatological Statistics and Summaries



Understand the future state of the climate

Climate Research and Modeling Program

- Understanding Climate Processes –
 - NOAA's Research Laboratories, Centers, and Cooperative Institutes
 - Competitive Grants**
 - Climate dynamics, atmospheric composition, carbon cycle
- Earth System Modeling, Predictions, and Projections –
 - GFDL and NCEP
 - Coupled climate models
 - Earth system model development
- Analysis and Attribution –
 - Reanalysis
 - Integrated Earth System Analysis
 - Attribution



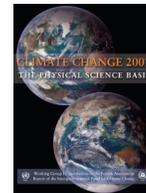
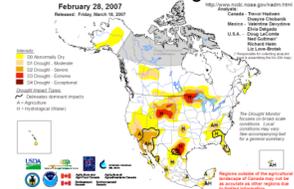
Assess evolving user needs and context

Climate and Societal Interactions

- Assessing Climate, Impacts and Adaptation –
Global, national, regional, sectoral assessments of vulnerability, impacts and adaptation
- Climate Services Development and Delivery –
National Integrated Drought Information System (NIDIS)
Emerging foci on Coasts, Arctic, Fisheries, ...
Regional
International



North American Drought Monitor



NOAA Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

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Updates on NOAA Climate Program

- Moving towards to National Climate Service
- In a process of setting new research themes for FY12-16
 - [Regional scale Information for Understanding and Addressing Climate Variability and Change-](#)
 - e.g., regional climate obs, modeling, prediction; Tropical climate including IAS
 - [Climate Information for Risk Management](#)
 - e.g., extremes
 - Climate Change, Oceans, Coastal and Great Lakes Ecosystem Interactions
 - National Climate Service Infrastructure



Climate Prediction Program for the Americas (CPPA)

Science Objectives:

- **Mission:** Improve operational intra-seasonal to interannual hydroclimatic predictions for the Americas
- CPPA is one of grant programs in NOAA Climate Program.
- CPPA contributes to CLIVAR (including VAMOS) and GEWEX programs.

- Quantify the sources and limits of **predictability** of climate variations on intra-seasonal to interannual time scale
- Improve **predictive understanding** and model simulations of ocean, atmosphere and land-surface processes, including the ability to quantify uncertainty
- Advance NOAA's **operational** climate forecasts, monitoring, and analysis systems by transferring research to operation
- Develop climate-based **hydrologic forecasting** capabilities for decision support and water resource applications

CPPA Major Research Activities

- Predictability and Process Studies

- ENSO, drought/extremes, monsoons (e.g., NAME), MJO
- air-sea interaction: e.g. VOCALS, IAS
- land-atmosphere interactions: soil moisture, vegetation, snow, topography

- Improving Climate Models and Predictions

- Development of Land Data Assimilation System (LDAS)
- Improvement of Land models
- Evaluation and model improvement of NCEP Climate Forecast System:
- Multi-regional model downscaling using multi-GCMs seasonal predictions

- Applications Development

- Drought monitor and prediction products
- Seasonal hydrological prediction in NWS/OHD and River Forecast Centers (RFCs)
- Applications of climate information for ecosystem prediction

- Transitioning Research to NWS Operations

- CPPA Core Project (focus on land & hydrology)
- joint university-NCEP competitive projects on CFS improvement

CPPA FY09 New IAS Projects

Focusing on predictability in IAS region, and IAS Impact on America's climate

Berbery and Mo: "Monitoring and Prediction of Hydroclimate over Pan America based on the Climate Forecast System Reanalysis and Reforecast Products"

Hu, Oglesby and Feng: "Understanding and Predicting Tropical and North Atlantic SST Forcing on Variations in Warm Season Monsoonal Precipitation Over North America"

Karnaуска, Giannini, Seager and Busalacchi: "The American Midsummer Drought: Causal Mechanisms and Seasonal-to-Interannual Predictability" (to be funded in FY10)

Liebmann, Kiladis and Vera: "Influence of Convective Systems on Intraseasonal to Interannual Variability of the Intra-American Monsoon" (to be funded in FY10)

Maloney and S-P Xie: "Remote Versus Local Forcing of Intraseasonal Variability in the IAS Region: Consequences for Prediction"

C-Z Wang, Enfield and Lee: "Diagnostic and Modeling Studies on Impacts, Mechanisms and Predictability of the Atlantic Warm Pool"

R. Wu and Kirtman: "Atmosphere-Ocean Interactions and Summer Rainfall Variability and Predictability in the Intra-Americas Region"

Mike Douglas's Opinion

A research program that depends only on US research funding will have limited lasting impact.

A program that has a goal of establishing a long-term climate monitoring network will have a lasting impact. SALLJEX, NAME and VOCALS haven't done this...

IASCLIP must not just make recommendations for climate monitoring - it must initiate them and seek to sustain them.
(Implementation must be fast compared with technology changes)

If an IASCLIP climate monitoring effort on order of \$1M/year cannot be sustained by NOAA what does this say about the importance of IASCLIP region/processes? Why waste our time?

Reality check - ARGO costs \$20M a year...

Mike Douglas's Questions

- Why most CPO funds go into ocean monitoring - little atmospheric component?
- Does National Climate Service have an international component?
- If not, who is taking care of international atmospheric monitoring ?

Comments/Questions for IASCLIP

- **Justification for a field experiment in IAS region**
 - process study: focused process? scientific hypothesis? improving climate models? involvement of modelers? (example: DYNAMO)
 - enhancing monitoring: importance of IAS region; sustainability issue; use of satellite data
 - Need to engage NOAA Climate Obs. and Monitoring Program
 - applications: impacts of IAS region on extremes (hurricanes)?
- **Timing is a secondary issue**