Outline

• Mission
• Who we are
• Main areas of research
• AOML and IOOS
• Vision
The mission of the Physical Oceanography Division at AOML is to conduct research relevant to the role of the oceans in climate and ecosystem dynamics and to provide quality ocean data and products in a timely and cost-effective manner to satisfy NOAA’s objectives.
We are an energetic group of scientists who:

• Conduct cutting edge research crossing disciplines in close cooperation with others throughout AOML, NOAA, and the greater scientific community.

• Provide data and products in support of the NOAA mission to improve weather and climate forecasts.

• Are a main partner in the development, deployment and improvement of the NOAA/IOOS sustained Ocean Observing Systems for Climate and Ecosystems.

• Are a major center for the collection, dissemination, interpretation and use of global oceanographic and surface marine atmospheric data.
PhOD was funded in FY07 with $3,579,000 in base and $4,535,800 in proposals. A total of 21 proposals were funded.

The average number of peer reviewed scientific publications has steadily increased (at the rate of 1.5 papers per year). In FY07 29 papers were published.
NOAA's Climate Goal, as stated in the NOAA Strategic Plan, is to:

"Understand and describe climate variability and change to enhance society's ability to plan and respond".

Main Areas of Research

AOML Conducts research related to three NOAA formal Goals

- Climate
- Ecosystems
- Weather and Water
Ocean Circulation and Climate

SSTA: El Nino (+1) AMJ

(a) OBSERVATION (ERSST3)

(b) MODEL (Normal El Nino)

(c) MODEL (Premature termination of El Nino)
Mesoscale and Upper Ocean Processes

Mixed layer heat storage in 1/2007 (Argo, XBT)

Track of Ronald Brown 2006 PIRATA NEE cruise

Imbalances in Southern Ocean heat budget accounting (W/m²)

Real time Tropical Cyclone Heat Potential (Altimeter)

AOML Laboratory Review, 18-20 March 2008
Ocean variability and its influence on the climate and weather of the surrounding continents
Heat content trend in the Mixed layer (Argo + XBT) 2000-2006
Physical characteristics of coastal areas and their role in ecosystem dynamics

Biscayne Bay

Extended areas

Florida Bay

Salinity

July 11-12, 2007

Salinity

07/10/07
Data analysis and assimilation for ocean prediction
NOAA INTEGRATED OCEAN OBSERVING SYSTEM (IOOS) PROGRAM

STRATEGIC PLAN 2008-2014

OCTOBER 2007

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
NOAA IOOS PROGRAM
Ship of Opportunity Program

Low Density and Frequently Repeated XBT Lines

Thermosalinographs (TSGs)

High Density XBT Lines

Thermosalinographs (TSGs)

SEAS - AMVER/SEAS Shipboard Environmental (data) Acquisition System (SEAS)
Western Boundary Time Series in the Atlantic Ocean

Bronze Medal 2007

Florida Cable Transport Time Series

Florida Current Cruises

Deep Western Boundary Current Hydrography

Deep Western Boundary Current Transport Time Series
At AOML:
- US Argo Data Assembly Center
- Deployment of Atlantic floats
- South Atlantic Argo regional Center

Consortium:
- SIO
- PMEL
- WHOI
- AOML
- UW

2003 NOPP Excellence in Partnership Award

2004 NOAA Administrator’s Award
AOML Collaboration with PMEL and ESRL
CLIVAR/CO2 repeat hydrography lines

NSF/NOAA program
AOML in charge of the Atlantic lines.
Collaborate with PMEL and others in the other oceans.
Number of cruises and days at sea

- Number of cruises:
  - 2003: 59
  - 2004: 59
  - 2005: 64
  - 2006: 69
  - 2007: 55

- Number of days:
  - 2003: 456
  - 2004: 456
  - 2005: 384
  - 2006: 376
  - 2007: 424
Number of XBT data processed at AOML
Float and drifters observations

Number of Argo float profiles processed at AOML

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Number of surface drifters processed at AOML

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Stakeholders

• Operational Agencies Worldwide (e.g. NCEP, NASA, NMSS, NRL, ECMWF, UK Met, Mercator, JMA, etc)
• International Research Community (e.g. More than 350 reviewed papers using drifter data, 364 acknowledging the use of Argo data)
• Search and Rescue (e.g. Coast Guard)
• Maritime industry
• Equipment manufacturers
• Recreation
• Education (e.g. schools K-12, Adopt a buoy, Semester at Sea, etc.)
• Outreach
• General public
Instrument Development

XBT 8-probe Auto launcher

Mini drifters

Pop-up System

Real time data transmission systems using satellites, cellular phones, and radio modems

Dropsonde
Our Vision for the Future

• Be a major center for the collection, dissemination, interpretation and use of global oceanographic and surface marine atmospheric data.

• Conduct research to improve our understanding of the role of the ocean in climate variability and change scenarios.

• Conduct interdisciplinary research in coastal waters to support NOAA's strategic goal to protect, restore, and manage the use of coastal and ocean resources.
Play a major role in bridging the gap between observations and models by:

• Analyzing and interpreting the data collected, and to generate products to develop a better understanding of the state of the ocean and the implications of its variability for climate.

• Jointly analyzing model products and observations to validate models, determine what phenomena different models resolve, enhance the observations, and provide feedback to the modeling community on potential deficiencies and solutions.

Improve the Observing System by

• Optimizing our understanding of the ocean dynamics and performing model experiments to establish a cost effective, observing system.

• Designing and developing new cost effective technology to allow near real-time observations over the full depth of the ocean.
Thank You