



*Atlantic Oceanographic &
Meteorological Laboratory*

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January 29, 2003

A brief introduction to AOML

- Parent organization is the US Department of Commerce, National Oceanic and Atmospheric Administration (NOAA)
- Part of NOAA Research – Office of Oceanic and Atmospheric Research

Purpose of AOML

- An applied and basic research laboratory that combines the interdisciplinary research involved in helping to understand and protect U.S. and global interests in atmospheric and oceanic phenomena, including:



Areas of Research

- ENSO-El Nino
- The Carbon Cycle
- Coral Reefs
- Ozone
- Climate Change
- Hurricanes

Organization

- Consists of three interrelated Divisions of scientists and associated technical and administrative support staff
- Approximately 90 Federal workers and about 25 additional contract employees to help fulfill NOAA's mission as the U.S. experts on the world's Oceans & Atmosphere

PhOD – Physical Oceanography

- The primary mission is provide and interpret oceanographic data
- Data are provided by scientific research cruises, large scale and regional observing systems, and satellites
- Geographic research areas include Intra-Americas Seas, South America, Gulf of Mexico, Atlantic Ocean

Some PhOD Research Projects

- Windward Islands Passages Monitoring Program – quality & sources of transport between Atlantic Ocean & Caribbean Sea
- El Nino-Southern Oscillation (ENSO)
- North Brazil Current retroflexion & ring generation
- Pan-American Climate Studies

Recent Advances in PhOD

- Salinity measurement can improve El Nino forecasts
- Better understanding of global El Nino
- A Unified ENSO theory
- Meridional Overturning Circulation at faster rate than previously estimated
- Atlantic Ocean warms in response to climate change

More PhOD Advances

- Oceanic measurements help to improve prediction of hurricane sudden intensification
- Multi-decadal sea-surface temperature swings may help hurricane prediction

OCD – Ocean Chemistry

- Comprised of chemical oceanographers, atmospheric chemists, biological oceanographers, and geologists
- Work includes projects for understanding the coupled atmospheric/ocean system
- Also future effects of human activities on the coastal and oceanic environments

Some OCD Areas of Research

- Ocean/Atmosphere Carbon Cycle
- Marine & Atmospheric Chemistry Research
- Coral Health and Monitoring Program (CHAMP)
- Interdisciplinary Ecosystem Research – e.g., Florida Bay
- Underwater acoustic detection of rainfall in the Bahamas

OCD Uses Internet 2

- Underwater web camera provides live streaming video of coral reefs
- Located at CREWS (Coral Reef Early Warning System) station at the Salt River Bay National Historical Park and Ecological Preserve, St. Croix, U.S. Virgin Islands
- Provides immediate feedback on coral bleaching predictions

Hurricane Research

- Advance the basic physical understanding and improving the forecasts of hurricanes and tropical meteorological systems
- A key aspect of HRD's activity is its annual field program of flights aboard NOAA's research aircraft (two WP-3D turboprops and a Gulfstream IV-SP jet) flown by NOAA's Aircraft Operations Center

HRD Aircraft Connected

- The NOAA aircraft are connected to the internet via satellite phone systems
- A project funded by NOAA High Performance Computing and Communications Office (HPCC) to improve communications to the aircraft

Status of NGI at AOML

- AOML connected to NGI/Abilene via the University of Miami (UM)
- Single-mode fiber connection at 1000 Mbps across causeway to UM's Rosentiel School of Marine and Atmospheric Science - completed May 2001
- NOAA's Southeast Fisheries Science Center cut over to 1000 Mbps as of 27 November 2001

Conclusion & URL

- Visit AOML's web page to explore the research mentioned in this talk and for many other projects and contacts
- <http://www.aoml.noaa.gov/>
- Streaming video (requires Microsoft Windows Media Player) - experimental
- <mms://192.111.123.141/uw-stx>