

Keynotes

Transmission of 50,000th Profile a Milestone for Argo

During June 2005, the 50,000th Argo temperature and salinity profile was transmitted via the Global Telecommunications System (GTS) for use by the international oceanographic community. This volume of data is a milestone for the successful ocean observation program. The Argo array's global coverage has already significantly increased critical oceanic data that are routinely used for weather and climate studies such as forecasting and monitoring of El Niño events.

Argo is an internationally-coordinated, broad-scale global array of temperature/salinity profiling floats and a major component of the ocean observing system. The Argo program will eventually deploy 3,000 floats on a global 3° x 3° grid. Presently, close to 1,900 Argo floats are operational around the globe. These floats are deployed from research vessels, volunteer merchant ships, and aircraft.

Upon release, the floats sink to a prescribed depth (typically 1,000 or 2,000 m), remain submerged for 10-14 days, and then gather temperature and salinity information about the water column on their ascent to the surface. Once at the surface, the floats transmit their data to satellites and then repeat the data-collection cycle.

Argo data are transmitted to the international operational and research communities within 24 hours by national data assembly centers. AOML has managed and provided real-time quality control of the U.S. Argo profiling float data since the Argo program began in 2001.

NOAA Predicts 2005 Hurricane Season Will be Active

NOAA released its 2005 outlook for the Atlantic basin on May 16th, advising coastal communities to prepare for another active hurricane season. Speaking at a press conference in Bay St. Louis, Mississippi, hurricane specialists predicted the June 1st-November 30th season would likely be marked by above-normal levels of storm activity. The outlook probability indicates a 70% chance that above-normal conditions will prevail, with only a 20% chance for near-normal conditions, and a 10% chance for below-normal conditions.

Twelve to 15 tropical storms are predicted to form, with seven to nine of these storms developing into hurricanes. Three to five hurricanes are predicted to become major hurricanes with sustained wind speeds of at least 115 mph (categories 3, 4, and 5 on the Saffir-Simpson scale). The majority of tropical storms and hurricanes for 2005 are expected to develop during the August-October time frame, considered the peak months of the hurricane season.

Climatic factors contributing to the above-normal forecast include the ongoing active phase of the Atlantic multi-decadal signal, which has contributed to increased amounts of hurricane activity since it began in 1995, and warmer than normal sea surface temperatures in the Atlantic Ocean and Caribbean Sea. An additional climatic factor considered to play a role in the 2005 forecast is the lack of strong El Niño-Southern Oscillation (ENSO) conditions, which tend to reduce hurricane formation. Neutral ENSO conditions forecasted to prevail in the tropical Pacific for much of the season should bear little impact in curbing hurricane activity.

The 2005 Atlantic hurricane outlook represents a collaborative effort by scientists with NOAA's Climate Prediction Center, National Hurricane Center, and AOML's Hurricane Research Division (Stanley Goldenberg and Christopher Landsea). An updated forecast will be issued in early August.



Hurricane Jeanne trekking across the Atlantic on September 24, 2004.

2005 ATLANTIC STORM NAMES

ARLENE	DENNIS	GERT	JOSE	MARIA	PHILIPPE	TAMMY
BRET	EMILY	HARVEY	KATRINA	NATE	RITA	VINCE
CINDY	FRANKLIN	IRENE	LEE	OPHELIA	STAN	WILMA

Two new Volunteer Observing Ship routes have been implemented that will assist AOML's Global Ocean Observing System (GOOS) Center in collecting oceanographic and atmospheric data. The GOOS Center uses Volunteer Observing Ships extensively to collect expendable bathythermograph and meteorological observations and for deployment of drifting buoys and profiling floats.

The new AX34 line extends from the Caribbean Sea to the Gulf of Guinea and will provide valuable data for monitoring the upper ocean thermal structure beneath the African monsoon system. The M/V *Merkur*, owned and operated by Alpha Shipping Company, will begin sampling along AX34 during the summer of 2005.

The new IX07 line lies in the Indian Ocean between Cape Town, South Africa and the Gulf of Oman. Historically, the IX07 line has been difficult to maintain due to logistical and geopolitical considerations. Through international cooperative efforts, however, a vessel with the Alpha Shipping Company is expected to begin sampling along IX07 later in the year. The recent tsunami in the Indian Ocean region has motivated researchers to reinvigorate their efforts to establish a more complete ocean observing system.

The GOOS Center currently coordinates with a global fleet of about 400 domestic and foreign commercial vessels that transmit data in real-time to national centers such as the National Center for Environmental Prediction for use by the operational and research communities. The GOOS Center's fleet represents a subset of the National Weather Service's volunteer observing fleet which consists of over 1,500 vessels.

Semester at Sea Students Help AOML Oceanographer Launch Floats and Drifters

AOML oceanographer Gustavo Goni had lots of help this past April as he deployed Argo profiling floats and surface drifters into a sparsely-sampled region of the Atlantic Ocean. Goni was assisted by a large group of undergraduate students sailing on the M/V *Explorer*, a passenger ship that serves as a floating university campus for the Semester at Sea program. More than 700 students and faculty members were aboard the *Explorer* on its spring semester voyage around the world as the instruments were deployed along a transect between Cape Town, South Africa and Salvador, Brazil.

Goni's presence on the *Explorer* was the result of an agreement reached earlier in the year between AOML and Semester at Sea program administrators. In exchange for the *Explorer* being offered as a volunteer observing ship to assist AOML in gathering oceanographic observations, AOML agreed to support the Semester at Sea's premise of providing at-sea learning experiences.

During his week aboard the *Explorer*, Goni presented a 90-minute class about oceanography, focusing on global ocean circulation patterns, NOAA's ocean observing efforts, and satellite oceanography applications. Students and faculty also attended training classes to learn about the instruments and the procedures used to deploy them. As a result, they were able to help Goni with every aspect of successfully deploying six Argo profiling floats and six surface drifters.

"It was a pleasure to meet such a group of extremely motivated, scientifically curious students," said Goni. "I'm thankful for their help during the deployment of the floats and drifters and for their enthusiasm in learning about NOAA's ocean observing system."

All who participated in the deployments were given information on how to track the movement of the profiling floats and surface drifters in near real-time by visiting NOAA web sites. In addition, Goni posted photographs and detailed information about the deployment process on his web site for students to peruse (www.aoml.noaa.gov/phod/people/goni/SAS.html).

Volunteer observing ships are an important component of NOAA's efforts to attain continuous monitoring of the oceans on a global scale. Data obtained from the *Explorer* deployments will provide much needed coverage in a region rarely sampled and will supplement existing data in other oceanic areas.

The next transect aboard the M/V *Explorer* will be conducted between Salvador, Brazil and Cape Town, South Africa in September 2005. The Semester at Sea program is an academic venture sponsored by the Institute of Shipboard Education, the Seawise Foundation, and the University of Pittsburgh.



Gustavo Goni, front and center, surrounded by students, faculty, and staff aboard the M/V *Explorer* for the 5 p.m. drifter deployment on April 7th.



Two students prepare to launch a surface drifter.



Gustavo Goni (left) with students and faculty members.



Photo by Catherine Booker

Computer specialist Mike Jankulak of AOML's Ocean Chemistry Division, standing about 17 feet above the ocean surface, installs electronics in the uppermost chamber of the new Coral Reef Early Warning System (CREWS) station near Lee Stocking Island, Bahamas. Deployment of the station was conducted in collaboration with the Perry Institute for Marine Science. Jeffrey Absten, Jules Craynock, Jeffrey Judas, Erik Stabenau, and Scott Stolz, all of AOML, also contributed to the effort.

Recent Publications*

MEINEN, C.S., 2005: Temporal sampling: How many sections are needed to quantify the mean transport and structure of a meandering current? *Journal of Atmospheric and Oceanic Technology*, 22(4):476-489.

LI, Q.P., J.-Z. ZHANG, F.J. Millero, and D.A. Hansell, 2005: Continuous colorimetric determination of trace ammonium in seawater with a long-path liquid waveguide capillary cell. *Marine Chemistry*, 96(1-2):73-85.

Wu, C.-C., P.-H. Lin, S.D. ABERSON, T.-C. Yeh, W.-P. Huang, K.-H. Chou, J.-S. Hong, G.-C. Lu, C.-T. Fong, K.-C. Hsu, I.-I. Lin, P.-L. Lin, and C.-H. Liu, 2005: Dropsonde observations for typhoon surveillance near the Taiwan region (DOTSTAR): An overview. *Bulletin of the American Meteorological Society*, 86(6):787-790.

*Names of AOML authors appear in capital letters.

Meeting Advances Plans for South Atlantic Argo Center

Researchers with AOML's Physical Oceanography Division have moved a step closer to their goal of establishing a South Atlantic Argo Regional Data Assembly Center (SAARDAC). In May, the first SAARDAC implementation meeting was held in Cape Town, South Africa to encourage countries bounded by the South Atlantic to participate in the Argo program. Representatives from Angola, Argentina, Brazil, Namibia, Nigeria, South Africa, Uruguay, and the U.S. attended, along with representatives from the Argo Information Center and other regional centers in the North Atlantic and Southern Ocean.



The Argo program is an endeavor to create a global ocean observing system. When fully implemented, the Argo array will consist of 3,000 autonomous profiling floats placed worldwide that gather temperature, salinity, and velocity data in the upper 2 km of the ocean. Argo data are assimilated into climate forecast models by national (e.g., NOAA) and international operational forecast centers and used by research scientists to advance understanding of the upper ocean structure.

In 2002, the Argo Science Team determined that the final level of quality control for Argo data should be performed by Regional Data Assembly Centers (RDACs). AOML was subsequently funded by the National Oceanographic Partnership Program to establish a RDAC for the South Atlantic. Developing participation, support, and cooperation among regional nations has been a key component of this effort. Towards this objective, several meetings have been convened to build consensus for the project.

The Cape Town meeting was a resounding success. As a result, new data sources for quality control were located, new deployment opportunities were realized, and infrastructure support from new participant countries was pledged. A proposal was also formulated for a South Atlantic Argo training school to educate scientists, data managers, modelers, and forecasters on the uses of Argo data. A web site will be developed to track the progress of the Center and disseminate pertinent information.

HRD Workshop Improves Access to Research Products



AOML's Hurricane Research Division (HRD) hosted a workshop on May 12-13, 2005 entitled "Hurricane Wind Field Research: How Can HRD Assist our Weather Forecast Office Partners?" Attendees included staff from Florida, Alabama, and Puerto Rico National Weather Service (NWS) forecast offices, as well as staff from the NWS Southern Regional Headquarters and Tropical Prediction Center. Dr. Mark Powell organized the workshop with the assistance of Frank Marks, Shirley Murillo, Eric Uhlhorn, Sonia Otero, and Nick Carrasco.

Farewell

Linda Pikula, librarian for the past 17 years with NOAA's Miami Regional Library located at AOML, departed on June 9th to accept a position in Silver Spring, Maryland. Linda will be the Branch Chief of Public Services and Outreach for NOAA's Central and Regional Libraries. Best wishes to Linda for her continued success.



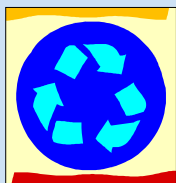
Welcome Aboard

Lewis Gramer joined the staff of the Physical Oceanography Division in May as a CIMAS Research Associate. Gramer has a SB degree in mathematics from the Massachusetts Institute of Technology and almost 20 years of experience in the fields of software engineering, data management, and data analysis. He will be working primarily with Dr. Molly Baringer on refining and providing quarterly estimates of heat transport in the North and South Atlantic Oceans using expendable bathythermograph (XBT) data.

Sarah Haddah joined the staff of the Ocean Chemistry Division in May as a student employee working through the Rosenstiel School's Division of Marine Biology and Fisheries. She will assist Chris Kelble in identifying, sorting, and counting zooplankton from Florida Bay in support of the South Florida Ecosystem Research and Monitoring Program.

Corey Peckins joined the staff of the Ocean Chemistry Division's Environmental Microbiology Laboratory in June as a CIMAS research assistant. Corey is currently pursuing a B.S. degree in marine science biology from the University of Miami. She will assist Dr. Kelly Goodwin with laboratory experiments, culture maintenance, media and solution preparation, data entry, and DNA extraction.

Don't Lose It... Reuse It!



AOML recycles

- Paper
- Aluminum cans
- Batteries
- Styrofoam "peanuts"

Congratulations

Christopher Landsea and Frank Marks, meteorologists with AOML's Hurricane Research Division, are the recipients of a 2005 NOAA Administrator's Award. Landsea and Marks served as members of a Steering Committee representing the Office of Oceanic and Atmospheric Research and the National Weather Service that was recognized for establishing and administering the Joint Hurricane Testbed, NOAA's first U.S. Weather Research Program testbed, that accelerates the process of incorporating innovative research products into day-to-day operations, greatly contributing to improved hurricane forecasts.



2005 Administrator's Award recipients (left to right): Christopher Landsea (AOML), Ward Seguin, Richard Knabb, Jiann-Gwo Jiing, Naomi Surgi, Frank Marks (AOML), and Edward Rappaport.

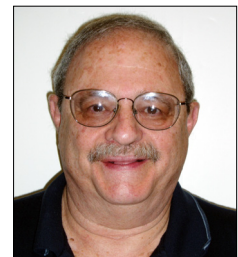
Nancy Griffin, a computer programmer with AOML's Hurricane Research Division (HRD), has been named NOAA's June 2005 Employee of the Month. Griffin was recognized for her long-term contributions to HRD's successful airborne Doppler radar program, as well as for recent advances which have paved the way for real-time data analyses aboard NOAA's hurricane hunter aircraft. These analyses, transmitted via satellite to the National Hurricane Center, provide critical information about the strength and direction of the winds within the hurricane environment.



Jason Dunion, a CIMAS research scientist with AOML's Hurricane Research Division, is the recipient of the American Geophysical Union's 2004 Editor's Citation for Excellence in Refereeing Award for outstanding service to the authors and readers of the *Journal of Geophysical Research* (Atmospheres). The award recognizes Dunion's meticulous efforts in reviewing submitted papers and in maintaining a high-quality standard for the journal.



Howard Friedman, Deputy Director of AOML's Hurricane Research Division, is the recipient of an award from the South Florida Federal Executive Board in recognition of his enthusiasm and willingness to support the Shared Neutrals ADR [Alternative Dispute Resolution] Program (SNAP). The Shared Neutrals Program provides trained mediators at little or no cost to assist federal employees in resolving disputes and conflicts in the work environment.



Mr. Hans Fangmeyer and Mr. Ole Raatz of Alpha Ship GmbH, an international shipping company, were recognized by NOAA-AOML's Global Ocean Observing System (GOOS) Center for their outstanding support of scientific sampling efforts from aboard their Voluntary Observing Ship fleet. The award was presented in March 2005 by Steven Cook, AOML oceanographer and Chairman of NOAA's Ship of Opportunity Implementation Panel.



Travel

Rik Wanninkhof attended the 37th International Liege Colloquium on Ocean Dynamics in Liege, Belgium, on May 2-6, 2005.

Christopher Landsea made a presentation at the Catastrophe Conference of the Property Claims Service in New Orleans, Louisiana on May 4, 2005.

Silvia Garzoli, Alberto Mestas-Nuñez, Robert Molinari, and Claudia Schmid attended the first South Atlantic Argo Regional Data Assembly Center Meeting in Cape Town, South Africa on May 12-14, 2005.

David Enfield and Chunzai Wang attended the 1st Alexander von Humboldt International Conference on the El Niño Phenomenon and its Global Impact, in Guayaquil, Ecuador on May 15-21, 2005.

Jeffrey Absten, Jules Craynock, Michael Jankulak, Jeffrey Judas, Erik Stabenau, and Scott Stolz deployed the new Coral Reef Early Warning System (CREWS) station at Lee Stocking Island, Bahamas on May 16-20, 2005.

Stanley Goldenberg was an invited speaker at the "Telling the Story when Natural Disasters Strike" seminar in Chapel Hill, North Carolina on May 20, 2005.

Sim Aberson was an invited speaker at the Weathernews Inaugural Symposium on Data Assimilation from the Planetary Scale to the Storm Scale in Norman, Oklahoma on May 24, 2005.

Mark Powell attended the Tenth Americas Conference on Wind Engineering (10ACWE) in Baton Rouge, Louisiana on May 31-June 4, 2005.

Judy Gray and Nina Liebig attended the Office of Oceanic and Atmospheric Research's Deputy Director/Administrative Officer Workshop in Longmont, Colorado on June 7-8, 2005.

Tsung-Hung Peng attended the American Society of Limnology and Oceanography's summer 2005 meeting in Santiago de Compostela, Spain on June 19-24, 2005.

June 2005 Informal Research Reports*

June 14 *The Great Hurricane Ivan Surveillance "Failure" (or What Can Happen When We Don't Pay Attention to Minor Details of the Operational Model)*

Dr. Sim Aberson
Hurricane Research Division

June 16 *Improving the Validation and Prediction of Tropical Cyclone Rainfall*

Dr. Robert Rogers
Hurricane Research Division

June 28 *The Atlantic Hurricane Database Reanalysis Project: The 1910s and 1920s*

Dr. Christopher Landsea
Hurricane Research Division

June 30 *The Hurricane Data Rescue Project: What Once was Lost Now is Found*

Mr. Neal Dorst
Hurricane Research Division

*Presentations are held in the first-floor conference room.

Itinerant Croc Returns!

Sporadic sightings of a reptile "of significant size," *i.e.*, a 6-8 ft. American crocodile, have been occurring in the pond on the northwest side of the AOML facility since the afternoon of May 24th. Please exercise caution when using the main entrance to exit and enter the facility.

Crocodiles evolved over 200 million years ago, surviving into the present era. They've been on the Endangered Species list since September 25, 1975, with numbers estimated at ranging between 500-1,200. South Florida is the only area in the United States where crocodiles are currently found.

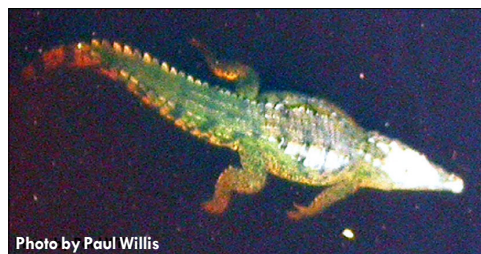


Photo by Paul Willis

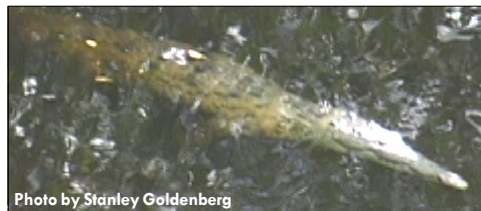


Photo by Stanley Goldenberg

Two views of the crocodile sporadically sighted swimming in the AOML pond since the afternoon of May 24th.

View Keynotes online: <http://www.aoml.noaa.gov/keynotes>

Keynotes is published bi-monthly by the Atlantic Oceanographic and Meteorological Laboratory. Contributions and/or comments are welcome and may be submitted via email (Gail.Derr@noaa.gov), fax (305) 361-4449, or mailing address: NOAA/AOML, Keynotes, 4301 Rickenbacker Causeway, Miami, FL 33149.

Editor – Judy Gray
Publishing Editor/Writer – Gail Derr