

AOML Keynotes

Potential Sites Identified for Saipan CREWS Station

A team from AOML's Integrated Coral Observing Network (ICON) program visited Saipan on October 15-19 to examine candidate sites for the installation of a Coral Reef Early Warning System (CREWS) station.

Field and logistical support for the effort were provided by the Commonwealth of the Northern Mariana Islands (CNMI) Coastal Resources Management office. Specific locations within Lao Lao Bay and the Managaha Marine Conservation Area were tentatively identified as the best candidate sites.

CREWS stations gather in-situ environmental data for monitoring and assessing the health of coral reefs. The Saipan CREWS station is being funded by NOAA's Coral Reef Conservation Program and will measure standard meteorological parameters, plus sea surface temperature, salinity, and tides, as well as light (PAR, UV) above and below the ocean surface. Its installation is expected to begin during the first half of 2010.

The ICON program currently monitors satellite data (sea surface temperature, wind, and rain) from the Managaha area for its developing ecological forecasting models. Data from the CREWS Saipan station will be integrated into the models, along with data from several Fish Aggregating Devices to be deployed by the CNMI Division of Fish and Wildlife along Saipan's west coast.

First-of-its Kind Data Gathered during International Cruise

A moored instrument array in the western South Atlantic Ocean has yielded the first time-series observations of the Deep Western Boundary Current along 34.5°S. Researchers with AOML's Physical Oceanography Division (PhOD), in collaboration with Argentinian and Brazilian partners, acoustically downloaded the data from the array in late August during a cruise aboard the Argentine research vessel *Puerto Deseado*. The cruise was conducted as part of an international program between the United States, Argentina, and Brazil to monitor the western boundary components of the global Meridional Overturning Circulation (MOC) in the South Atlantic.

The MOC consists of a slow circulation that redistributes the waters of the world ocean involving poleward surface transport of warm water and its subsequent sinking at high latitudes and upwelling elsewhere. Variability in the Atlantic MOC has been shown in numerical models to have significant impacts on global climate signals such as air temperature and precipitation over large portions of the Northern Hemisphere. Observations of the southern portion of the Atlantic MOC are critical to gaining a more complete picture of this ocean circulation system.

The instrument array—three inverted echo sounders (IES) equipped with pressure gauges (PIES) and one PIES equipped with an added current meter (CPIES)—was deployed in March 2009 to assist researchers in investigating the role of the western boundary currents in the South Atlantic. The PIES/CPIES array is mounted on the ocean floor. The instruments send sound pulses to the sea surface and back. The round-trip travel time of the acoustic pulses are combined with historical hydrographic data to obtain daily estimates of the temperature and salinity for the full water column. The current meter measures the current, while the pressure gauges provide information on the variability of deep water flows along the bottom of the ocean.

PhOD researchers first pioneered using IES technology to monitor deep ocean flows in the North Atlantic in 2004. This technology has now been expanded to include the South Atlantic. The array will be in place for at least four years with acoustic data download cruises conducted annually or bi-annually. *(continued on page 2)*



An array of three inverted echo sounders (IES) equipped with pressure gauges and one IES with a current meter were moored on the sea floor this past March 2009 along 34.5°S. Data from the array were gathered for the first time in August 2009 from the Argentine research vessel *Puerto Deseado*.



Common Access Cards

New identification badges known as Common Access Cards have become a requirement for all employees working onsite at Federal facilities, as specified by Homeland Security Presidential Directive 12 (HSPD-12) signed into law by former President George W. Bush in August 2004. Current NOAA identification badges do not satisfy HSPD-12 requirements and will become obsolete on December 31, 2009.

All AOML employees—Federal, CIMAS, and contractors—must obtain Common Access Cards at their earliest convenience. These new cards must be worn alongside existing NOAA identification badges until the NOAA badges are phased out.

Common Access Cards can be obtained at the following locations:

U.S. Coast Guard
Integrated Support Command
100 MacArthur Causeway
Miami, FL 33139
305-535-4598 (call for appointment)

U.S. Army Garrison
8300 N.W. 33rd Street
Miami, FL 33122
(No appointments, walk-ins only)

Two forms of personal identification must be presented:

- Florida state-issued document, e.g., Florida driver's license.
- Social security card, passport, birth certificate, or voter registration card.

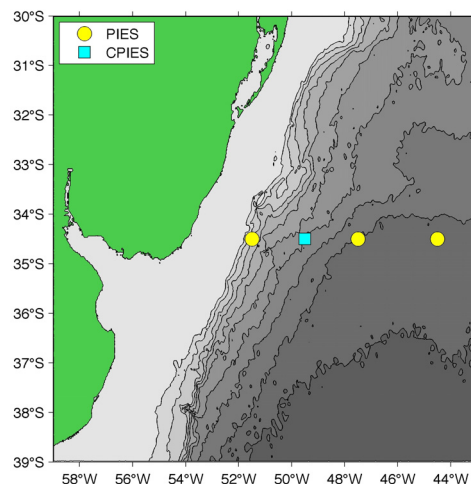
For purposes of time and attendance, travel involved in obtaining a Common Access Card is considered work time. Please inform Ruth Almonte (305-361-4367) of AOML's Administrative Group when you have obtained a Common Access Card so your name can be added to AOML's weekly compliance reports.

(continued from page 1)

The present cruise represents the first retrieval of data from the array since its deployment this past March.

Future collaborations with French, German, and South African partners monitoring the eastern South Atlantic will allow for further expansion of this program across the ocean basin and, overall, a more comprehensive understanding of the MOC in the South Atlantic, where numerical models suggest critical water mass variations occur via interactions with the waters of the Pacific and Indian Oceans.

NOAA's contribution to this effort is funded by the Office of Climate Observations, with ship time provided by the hydrographic service agencies of Argentina and Brazil.



Location of the inverted echo sounder array deployed offshore of South America along 34.5°S. Data gathered from the array will assist researchers in monitoring the western boundary components of the global Meridional Overturning Circulation in the South Atlantic.

TSG Installation Enhances Global Data Collection Efforts

Pedro Pena and Francis Bringas, SOOP Program, Physical Oceanography Division

Two high density expendable bathythermograph (XBT) cruises were completed in September 2009 in support of AOML's Ship of Opportunity Program (SOOP). More than 300 temperature profiles that depict the thermal structure of the upper 800 m of the Atlantic Ocean were obtained. During one of the two cruises, a technical team from AOML installed a thermosalinograph (TSG) aboard the *Barcelona Express*, a cargo ship that has gathered XBT measurements between Gibraltar and Miami, Florida since 2004.

TSGs are instruments that continuously measure sea surface temperature and sea surface salinity along a ship's track. These data have many applications including climate and ocean dynamics research, determination of boundary regions in ocean currents, and as input for climate and weather forecast models. The TSG and XBT data obtained at AOML are used for monitoring and understanding long-term changes in the marine environment.

The installation of TSG equipment aboard ships presents many challenges. AOML's technical team of Pedro Pena, Denis Pierrot, Ulises Rivero, and Kevin Sullivan worked with the crew of the *Barcelona Express* to construct a water intake mechanism in the ship's engine room for continuous sampling. The team also successfully met several other mechanical and electrical challenges in configuring the TSG. The *Barcelona Express* is currently recording constant measurements that are reported to a computer on its bridge. Real-time TSG data transmission will soon be implemented on the ship, increasing the number of vessels with this capability participating in SOOP.

A large portion of the SOOP TSG operation is conducted in support of efforts to carry out a global inventory of carbon dioxide levels in the oceans, a project led at AOML by Dr. Rik Wanninkhof. Installation of the TSG aboard the *Barcelona Express* was part of this effort. A pCO₂ system for automated carbon dioxide sampling is currently being installed on the *Barcelona Express* to aid in monitoring the exchange of carbon dioxide between the ocean and atmosphere.



Following the installation of a thermosalinograph aboard the *Barcelona Express*, Kevin Sullivan and Denis Pierrot perform a logistical survey to prepare the vessel for the installation of a pCO₂ system that will gather ocean carbon data.

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For more information contact:

Hector Casanova
2009 CFC Coordinator

(305) 361-4544
Hector.Casanova@noaa.gov

MPOWIR

Mentoring Physical Oceanography
Women to Increase Retention

NOAA's new MPOWIR Internship program seeks to familiarize junior scientists in the field of physical oceanography with the research conducted at NOAA labs and to enable NOAA scientists to work with graduate students on projects of joint interest. Two junior scientists will be selected annually for internship at either AOML, GFDL, or PMEL. To learn more, visit the MPOWIR web site at www.mpowir.org

New Vessel Acquired to Support Coastal Ocean Research

Cheryl Brown, Ocean Chemistry Division

The Ocean Chemistry Division (OCD) would like to announce the arrival of its newest asset, the RV *S.F. Hildebrand*. Built in 1978, this U.S. Coast Guard Dauntless class 41-foot vessel originally served the USCG Group in Mayport, Florida. Its speed and maneuverability supported search and rescue operations, maritime law enforcement, port security, marine environmental protection, recreational boating safety, and coxswain and aircrew training missions.

In May 2001, USCG 41316 was transferred to NOAA's Center for Coastal Fisheries and Habitat Research (CCFHR) in Beaufort, North Carolina. There the vessel was renamed the RV *S.F. Hildebrand* in honor of Samuel Hildebrand, a noted ichthyologist and former director of the Beaufort Laboratory. The Center used the *Hildebrand* for a variety of diving operations and coastal fisheries research projects.

Now a part of AOML, the *Hildebrand* will continue its research-related service as a platform for OCD's Florida Area Coastal Environment (FACE) program and other coastal research projects. FACE is primarily concerned with anthropogenic discharges in Florida's coastal ocean, including treated wastewater releases that flow into the coastal ocean and adjacent water bodies. The program seeks to understand the many controlling oceanographic and coastal environmental factors that impact Florida public health and coastal biota, and to provide this knowledge to the area's environmental regulators, resource managers, utility operators, and the public. The *Hildebrand* is equipped with twin diesel engines fueled by biodiesel, an enclosed cabin that can house up to 10 individuals, and an A-frame capable of supporting a conductivity-temperature-depth (CTD) rosette for gathering oceanographic samples.

Thanks go out to Dennis Donahue, the NOAA-Office of Oceanic and Atmospheric Research Small Boat Program representative, who first brought the *Hildebrand* to our attention. By acquiring the vessel through a direct property transfer between CCFHR and AOML, both time and costs were significantly reduced. We would also like to recognize the USCG personnel stationed at Tybee Island, Georgia and Ft. Pierce, Florida. Their resources, expertise, and hospitality greatly assisted in the safe passage of the *Hildebrand* from Beaufort, North Carolina to her new home port in Miami, Florida. Last but not least, thanks go to Dr. David Johnson, CCFHR Director, for generously allowing Roger Mays, the *Hildebrand's* operator for the past eight years, to accompany the AOML crew on their journey south and impart his experience and knowledge of the vessel to LTJG Lecia Salerno (NOAA Corps) and Joe Bishop of OCD.

The trip was successful and can be attributed to good planning that included assembling a qualified boat crew and gaining inter-agency cooperation. Shore and logistical support were provided by Cheryl Brown (myself), Emy Rodriguez, and Thomas Carsey. Although the seas were a bit rough the night before the *Hildebrand* departed Beaufort due to the passage of Tropical Storm Danny, she nevertheless arrived safely in Miami on September 3rd after a journey of 728 nautical miles.



The RV *S.F. Hildebrand* arrived safely in Miami, Florida on September 3rd after completing a five-day journey of 728 nautical miles from Beaufort, North Carolina.



Crew of the RV *S.F. Hildebrand*: NOAA Corps officer LTJG Lecia Salerno, Joe Bishop, and Cheryl Brown, all of AOML, along with Roger Mays of NOAA's Center for Coastal Fisheries and Habitat Research.

The South Florida Federal Executive Board (FEB) celebrated its 40th anniversary on September 17th by hosting a luncheon at the Rusty Pelican restaurant on Virginia Key. More than 100 employees representing an assortment of Federal agencies attended.

AOML was the highlighted agency, and Judith Gray, AOML's Deputy Director, made an invited presentation about AOML's research, its importance to south Florida, and NOAA's mission of environmental stewardship. Howard Friedman of AOML was also an invited speaker and made a brief presentation about his experiences in working with the FEB over the past 30 years.



Left: Outgoing FEB chairman Ron Demes (Executive Director, Key West Naval Air Station), presents Howard Friedman of AOML with an award in recognition of his service to the FEB as treasurer and as a member of its Board of Directors. Right: Incoming FEB chairman, Darrell Roberts (Technical Operations Manager, Federal Aviation Administration), presents Judith Gray of AOML with an award in recognition of her service as the chairperson of the FEB's Pandemic Influenza Subcommittee.

As part of the proceedings, Howard Friedman was re-elected as the FEB treasurer and received an award in recognition of his numerous contributions in support of the FEB. Judith Gray was also presented an award for her service as the chairperson of the FEB's Pandemic Influenza Subcommittee. Evan Forde of AOML was recognized for his educational outreach activities in the south Florida community.

Following the luncheon, several FEB Board of Directors and FEB members visited AOML for a tour of the facility and to learn more about the Laboratory's research.

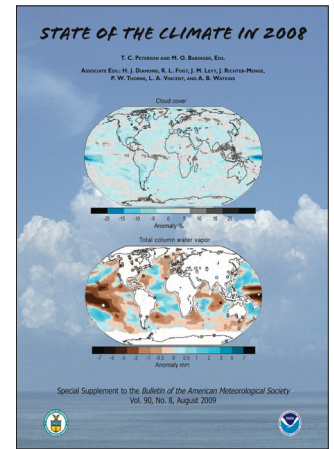
Report Documents Global Weather and Climate in 2008

The nineteenth in a series of annual reports that document the planet's global weather and climate has been published as a supplement to the August 2009 issue of the *Bulletin of the American Meteorological Society*. The report, *State of the Climate in 2008*, describes and analyzes the weather and climate events that occurred in 2008. It places them into an accurate historical perspective with a particular focus on unusual or anomalous events. Thomas Peterson of NOAA's National Climatic Data Center and Molly Baringer of AOML's Physical Oceanography Division served as co-editors on this international project.

More than 280 authors from every continent and a variety of research groups collaborated and contributed to the report, shared data and insights, and described the observed changes in climate from different perspectives. AOML's participation included the contributions of seven researchers who served as co-authors on the following sections of the report:

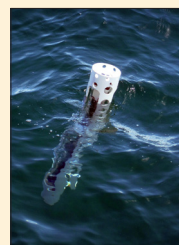
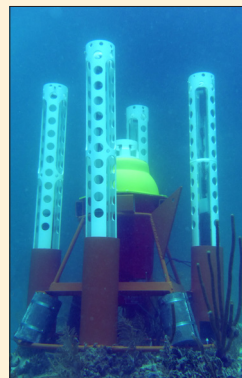
- *Global Ocean Carbon Cycle*—Rik Wanninkhof
- *Meridional Overturning Circulation*—Molly Baringer and Christopher Meinen
- *Ocean Heat Content*—Claudia Schmid and Gustavo Goni
- *Surface Current Observations*—Rick Lumpkin and Gustavo Goni
- *Tropical Cyclone Heat Potential*—Gustavo Goni
- *Tropical Cyclones: Atlantic Basin*—Stanley Goldenberg

The report includes an introductory summary that describes the most notable features of the climate in 2008. In particular, 2008 began with a strong La Niña episode that ended in June. Globally, the mean temperature in 2008 was slightly cooler than that in 2007; however, it still ranks within the 10 warmest years on record. The 2008 Atlantic hurricane season was the 14th busiest on record and the only season ever recorded with major hurricanes developing each month from July through November. The full report can also be found at <http://www.ncdc.noaa.gov/oa/climate/research/2008/ann/bams/>.



Researchers with AOML's Physical Oceanography Division conducted a successful proof-of-concept field test for a new deep ocean data retrieval system on September 8th. Developed at AOML, the Adaptable Bottom Instrument Information Shuttle System, ABIISS, enables scientific instruments on the ocean floor to send their data to the surface via expendable data pods. The data pods are released on a programmable schedule and float to the sea surface where they transmit their data via satellite. ABIISS has the potential to save significant amounts of financial and personnel resources by reducing the amount of ship time needed to support and maintain ocean time series measurement sites. Principle funding for the project was provided by the Assistant Administrator's Discretionary Fund of

NOAA's Office of Oceanic and Atmospheric Research. Additional funding to support the one-day cruise aboard the R/V *F. G. Walton Smith* in the Straits of Florida was provided by NOAA's Office of Climate Observations.



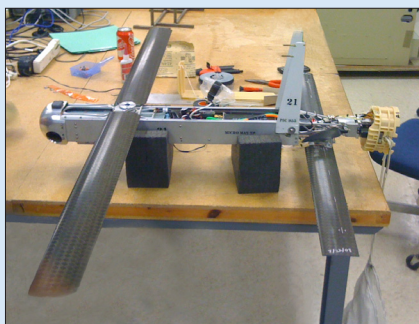
Far left: Four prototype data pods were configured and inserted into the frame of a pressure inverted echo sounder (PIES). The instrument was deployed in the Straits of Florida to test the new ABIISS technology.

Left: The ABIISS' expendable data pods are released from the ocean floor and float to the sea surface where their data are transmitted via satellite.

Robotic Hurricane Aircraft Successfully Tested

AOML hurricane researchers and NOAA-Aircraft Operations Center personnel, in partnership with staff from BAE Systems and the Navy, completed the first test flight of an unmanned aircraft system (UAS) from aboard a manned aircraft on Sunday, September 20th.

The Coyote, a mini-unmanned aircraft, was launched from NOAA's P-3 hurricane reconnaissance aircraft over the Gulf of Mexico at an altitude of 10,000 feet via a free-fall parachute. After Coyote completed its launch sequence, as programmed, it navigated along a pre-determined flight pattern at 1,000 feet.

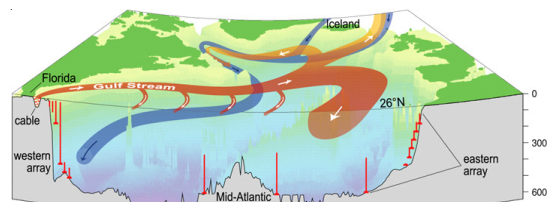


During its 49-minute flight, the Coyote successfully completed a loss of communications demonstration, communication range tests at three altitudes, spiral maneuvers, and flight at altitudes as low as 64 feet above the ocean surface. The P-3 aircraft circled above the UAS at 10,000 feet and launched four dropsondes for post-flight comparisons with the meteorological data obtained from the Coyote autopilot and dropsondes.

All objectives for the test flight and demonstration were met. The Coyote is currently under development by BAE for use by the Navy. It is also being adapted for hurricane research data collection efforts. Unmanned aircraft have the potential for gathering critical observations from the lower levels of the hurricane environment where the winds are strongest, areas too dangerous for manned aircraft to safely venture.

Recent Meetings Highlight the Atlantic's Role in MOC

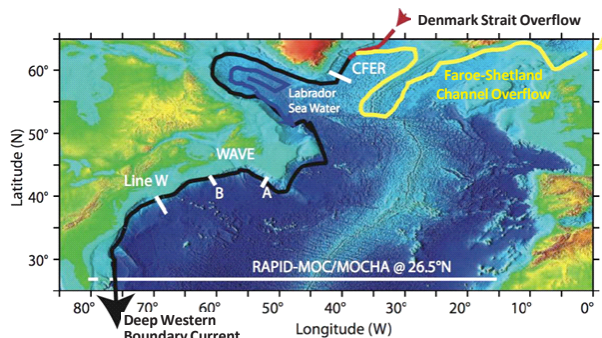
The first annual U.S. Atlantic Meridional Overturning Circulation (AMOC) meeting was held in Annapolis, Maryland on May 4-6, 2009; Molly Baringer of AOML's Physical Oceanography Division served as a co-convenor. This new MOC program, together with the U.S. Climate Change Science Program and international partners, aims to improve the understanding, observations, and prediction of the AMOC's variability with the goal of characterizing its potential impacts on climate. Contributions from more than 100 U.S. and international participants can be found at www.atlanticmoc.org/AMOC2009agenda.php. NOAA scientists and affiliates contributed more than 20 presentations that included AOML's contribution to the U.K. RAPID (Rapid Climate Change)/U.S. MOCHA (Meridional Overturning Circulation and Heatflux Array) mooring array at 26°N which spans the Atlantic basin at full depth and has provided the only direct measurements of the AMOC.



Schematic of measurement components for the U.K. RAPID/U.S. MOCHA observing system designed to measure the Atlantic Meridional Overturning Circulation (courtesy of Louise Bell/Neil White, Commonwealth Scientific Industrial Research Organization).

A South Atlantic Meridional Overturning Circulation (MOC) meeting in Paris, France on July 1-2, 2009 fostered collaborations and established recommendations for a monitoring system of the meridional heat and mass transports in the South Atlantic and inter-ocean exchanges as a component of the MOC. This meeting followed up on previous international meetings held in 2003 and 2007. Workshop presentations ranged from a summary of recent observations in the South Atlantic to modeling results that demonstrate substantial water mass transformations occur within the South Atlantic basin in regions of high variability. The main recommendation was for work to begin on the design of a South Atlantic observing system for the MOC, with both the specific parameters needed for measurements and the best locations to observe them defined. Details of these recommendations were presented at the Ocean Obs '09 meeting in Venice, Italy on September 21-25, 2009. The next South Atlantic MOC meeting will be held in Brazil on May 10-14, 2010.

Several NOAA researchers attended the United Kingdom's Natural Environment Research Council (NERC) RAPID-WATCH annual meeting in Edinburgh, Scotland on July 6-9, 2009. Michael McPhaden of NOAA's Pacific Marine Environmental Laboratory was an invited speaker; Molly Baringer and Christopher Meinen of AOML, as well as James Todd of NOAA's Climate Program Office, also attended. The RAPID-WATCH program aims to deliver a robust and scientifically credible assessment of the risks to the climate of the U.K. and Europe arising from a rapid change in the Atlantic Meridional Overturning Circulation (MOC). The program also seeks to assess the need for a long-term observing system that can detect major MOC changes, narrow uncertainties in projections of future change, and possibly be the start of an early warning prediction system. Several NOAA-sponsored programs such as the Western Boundary Time Series program play a key partnership role in the RAPID-WATCH program.



NERC/U.K. funded programs that measure a portion of the Deep Western Boundary Current (black line) include measurements off Greenland, the WAVE array, and the RAPID-MOC/MOCHA array at 26.5°N. International partners on many of these programs include NOAA and the National Science Foundation.

Congratulations

Rik Wanninkhof, an oceanographer with AOML's Ocean Chemistry Division, is the recipient of a 2009 Department of Commerce Silver Medal awarded for scientific/engineering achievement. Wanninkhof is a member of a group that was recognized "for providing timely ocean information and capacity for improved global monitoring and management of coral reef ecosystems relative to climate change."

It's a Girl!

LT Hector Casanova, AOML's Associate Director, and his wife Luisette are the proud parents of their first child, a daughter. Mariela Isabel Casanova was born in Miami on October 18, 2009 and weighed in at 6 lbs. 3 oz. She and her parents are healthy, happy, and doing well.



Farewell

Dr. David Palmer, a physicist with AOML's Ocean Chemistry Division, retired in September after 34 years of federal service. Palmer began his federal career at the Naval Research Laboratory in the mid 1970s. He joined AOML in the early 1980s to conduct research on underwater acoustics.



During his years at AOML, Palmer played a role in many significant projects. He co-developed a sonar device for imaging hydrothermal plumes at seafloor spreading centers, as well as developed an underwater acoustics technique for monitoring El Niño events. Palmer served as the senior scientist for the research group that traveled to Ascension Island in 1991 to record the Heard Island Feasibility Test signals. This experiment was conducted to test the ability of man-made acoustic signals to travel throughout the world's oceans.

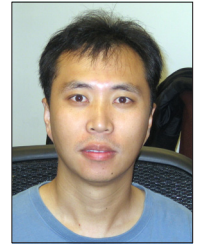
More recently, Palmer was involved in a number of international projects including a joint effort with researchers in the Ukraine to rescue Black Sea hydrographic data. In 2008, he co-edited a 1,000-page book entitled *History of Russian Underwater Acoustics* about the development of underwater acoustics in the former Soviet Union and, later, in Russia.

Welcome Aboard

David Lindo joined the staff of AOML's Physical Oceanography Division in September as a CIMAS research associate. Lindo is a doctoral student from Barcelona, Spain who recently received an educational grant from the Spanish Royal household. He will work with Dr. Gustavo Goni and Nelson Melo. Lindo's dissertation aims to assess and predict temporal and spatial oceanographic changes in the Gulf of Mexico and Mediterranean Sea, as well as changes in the ability of these ecosystems to provide fisheries resources.



Dr. Hailong Liu joined the staff of AOML's Physical Oceanography Division in September as a CIMAS post-doctoral associate. Liu recently received his Ph.D. in physical oceanography from the University of Maryland's Marine Estuarine and Environmental Sciences Graduate Program/Department of Atmospheric and Oceanic Science. He will work with Dr. Chunzai Wang on climate modeling research related to the Atlantic warm pool and tropical Atlantic Ocean.



Jonathan Molina joined the staff of AOML's Physical Oceanography Division in August as a CIMAS research associate to support the Division's global oceanographic data collection efforts through the Ship of Opportunity Program (SOOP). Molina will work primarily on activities related to the data flow and processing of the expendable bathythermograph (XBT) component of SOOP. He holds a M.S. degree in marine, earth, and atmospheric sciences (with a specialization in physical oceanography) from North Carolina State University.



Eduardo Ramos joined the Physical Oceanography Division in September as an information technology specialist. Ramos will work with Reyna Sabina to provide support for the Division's U.S. Argo Data Center. He will also provide database support for the Global Drifter Center and the SEAS XBT program's real-time quality control operations. Ramos holds a B.S. degree in management information systems from the Jose A. Echevarria Polytechnic Institute of Havana, Cuba.



Debra Willey joined the staff of AOML's Physical Oceanography Division in September as a CIMAS senior research associate. Willey will provide programming and analysis support for ocean modeling at AOML. She will work with Dr. George Halliwell in performing Observing System Simulation Experiments to improve ocean model initialization for coupled tropical cyclone forecast models. Willey holds a M.A. degree in marine affairs and policy from the University of Miami's Rosenstiel School.



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Travel

Molly Baringer and Gustavo Goni attended the Building Coalitions and Fostering Teamwork workshop in Seattle, Washington on September 8-10, 2009.

Geun-Ha Park, Tsung-Hung Peng, and Rik Wanninkhof attended the 8th International Carbon Dioxide Conference in Jena, Germany on September 13-19, 2009.

Molly Baringer, Silvia Garzoli, Gustavo Goni, George Halliwell, Rick Lumpkin, Christopher Meinen, Claudia Schmid, Rik Wanninkhof, and Jia-Zhong Zhang attended the Ocean Obs'09 Conference in Venice, Italy on September 21-25, 2009.

Bob Atlas participated in the National Workshop on Mesoscale Probabilistic Prediction in Boulder, Colorado on September 23-24, 2009, visited NOAA's Earth System Research Laboratory in Boulder on September 25, 2009, and attended the OAR/National Weather Service Summit in Chicago, Illinois on October 14-15, 2009.

Shaun Dolk, Rick Lumpkin, Mayra Pazos, and Erik Valdes attended the 25th Session of the Data Buoy Cooperation Panel in Paris, France on September 28-October 1, 2009.

Judith Gray participated in the first Joint Executive Meeting between NOAA and India's Ministry of Earth Sciences in New Delhi, India on October 1-8, 2009.

Michael Jankulak and Lecia Salerno provided maintenance for the La Parguera ICON (Integrated Coral Observing Network) station in La Parguera, Puerto Rico on October 5-9, 2009.

Robert Rogers attended the Second International Workshop on Tropical Cyclone Landfall Processes in Shanghai, China on October 19-23, 2009.

James Hendee, Derek Manzello, and John Halas performed a site survey for a ICON (Integrated Coral Observing Network) station in Lao Lao Bay and the Managaha Marine Conservation Area of Saipan on October 15-19, 2009.

Nelson Melo attended the 13th Latin American Congress on Marine Sciences in Havana, Cuba on October 26-30, 2009.

Recent AOML Publications*

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Bell, G.D., E. Blake, **S.B. GOLDENBERG**, T. Kimberlain, C.W. Landsea, R. Pasch, and J. Schemm, 2009: Tropical cyclones: Atlantic basin. In *State of the Climate in 2008*, T.C. Peterson and M.O. Baringer (eds.). *Bulletin of the American Meteorological Society*, 90(8):S79-S83.

GONI, G.J., and J.A. Knaff, 2009: Tropical cyclone heat potential. In *State of the Climate in 2008*, T.C. Peterson and M.O. Baringer (eds.). *Bulletin of the American Meteorological Society*, 90(8):S54-S57.

Johnson, G.C., J.M. Lyman, J.K. Willis, S. Levitus, T. Boyer, J. Antonov, **C. SCHMID**, and **G.J. GONI**, 2009: Ocean heat content. In *State of the Climate in 2008*, T.C. Peterson and M.O. Baringer (eds.). *Bulletin of the American Meteorological Society*, 90(8):S49-S52 (2009).

Katzberg, S.J., and **J.P. DUNION**, 2009: Comparison of reflected GPS wind speed retrievals with dropsondes in tropical cyclones. *Geophysical Research Letters*, 36(17):L17602, doi:10.1029/2009GL039512.

LUMPKIN, R., **G.J. GONI**, and K. Dohan, 2009: Surface current observations. In *State of the Climate in 2008*, T.C. Peterson and M.O. Baringer (eds.). *Bulletin of the American Meteorological Society*, 90(8):S57-S59.

Peng, G., Z. Garraffo, **G.R. HALLIWELL**, O.M. Smedstad, **C.S. MEINEN**, V. Kourafalou, and P. Hogan, 2009: Temporal variability of the Florida Current transport at 27°N. In *Ocean Circulation and El Niño: New Research*, J.A. Long and D.S. Wells (eds.). Nova Science Publishers, New York, 119-137.

Peterson, T.C., and **M.O. BARINGER**, Editors, 2009: State of the climate in 2008. *Bulletin of the American Meteorological Society*, 90(8):S1-S196.

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