

AOML

Miami, Florida

Keynotes

September-October 2008

Atlantic Oceanographic and Meteorological Laboratory

Volume 12, Number 5

Combined Federal Campaign

The annual CFC program enables federal employees to support thousands of non-profit charitable organizations and agencies through payroll deductions

CFC 2008:

November 3 – November 21

Kickoff Breakfast Meeting

10:00 a.m.

November 3rd

Speaker from the
Miami Rescue Mission

Erica Rule
AOML CFC Coordinator

Erica.Rule@noaa.gov – 305-361-4541

Valuable Data Gathered in Hurricane Field Program Effort

Sim Aberson, Hurricane Field Program Director, Hurricane Research Division

The 2008 NOAA Hurricane Field Program is nearing a close as the Atlantic hurricane season winds down. This year has been a near record year for the Hurricane Research Division (HRD) and its partners. The two WP-3D and the G-IV aircraft flew a combined total of 605.4 hours to gather data in Hurricanes Noel (at the end of the 2007 season), Dolly, Gustav, and Ike, Tropical Storms Fay and Kyle, and in a disturbance near the South Carolina coast that did not develop into a tropical depression.

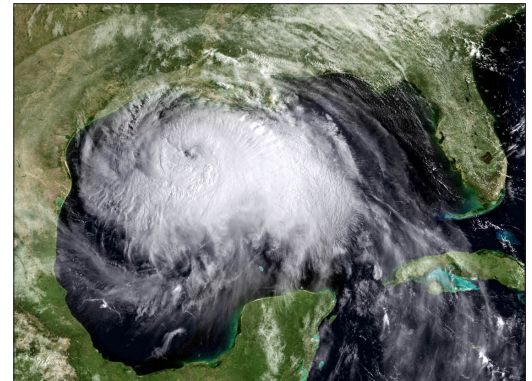
The main goal of this year's program was to document the life cycle of tropical cyclones, especially changes to their structure and intensity. HRD once again partnered with NOAA's Aircraft Operations Center at MacDill Air Force Base, the Environmental Modeling Center (EMC), National Hurricane Center (NHC), and the National Environmental Satellite, Data, and Information Service to collect these data. HRD also partnered with both AOML's Ocean Chemistry and Physical Oceanography Divisions to collect valuable atmospheric ozone and oceanic measurements.

Some of the program's more notable accomplishments include:

- Pre- and post-storm ocean surveys, in which airborne expendable bathythermographs (AXBTs) were deployed throughout the Gulf of Mexico, were conducted for Hurricanes Gustav and Ike. The effort included coordination with AOML's Physical Oceanography Division, the University of Washington, Scripps Institute of Oceanography, the Air Force 53rd Weather Reconnaissance Squadron, and CARCAH (Chief Aerial Reconnaissance Coordination, All Hurricanes) to deploy floats and drifters ahead of each storm. Subsequent aircraft missions flew over the arrays while they experienced hurricane conditions. A total of 453 AXBTs were deployed during the season, and the data were used to initialize and verify ocean models.

- Landfall flights coordinated with mobile teams from the University of Florida (Florida Coastal Monitoring Program), Texas Tech University, Louisiana State University, the University of Alabama at Huntsville, and the Center for Severe Weather Research were conducted in Hurricanes Gustav and Ike. These teams collected polarimetric and Doppler radar data and high-frequency wind data in a wide area near the landfall locations of Gustav and Ike. Along with the WP-3D data, these data will help to document changes in the boundary layer in onshore flow during landfall.

(continued on page 2)



GOES-12 satellite image of Hurricane Ike on September 12th before the massive storm made landfall along the Galveston, Texas coastline.



AOML is an environmental research laboratory of NOAA's Office of Oceanic and Atmospheric Research located on Virginia Key in Miami, Florida



On-Demand High Performance Computing and High-Resolution Models Tested

A priority for NOAA's Hurricane Forecast Improvement Project (HFIP) is to measurably improve track and intensity forecasts in the next 10 years. The HFIP plan calls for the development of new high-resolution models to allow for such improvements. A recent collaboration with university and NOAA partners has demonstrated a real-time, on-demand computing capability using experimental high-resolution global and regional models. The models were run on Ranger, the University of Texas Advanced Computing Center's (TACC) high performance computer, with data from four 2008 Atlantic storms.

This HFIP/TACC effort produced real-time experimental forecasts from high-resolution global (ESRL's FIM at 15 km) and regional (NCAR's Advanced Research WRF or ARW at 1.5 km) models that were used to investigate the predictability of tropical cyclone tracks and intensity. These tests represent the first time NOAA has used such high-resolution runs for hurricane guidance. Comparison of the FIM model forecasts run at 15 and 30 km showed that higher resolution clearly improved hurricane track forecasts for the four storms tested.

Working with the National Coordination Office (NCO) and the National Hurricane Center (NHC), a method was crafted by which the global model fields are automatically obtained at TACC, Doppler radar observations are processed and downloaded from the NOAA WP-3D aircraft, the research models are run, output products are generated for the forecasters, and the products are transferred to NHC via NCO for future evaluation.

Portions of this procedure were tested during Hurricane Dolly and Tropical Storm Fay; a test of the complete system was conducted during Hurricanes Gustav and Ike. Initial results are promising and performed well within range of the operational models currently used by the National Centers for Environmental Prediction.

(continued from page 1)

• Eighty-three three-dimensional analyses of airborne Doppler radar data were transmitted to NHC and EMC in real-time. Additionally, radar data transmitted during Hurricanes Gustav and Ike provided the first real-time assimilation of airborne Doppler radar data into a numerical model, accomplished in collaboration with scientists at Penn State University, Texas A&M, and the University of Texas' Advanced Computing Center.

• Flights were conducted over coastal Louisiana and Texas before Hurricane Ike's landfall to use the new scanning radar altimeter to obtain high-quality storm surge measurements along the coast.

• Maneuvers to test the feasibility of adding a second stepped-frequency microwave radiometer (SFMR) were conducted, and measurements in shallow water were obtained to validate SFMR wind retrievals there.

• The Aerosonde unmanned aircraft was able to sample Hurricane Noel at the end of the 2007 Atlantic hurricane season with support from NOAA's manned aircraft.

• A total of 981 dropwindsondes were released by NOAA aircraft.

• A total of 222 H*Wind surface wind analyses were produced in real-time.

• A total of 59 real-time runs of the new Hurricane Research System model developed at HRD were produced.

The data obtained during all these operations will be examined during the off-season by AOML scientists and their collaborators as part of the Hurricane Forecast Improvement Project whose goal is to accelerate improvements to hurricane forecasts in the Atlantic, especially intensity forecasts.



NOAA's WP-3D aircraft continue to serve as the cornerstone of HRD's annual Hurricane Field Program activities.

Silvia Garzoli, Director of AOML's Physical Oceanography Division, was an invited speaker at the 2008 SACNAS (Society for Advancement of Chicanos and Native Americans in Science) National Conference in Salt Lake City, Utah on October 9-12th. This year's conference theme was The International Polar Year: Global Change in our Communities. Garzoli's presentation, *The Global Ocean and Climate Change*, focused on the Meridional Overturning Circulation (MOC), NOAA's climate observing system, and AOML's efforts to monitor and understand the Atlantic MOC. Additionally, she participated in mentoring sessions for students interested in pursuing careers in oceanography.

Ernesto Muñoz, a post-doctoral researcher with the Physical Oceanography Division, also attended the conference. Muñoz served as a poster judge, a mentor, and exhibitor at the booth hosted by NOAA's Office of Oceanic and Atmospheric Research (OAR). Pictured from left to right are Ms. Georgia Madrid, an OAR equal employment opportunity specialist, Dr. Silvia Garzoli, and Dr. Ernesto Muñoz during a networking/student poster reception.





August and September were hectic months for AOML's Hurricane Research Division (HRD). A string of storms in the Atlantic kept researchers busy as they conducted the annual NOAA Intensity Forecast Experiment (IFEX) to gather in-situ and remotely-sensed observations from the surrounding environment and inner core of tropical cyclones in support of operational needs. After having participated in 10 research flights into Tropical Storm Fay, which drenched portions of Florida with 30 inches of rain, HRD researchers participated in more than 30 IFEX missions in a five-week period into Hurricane Gustav, Hurricane Hanna, Hurricane Ike, and Tropical Storm Kyle aboard NOAA's WP-3D and Gulfstream-IV aircraft for use in operations and research. Joe Klimavicz, NOAA's Chief Information Officer and Director of High Performance Computing and Communications, participated in a research mission into Hurricane Gustav on August 31st. Dr. Rick Spinrad, Assistant Administrator of NOAA's Office of Oceanic and Atmospheric Research, joined HRD researchers and the flight crew from NOAA's Aircraft Operations Center aboard one of the WP-3D aircraft for a mission into Hurricane Ike on September 10th. Pictured above are photos taken from the various research flights into Gustav, Hanna, and Ike.

Summit Expands Collaborative Efforts

NOAA's Office of Oceanic and Atmospheric Research (OAR) and National Environmental Satellite, Data, and Information Service (NESDIS) held a Summit on September 25-26. Senior leaders and technical experts that included Drs. Frank Marks and Gustavo Goni from AOML met in Suitland, Maryland to review current and potential collaborative activities. Dr. Bob Atlas, Director of AOML, and Dr. Alfred Powell, Director of the NESDIS Center for Satellite Applications and Research, organized the event with the assistance of Steve Goodman and Stan Wilson of NESDIS and Mike Uhart of OAR.

The following topics were discussed:

- *Sea level rise:* Current collaborations are to improve model predictions and to evaluate the separate contributions by added mass and the steric effect.

- *Ocean heat content for tropical cyclone intensification studies and forecasts:* Current collaborations are to improve estimates using a combination of satellite and hydrographic observations. Future work will incorporate additional modeling techniques.

- *Sea surface salinity:* Future collaborations will support data calibration and validation efforts during the first phase of the SMOS (soil moisture and ocean salinity) and Aquarius satellite missions.

- *Atlantic Meridional Overturning Circulation (AMOC):* Discussions centered on the impact of using improved wind fields along with observations from the current ocean observing system to better understand and monitor different components of the AMOC.

- *Statistical-dynamical models:* Current collaborations are to develop advanced hurricane dynamical model evaluation and verification techniques.

- *Hurricane observing system:* Current collaborations are to develop strategies to improve forecasts and initial conditions for hurricane models.

- *Water budget observations:* Future collaborations will improve observations through the use of global precipitation measurements.

- *Research requirements and analysis of alternatives:* Future collaborations will improve the ability to develop operational and research requirements and to analyze alternatives.

Beach Study Aims to Reduce Public Health Risks

Beaches are a popular destination for local Floridians and vacationers alike in the Miami area. To ensure the public's health at these recreational destinations, beach water is regularly tested for levels of bacteria. The tests are conducted by the Florida Department of Health to detect when beach water may pose a health risk.

Researchers with AOML's Environmental Microbiology Laboratory play an active role in collaborating with the Environmental Protection Agency (EPA), Florida Department of Health, the University of Miami's Oceans and Human Health Center, and a variety of other investigators from public and private institutions around the state to more quickly identify when beach water contains disease-causing pathogens, as well as which pathogens are most likely to cause illness.

The program, nicknamed BEACHES, is a study of common water-borne diseases that typical bathers might contract while at the beach. Examples of illnesses include gastro-intestinal distress, eye and ear infections, and skin irritations and rashes. The location of the study is Hobie Cat Beach along the Rickenbacker Causeway of Virginia Key.

After a baseline health assessment, study participants spend about an hour at the beach either sitting on the sand as a control group or swimming in the water as a test group. Samples are taken of the beach water for analysis. The general health of the participants is then recorded one week later. The goal of the program is to determine linkages between any ailments and elevated levels of bacteria that tend to indicate disease-causing microbes.

AOML's Environmental Microbiology Laboratory conducts assessments of the microbes in recreational waters and beach sand using EPA standard methods for identifying bacteria that tend to be present when there is fecal contamination. Such EPA standard tests identify bacteria that indicate the possible presence of pathogens, as opposed to measuring the actual disease-causing pathogens. In addition to these tests, the BEACHES program also uses new assays developed in labs like AOML that use molecular microbial source tracking to specifically identify the disease-causing pathogens, as well as the source of the pathogens such as dog, bird, or human waste.

The BEACHES program is an ongoing study aimed at comparing the actual incidence of disease alongside the EPA bacterial indicators and newly developed molecular assays. Field sampling for the study was recently completed. AOML researchers are now conducting molecular analysis on archived samples. Traditional and alternate fecal indicator bacteria and microbial pathogens are being tested to develop a better understanding of the relationship between the abundance and persistence of disease-causing pathogens and environmental parameters. AOML hopes to increase the ability for natural resource managers to more accurately assess the levels of non-point source pollution and thereby reduce the incidence of bather illness.



Dr. Chris Sinigalliano, Director of AOML's Environmental Microbiology Laboratory, oversees the development, adaptation, and deployment of molecular assays, sensors, and methodologies for improved microbial water quality assessment.

Oktober'ween Party

BooBoo Staging Area

October 31st

12 Noon

\$5.00 + Dessert

Wear Yer Costume

Contact Neal Dorst for more info (305-361-4311-Neal.Dorst@noaa.gov)

As Hurricane Gustav entered the Gulf of Mexico, NOAA's Global Drifter Program worked with the Air Force Reserve's 53rd Reconnaissance Squadron "Hurricane Hunters" to deploy 12 ocean drifters off the Louisiana coast. The drifters measure wind direction and speed, barometric pressure, surface temperature, and subsurface temperatures to a depth of 150 m. The array also included subsurface profiling floats funded by the National Science Foundation. Gustav passed directly over the array during the evening hours of August 31st, while AOML's Hurricane Research Division conducted a flight aboard NOAA's P-3 aircraft to survey storm conditions directly over the buoys.

Two of the P-3's missions were pre- and post-storm ocean surveys conducted in collaboration with the Environmental Modeling Center (EMC), University of Miami, and the University of Rhode Island. Expendable bathythermographs were deployed from the aircraft to profile the warm waters of the upper ocean mixed layer to help determine heat energy available to the storm. The ocean data from these pre- and post-storm missions will be used in conjunction with the drifter data gathered in Hurricane Gustav.

All data were transmitted in real time to the Global Telecommunications System and made available to forecasters at the National Hurricane Center and at EMC for model ingest. Data from the buoys will be used for model simulations to test the impact of ocean data on coupled atmosphere-ocean models. The overall goal of these efforts is to increase the capability for understanding and predicting intensity change in hurricanes.

America's Toughest Jobs...NOAA's Hurricane Hunters

Erica Rule, Office of the Director

On August 30, 2008, I received an opportunity unique to NOAA and given to only a handful of people: flying into a hurricane onboard NOAA's P-3 hurricane hunter aircraft. Hurricane Gustav was the target storm for the mission, a category-three hurricane located just south of Cuba.

The primary goal of our flight was to obtain horizontal and vertical scans of Gustav's structure using the Doppler radar located in the aircraft's tail. Eric Uhlhorn, a hurricane researcher with AOML's Hurricane Research Division and the lead scientist on this flight, developed a flight track that allowed us to sample all quadrants of the hurricane while penetrating Gustav's eye three times. These observations, paired with surface wind measurements and sea surface temperatures, were just a few of the many parameters measured in Gustav, all transmitted in near-real time from the aircraft to improve forecasts and allow scientists to develop the next generation of hurricane models.

My path to this opportunity began several months ago during a discussion with Dr. Jim McFadden, chief of flight programs at NOAA's Aircraft Operations Center (AOC) in Tampa, Florida. "You should see what it's like to fly in hurricanes, and I don't mean just the turbulent experience of passing through a hurricane eyewall," McFadden said. "These men and women regularly fly long multi-day missions, working odd hours, relocating with the aircraft when needed... It's not all about the thrill and excitement of hurricanes. This is a tough job, and they take it very seriously."

Becoming eligible to participate in a NOAA hurricane flight is not a simple process. As part of NOAA's commitment to the safety of its employees, I first had to complete a mandatory two-day flight safety training with the Federal Aviation Administration, a process that includes simulated survival training in a pool for four hours.

Once I got added to a mission, I drove from Miami to Tampa and was instructed to try and get some sleep: we would depart for AOC at 1 a.m. for our flight departure at 4 a.m. Right! I did manage a few hours of rest but was ready to go when the alarm clock rang. After the flight tracks had been planned by the pilots and navigator at AOC, we boarded N43RF, Miss Piggy, for our safety and plane-side briefings. The flight was piloted by CDR Mark Nelson, LCDR Karl Newman and LT Amelia Ehardt of the NOAA Corps. Our crew of 18 also included an incredible engineering group who meticulously maintain the aircraft and know every square inch of the instrumentation.

My job was to monitor the ocean probes deployed in and around Gustav. While not a terribly time-consuming task, it challenged me to maintain focus when we started passing through the outer rain bands and then the first eyewall penetration, all in the dark! Graupel-snow pellets that form when super-cooled droplets of water condense on a snowflake-pelted the fuselage and windows, a sign that Gustav was strengthening. The plane jolted as we flew through updrafts and downdrafts. Then dead calm. For about five minutes we passed through the eye, which in later passes would show a spectacularly clear blue sky above and turbulent ocean waves below. It was breathtaking.

I nodded in and out of sleep on the way back to AOC. Later that night I would be up to do it all again, as would the rest of the crew. The fatigue of working off schedule was taking its toll on me but all I could do was watch in amazement as many of the scientists would stay awake for a few more hours dealing with post-flight communications and planning for the next flight. I must say that I have always admired the work that our hurricane hunters conduct in the field. I now have a new level of appreciation for the immense effort that goes into planning for and participating in these flights, and my hat goes off to all of NOAA's hurricane team.



The science crew: Erica Rule, Eric Uhlhorn, and Jun Zhang, all of AOML. Photo courtesy of Paul Leighton.



AOML's Integrated Coral Observing Network (ICON) team is pleased to announce that data from two ICON stations are now being transmitted to the National Data Buoy Center (NDBC) to be shared with forecasting and numerical modeling centers worldwide and assimilated into operational weather and ocean models. These data are from the Salt River Bay, St. Croix, U.S. Virgin Islands (NDBC ID No. SRBV3) and La Parguera, Puerto Rico (NDBC ID No. LPRP4) stations. See the following, for example:



- <http://www.ndbc.noaa.gov/maps/Caribbean.shtml>
- http://www.ndbc.noaa.gov/station_page.php?station=lprp4
- http://www.ndbc.noaa.gov/station_page.php?station=srbv3

ICON stations are located at several reefs of interest in the Caribbean and collect local meteorological and oceanographic data relevant to coral bleaching and other coral phenomena. The near-real time data are made available via the web to researchers and natural resource managers globally.

This collaboration was originally suggested by Jack Beven of NOAA's National Hurricane Center, in email discussions following the installation of an ICON station in Jamaica last summer, as a way of getting ICON data into the National Weather Service operational data stream.

There followed a careful analysis of NDBC's meteorological data requirements and a re-engineering of the ICON station control programming to produce 1-minute and 10-minute data averages. This programming update was introduced at the St. Croix station in March, at the Puerto Rico station in July, and is expected to be installed at the Jamaica station by the end of 2008. AOML is grateful for the hard work and patience of Rex Hervey of NDBC in bringing this effort to fruition.

Mike Jankulak
Ocean Chemistry Division/ICON Team

Profiling Float Transmits Data after Two-Year Absence

An Argo profiling float is once again transmitting data after having drifted for more than two years beneath the surface of the Atlantic Ocean. Researchers with AOML's Physical Oceanography Division were pleasantly surprised this past June when float #39010 suddenly popped to the surface and transmitted its coordinates at 2.826°N, 7.154°W.

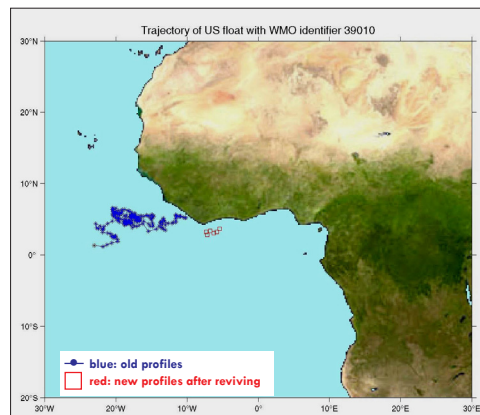
Argo PALACE float #39010 was launched in the Atlantic on January 18, 2000 at 1.01°N, 23.001°W and generated more than 200 temperature and salinity profiles before it stopped transmitting data in March 2006. Its last reported position in the Atlantic was close to the equator at 5.180°N, 10.201°W. PALACE floats are the predecessor of the APEX floats that currently comprise a large portion of the floats in Argo's global ocean-observing network.

The Argo program is an international effort to monitor the upper 2000 m of the global oceans through an array of free-drifting profiling floats. Upon release, the floats typically sink to a depth of about 1,000 meters where they remain submerged for 10-14 days. Before rising to the surface, the floats sometimes dip to 2000 m. As the floats descend and ascend, they gather temperature and salinity information. Once at the surface, the data are transmitted via satellite to a receiving center, and the floats sink again to begin their data-collection cycle anew.

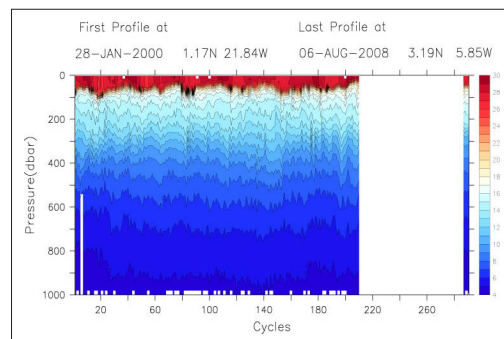
The most likely reason float #39010 stopped transmitting data was its inability to reach the surface due to the considerable density differences between the very warm surface waters near the equator and the cooler drifting waters at 1000 m. Overcoming this large change in density remains an engineering challenge, even with the newer float models. One possibility being explored by researchers is to modify APEX floats with nitrogen gas canisters to overcome the sizable density differences that exist in the equatorial region. Some float manufacturers are looking into other ways of overcoming this challenge that include using a more efficient type of pump to propel floats vertically through the water column. The Argo program has a goal that all floats eventually possess the capacity to profile to a depth of 2000 m.

NOAA maintains half of the global Argo network and supports the U.S. component of this international program. AOML, which serves as the Argo data center for the United States, conducts real-time quality control of raw float data obtained by satellite transmissions. The data are then distributed worldwide via the Global Telecommunications System and sent to the Global Argo Data Assembly Centers in Monterey, California and Brest, France.

In its almost 10 years in operation, the Argo ocean-observing network has improved estimates and forecasts of sea level rise and has contributed to improving seasonal climate forecasts, as well as providing new insights into hurricane activity. Since resurfacing, Argo float #39010 has completed ten temperature profiles. It is hoped the float will transmit many more profiles and continue to successfully reach the surface until its batteries fail.



Trajectory for PALACE float #39010 off the western coast of Africa. The float was deployed in January 2000 and went missing in March 2006 after it failed to return to the ocean surface and transmit its data. It finally resurfaced in June 2008.



Float #39010 generated more than 200 temperature and salinity profile plots after its deployment in the Atlantic Ocean in January 2000. It has generated an additional ten profile plots since resurfacing in June 2008.

Know the Plan!

AOML's Hurricane Preparedness and Recovery Plan outlines a course of action to secure the AOML grounds and facility for severe weather. Should a tropical storm or hurricane threaten south Florida, the Plan is implemented. The Plan requires the cooperation and support of all staff and can be viewed online at nuwave/intrapdf/hurrprep2008.pdf.

The following Coordination Team members are tasked with leading the effort to carry out the Plan during both preparatory and recovery phases for their respective Division or group. Staff are tasked with assisting team members in fulfilling their duties, as well as preparing and securing their individual offices and work areas.

Computer Networks and Services

- Robert Kohler
- Thomas Heeb

Hurricane Research Division

- Neal Dorst
- Shirley Murillo
- Joseph Griffin (alternate)

Ocean Chemistry Division

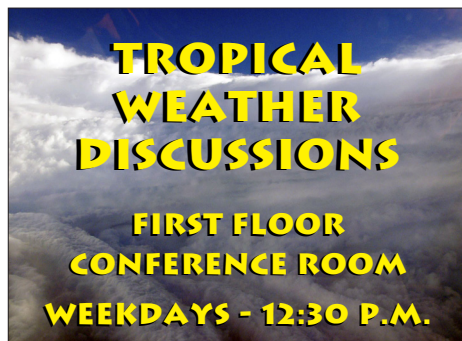
- Thomas Carsey
- Jules Craynock
- Michael Shoemaker
- Joseph Bishop (alternate)

Office of the Director

- Nancy Ash
- Gregory Banes
- Judith Gray
- Manuel Fraga (alternate)

Physical Oceanography Division

- Robert Roddy
- Pedro Pena
- Ulises Rivero (alternate)



Horizon Tiger Honored for Ship of Opportunity Contributions

Steve Noah of Olympic Computer Services in Seattle, Washington, recently visited the *Horizon Tiger* of Horizon Lines on behalf of the NOAA/AOML Ship of Opportunity Program (SOOP). The *Horizon Tiger* is one of five new ships acquired by Horizon Lines in early 2007 for their Pacific Far East service and replaces the *Horizon Pacific*, which had performed XBT (expendable bathythermograph) and drifter deployments for AOML for five years.

On this visit, Noah presented a plaque to Captain Dan Corn and his crew in appreciation and recognition of their invaluable contributions to SOOP. He also loaded four drifters and seven cases of XBTs aboard the ship and reviewed deployment instructions and equipment with Captain Corn.

In 2007, Noah installed an XBT system aboard the *Horizon Tiger* and trained the crew in the deployment of XBTs and drifter drops. Since then, the *Horizon Tiger* has made approximately 750 XBT drops and deployed 34 drifter buoys for AOML, covering four transect lines in their Pacific travels.

Noah began work as a NOAA contractor in May 2001. He now services SOOP vessels in Seattle and Tacoma, Washington, Portland, Oregon, and Vancouver, British Columbia, as well as providing occasional assistance with various NOAA and U.S. Coast Guard ships stationed in Seattle. NOAA currently has two SOOP vessels (*Horizon Tiger* and *Horizon Hawk*) based in the Puget Sound area that perform XBT and drifter buoy operations in the North Pacific between Japan and the United States.

SOOP is supported by both the World Meteorological Organization and Intergovernmental Oceanographic Commission. NOAA/AOML plays a role in the acquisition, deployment, and data transmission of 90% of the approximate 25,000 XBTs deployed annually to obtain temperature profiles of the sea surface down to a depth of 800 m. Additional information about SOOP can be found on the Physical Oceanography Division's web pages at www.aoml.noaa.gov/phod/goos/.



NOAA contractor Steve Noah presents a plaque of appreciation to Captain Dan Corn of the *Horizon Tiger* in recognition of contributions to NOAA's Ship of Opportunity Program.

Department of Commerce Secretary Carlos Gutierrez visited NOAA's National Hurricane Center (NHC) in Miami on September 17th to commend staff for the excellent forecast guidance provided to coastal communities during the passage and subsequent landfall of Hurricanes Gustav and Ike. Gutierrez spoke of the devastating economic impacts to commercial fishing industries along the Gulf coast, as well as the Federal government's efforts to provide hurricane disaster relief to the Gulf area. Gutierrez was given a tour of the NHC facility, discussed the 2008 hurricane season with hurricane specialists, and met with local NOAA leaders including Dr. Bob Atlas, AOML Director, Dr. Bonnie Ponwith, Director of the Southeast Fisheries Science Center, and Dr. Frank Marks, Director of AOML's Hurricane Research Division. Pictured above from left to right are Dr. Bob Atlas, Dr. Ed Rappaport, Deputy Director of NHC, Secretary Gutierrez, and Chris Burr of NHC.



Congratulations

Howard Friedman, Deputy Director of AOML's Hurricane Research Division, received a certificate of appreciation from the South Florida Federal Executive Board (FEB) for his dedication and service as the treasurer of the south Florida FEB during fiscal year 2008.

James Hendee, an oceanographer with AOML's Ocean Chemistry Division and principal investigator of NOAA's Coral Health and Monitoring Program, has been made a Board Member of the South Florida Jazz organization. Hendee originated the concept of Reef Fest, a non-profit venture, in October 2006. He has since led the effort to organize and promote concert events on his own time throughout south Florida, the Caribbean, and other locales to raise awareness and funds to support coral reef conservation. Reef Fest concerts will continue through 2008 in support of the International Year of the Reef, but several big events are also planned for 2009. For more information about the Reef Fest effort, visit www.reeffest.org. Several of Hendee's former collaborators have registered a private business as Reef Fest LLC to continue the project indefinitely.

IN CELEBRATION OF
HISPANIC HERITAGE
MONTH...

AOML POT-LUCK
LUNCHEON

THURSDAY, OCTOBER 23RD
12:00 NOON
AOML LOBBY

PLEASE BRING A COVERED
DISH TO SHARE WITH OTHERS

Welcome Aboard

AOML's Environmental Microbiology Laboratory welcomed four new University of Miami CIMAS researchers to its ranks this past summer to participate in the Environmental Protection Agency's (EPA) Virtual Beach Program. The intensive summer sampling phase of the project has been completed, and the new "Micro" team is now busy with molecular analysis of a large number of archived samples from the study. The team will also be involved with other projects related to microbial water quality monitoring and ecosystem health at AOML including the Florida Area Coastal Environment (FACE) program, molecular water quality assessment for the Florida Keys National Marine Sanctuary, and microbial risk assessment from exposure to beach sand.

Diana Aranda is a graduate student at Nova Southeastern University pursuing a M.S. degree in coastal zone management. Aranda completed an EPA internship this past summer with the Microbiology Lab, where she was responsible for deploying, maintaining, and acquiring in-situ data from EPA instruments for the Virtual Beach Project. She will continue to support the Microbiology Lab's field operations for microbial water quality assessment and post-sampling analysis of the Virtual Beach data. Aranda is currently being trained in molecular assay methods to conduct molecular analysis of microbial water quality.



Jakub Bartkowiak is an undergraduate student pursuing a B.S. degree at the College of Arts and Sciences of the University of Miami in the program track of neurobiology, with plans to eventually earn a doctorate in neuroscience. Bartkowiak will provide support for several projects at AOML that involve microbial water quality assessment and sources of land-based pollution to the coastal environment. He is being trained in the application of molecular techniques to assess the environmental microbial qualities of water, sand, and marine sediments, as well as molecular microbial source tracking of contaminants in the marine environment.



Dr. Maribeth Gidley is an environmental public health physician with a diverse background in environmental microbiology and medicine, including an internship with the National Centers for Disease Control and Prevention, and residencies in family medicine with Palmetto General Hospital and preventive medicine with the Palm Beach County Department of Health. She is involved in a wide range of microbial water quality assessment projects, epidemiological assessment of human environmental exposure in coastal regions, and impacts of land-based sources of pollution on ecosystem and public health in the coastal environment.



Dr. Tomoyuki Shibata, a post-doctoral researcher, is an environmental engineer who specializes in quantitative microbial risk assessment, particularly in marine ecosystems. He recently completed a post-doctoral fellowship with the Center for Advancing Microbial Risk Assessment at Michigan State University and is now serving a CIMAS post-doctoral fellowship at AOML. Shibata is currently conducting quantitative microbial risk assessment analysis for several microbiology projects at AOML, including the BEACHES epidemiology study, the EPA Virtual Beach Program, and the Florida Area Coastal Environment (FACE) Program.



"Spring Forward, Fall Back..."
Daylight Savings Time ends November 2, 2008

Travel

Bob Atlas visited NASA's Goddard Space Flight Center in Greenbelt, Maryland on September 4th; attended the Joint Center for Satellite Data Assimilation's Executives briefing in Silver Spring, Maryland on September 5th; attended a symposium in honor of Professor Ed Lorenz in Cambridge, Massachusetts on September 13; attended the OAR Senior Research Council meeting in Silver Spring, Maryland on September 22-24; and served as co-lead for NOAA's OAR-NESDIS Summit in Suitland, Maryland on September 25-26.

Molly Baringer, Silvia Garzoli, Gustavo Goni, Rick Lumpkin, Christopher Meinen, Robert Molinari, Claudia Schmid, and Rik Wanninkhof attended the 6th Annual System Review of NOAA's Office of Climate Observation in Washington, D.C. on September 1-5, 2008.

David Enfield attended and made a presentation at the Conference on Precipitation and Associated Meteorological Phenomena in Ibero-America on September 8-10, 2008 in Ourense, Spain.

Robert Castle installed a new underway pCO₂ system aboard the NOAA Ship *Ronald H. Brown* in Charleston, South Carolina on September 24-30, 2008.

Frank Marks and Gustavo Goni attended NOAA's OAR-NESDIS Summit in Suitland, Maryland on September 25-26, 2008.

Rik Wanninkhof attended the Second International Symposium on the Ocean in a High CO₂ World in Monaco on October 6-8, 2008. He also made an invited presentation at Texas A&M University in College Station, Texas on October 20, 2008.

Shaun Dolk attended the 24th session of the Data Buoy Cooperation Panel in Cape Town, South Africa on October 13-16, 2008.

Jules Craynock attended a meeting of NOAA's Diving Control and Safety Board in Seattle, Washington on October 14-17, 2008.

Claudia Schmid attended the Argo Data Management's Executive Committee meeting and Team #9 meeting in Honolulu, Hawaii on October 27-31, 2008.

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- ABERSON, S.D.**, 2008: Large forecast degradations due to synoptic surveillance during the 2004 and 2005 hurricane seasons. *Monthly Weather Review*, 136(8):3138-3150.
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*Names of AOML authors appear in blue capital letters.

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