May-June 2012
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AOML Keynotes

ATLANTIC OCEANOGRAPHIC AND METEOROLOGICAL LABORATORY

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

NOAA Outlook Calls for High Probability of Near-Normal Atlantic Hurricane Season

NOAA unveiled its pre-season outlook for the 2012 Atlantic hurricane season on May 24th, stating that a near-normal season is expected. The live broadcast was televised from the lobby of AOML as the low-pressure system that would become Tropical Storm Beryl brought drenching rains and gale-force winds to the metropolitan Miami area.

The NOAA seasonal outlook predicts with 70% certainty that between nine and 15 named storms (winds ranging from 39-73 mph) will likely develop during the six-month long Atlantic hurricane season from June 1st to November 30th. Four to eight named storms are expected to strengthen into hurricanes (winds above 74 mph), while one to three hurricanes will likely intensify into major hurricanes with winds above 111 mph (categories 3, 4, and 5 on the Saffir-Simpson scale). An average season, based on the 1981-2010 time frame, typically produces 12 named storms, six hurricanes, and three major hurricanes.

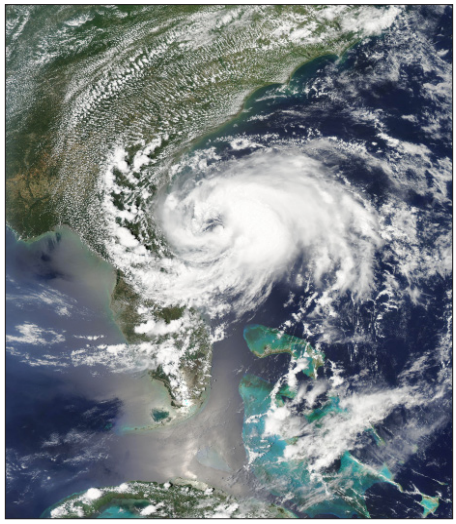
According to NOAA's outlook, "the possibility of competing climate factors, combined with several circulation and sea surface temperature features, suggest a less active season compared to many in recent years." Climate factors that support a more active season include the tropical multi-decadal signal, which has been linked to increased Atlantic hurricane activity since 1995, and near average sea surface temperatures across the tropical Atlantic Ocean and Caribbean Sea, the main development region for storms.

However, the possible development of El Niño conditions during the season is a potentially competing climate factor that could decrease the likelihood of storm formation and intensification during the peak months of the Atlantic hurricane season (August-October), shifting the expected level of activity towards the lower end of the predicted range. Two additional climate factors—enhanced wind shear across the main development region and cooler sea surface temperatures in the far eastern Atlantic—could also compete with conditions associated with higher levels of storm activity.

NOAA will reassess climatic conditions and issue an updated forecast for the Atlantic basin in early August. Coastal residents and communities in areas potentially impacted by landfalling storms are urged to prepare and remain vigilant in monitoring the tropics, despite the forecast for a slightly less active season. Even a below-average season can produce hurricane disasters, as was the case with Hurricane Andrew in South Florida during the relatively slow 1992 hurricane season.

The 2012 Atlantic hurricane seasonal outlook is an official product of NOAA's Climate Prediction Center, produced in collaboration with researchers from the National Hurricane Center and AOML's Hurricane Research Division (HRD). HRD meteorologist Stanley Goldenberg has been a member of NOAA's seasonal hurricane forecast team since its inception in 1998

Additional information about NOAA's hurricane outlook can be found at www.cpc.ncep.noaa.gov/products/outlooks/hurricane.shtml.



NASA satellite image of Tropical Storm Beryl, the second named storm of the 2012 Atlantic hurricane season, prior to its landfall along the Florida coast. Beryl came ashore near Jacksonville, Florida, on May 28th with top winds of 70 mph. The storm pelted northern Florida with heavy rains and damaging winds and caused widespread power outages. Beryl also soaked portions of Georgia, South Carolina, and North Carolina, bringing much needed rain to drought-stricken areas.

NOAA's 2012 Pre-Season Atlantic Hurricane Outlook

Activity Type	NOAA Outlook	1981-2010 Averages
Named Storms	9-15	12
Hurricanes	4-8	6
Major Hurricanes	1-3	3

NOAA's outlook predicts a less active season compared to recent years but, regardless of the outlook, it's vital for anyone living or vacationing in hurricane-prone locations to be prepared. We have a stark reminder this year with the 20th anniversary of Hurricane Andrew. NOAA's improvement in monitoring and predicting hurricanes has been remarkable over the decades since Andrew, in large part because of our sustained commitment to research and better technology, but more work remains to unlock the secrets of hurricanes.

Dr. Jane Lubchenco
NOAA Adminstrator

Storm Names for the 2012 Atlantic Hurricane Season

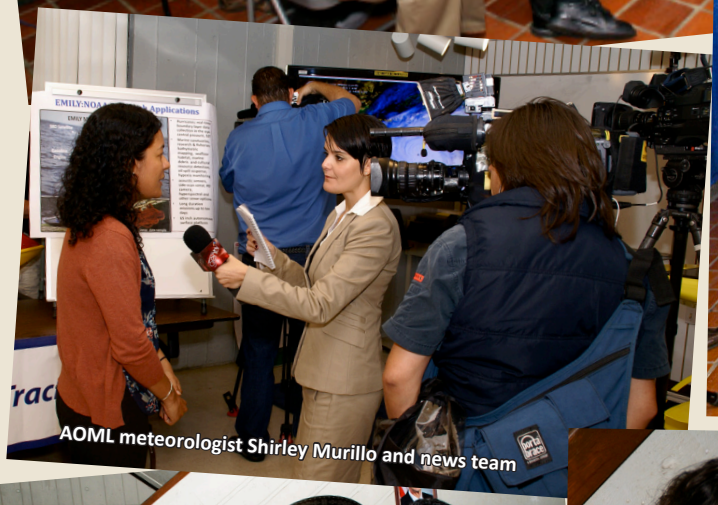
Alberto	Debby	Gordon	Joyce	Michael	Patty	Tony
Beryl	Ernesto	Helene	Kirk	Nadine	Rafael	Valerie
Chris	Florence	Isaac	Leslie	Oscar	Sandy	William

Live from AOML...

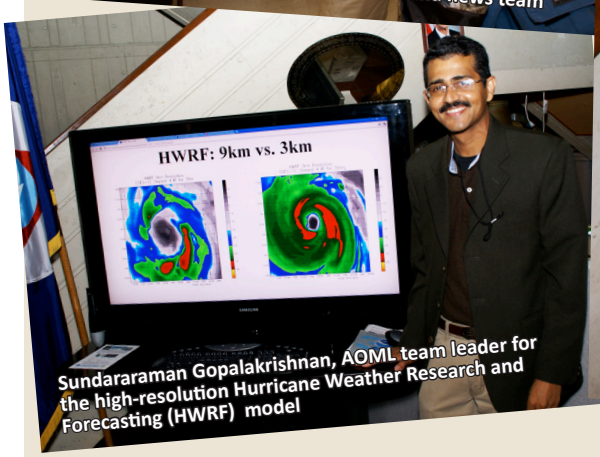
Cameras roll as NOAA releases its 2012 pre-season hurricane outlook

Camera crews set up shop in the AOML lobby

Gerry Bell, NOAA's lead forecaster for the seasonal outlook, discusses and answers questions about the 2012 hurricane season

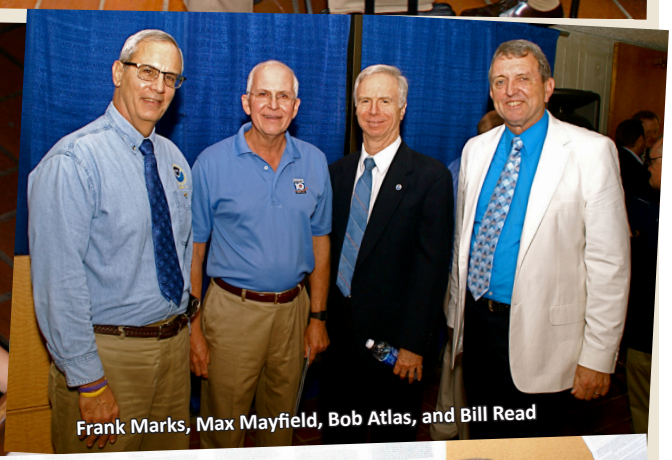


AOML meteorologist Shirley Murillo and news team



Sundararaman Gopalakrishnan, AOML team leader for the high-resolution Hurricane Weather Research and Forecasting (HWRF) model

Erica Rule



Frank Marks, Max Mayfield, Bob Atlas, and Bill Read

NOAA's seasonal outlooks for the 2012 Atlantic and Pacific hurricane seasons were broadcast live from the lobby of AOML on May 24th. Reporters and camera crews crowded in as Dr. Robert Detrick, Assistant Administrator for NOAA's Office of Oceanic and Atmospheric Research, made the announcement. Dr. Gerry Bell, lead forecaster for NOAA's Hurricane Forecast Team, discussed climatic conditions that shaped NOAA's seasonal outlook, while other NOAA and emergency management officials spoke about how to best prepare for hurricane season. The event at AOML was planned, organized, and coordinated by Erica Rule, AOML's outreach and communications coordinator, with assistance from numerous staff members. Visit www.aoml.noaa.gov/keynotes/keynotes1.html to view the live broadcast.

AOML meteorologist Stanley Goldenberg and Gerry Bell of NOAA's Climate Prediction Center, members of NOAA's Hurricane Forecast Team

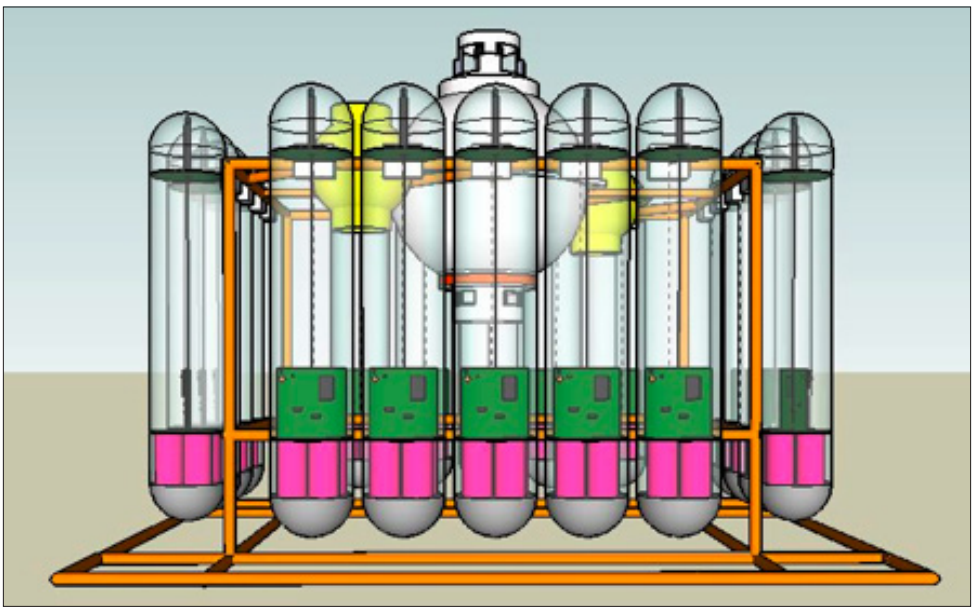
Workshop Explores Data Retrieval Technologies for Deep Ocean Instruments

Researchers with AOML's Physical Oceanography Division (PhOD)–Dr. Chris Meinen, Mr. Ulises Rivero, Mr. Pedro Pena, and Dr. Silvia Garzoli–hosted an international workshop at AOML on May 31st-June 1st to discuss developing technologies for retrieving data from instruments moored in the deep ocean.

One of the key systems discussed was the "Adaptable Bottom Instrument Information Shuttle System," or ABIISS, being developed by Mr. Rivero and the engineers with PhOD's Instrumentation Group. Other instrument retrieval systems under development in Germany and France were also discussed, as was a technique for using autonomous gliders.

The meeting involved participants from several national and international partners, including the French Research Institute for the Exploration of the Sea, the Alfred Wegener Institute for Polar and Marine Research in Germany, the University of Miami's Rosenstiel School, the Scripps Institution of Oceanography, and the University of Rhode Island's Graduate School of Oceanography.

The technologies being developed by AOML and these other organizations will serve a crucial role in expanding the ocean-observing system into the deep ocean, a key priority of the international science community discussed at the OceanObs'09 conference convened in Venice, Italy in September 2009. These systems, when fully developed, will also save resources for NOAA, the nation, and the international community by reducing the need for ship time on ocean-going research vessels.



Conceptual drawing (not to scale) of the ABIISS, or data pod system, presently under development by the Instrumentation Group of AOML's Physical Oceanography Division. The glass tubes mirror the data collected inside the instrument, here illustrated by a pressure-equipped inverted echo sounder, then self release and rise to the ocean surface on a preprogrammed schedule to transmit their data to AOML via satellite. This was just one of several technologies discussed during the workshop at AOML. A video that demonstrates the release of the ABIISS data pods can be viewed at http://www.youtube.com/watch?v=fHdwfRHVtZQ.

OAR Assistant Administrator Visits AOML

NOAA's new Assistant Administrator for the Office of Oceanic and Atmospheric Research (OAR), Dr. Robert Detrick, visited AOML on May 23-24th. He was warmly welcomed by the AOML community.

Dr. Detrick chatted with a large number of staff members at an early morning meet and greet session on May 23rd. He then toured the AOML facility to learn about AOML's climate, ecosystem, and hurricane research.

In the afternoon, he hosted an all-hands meeting and later boarded the RV *Hildebrand* for an ecosystems overview cruise on Biscayne Bay. Dr. Detrick also attended a science cafe at a local restaurant that featured a presentation by AOML coral researcher Derek Manzello.

The following day Dr. Detrick toured the National Hurricane Center in Miami and announced NOAA's pre-seasonal hurricane outlook at a live broadcast from the AOML lobby.

AOML welcomes a return visit by Dr. Detrick for the opportunity to present its research in greater depth.

Dr. Robert Detrick (center) listens as Chris Sinigalliano of AOML's Environmental Microbiology Laboratory discusses recent research activities.

Barry Reichenbaugh, Dr. Robert Detrick, and Michelle Wood aboard the RV *Hildebrand,* AOML's small boat dedicated to coastal research, on Biscayne Bay.

Jia-Zhong Zhang welcomes Dr. Robert Detrick to the Nutrients Laboratory at AOML.

Barry Reichenbaugh and Dr. Robert Detrick listen as Chunzai Wang and George Halliwell discuss climate research at AOML.

AOML Director Dr. Bob Atlas joined U.S. Florida Congressional representatives Debbie Wasserman Schultz (FL-20) and Alcee Hastings (FL-23) on May 25th for Broward County's annual hurricane preparedness conference. The event at the Broward Emergency Operations Center brought together concerned citizens, emergency management personnel, and local, state, and federal officials to discuss the 2012 hurricane season and hurricane preparedness efforts. Bob provided information about NOAA's seasonal hurricane outlook and spoke about recent advances in hurricane research aimed at providing the public with more accurate forecasts.

Pictured from left to right: U.S. Congresswoman Debbie Wasserman Schultz, AOML Director Dr. Bob Atlas, U.S. Congressman Alcee Hastings, and sign language interpreter.

AOML's Hurricane Research Division (HRD) held a two-day science retreat at the Miami Beach Coast Guard Base along the MacArthur Causeway on May 15-16. With assistance from the Federal Mediation and Conciliation Service (Ines DelGado, Commissioner, facilitator for the retreat), HRD staff discussed ways to strengthen their scientific visibility, work environment cohesiveness, and future science directions. The retreat provided an open forum for the group to explore these topics.

Bradley Klotz at the U.S. Coast Guard Miami Air Station

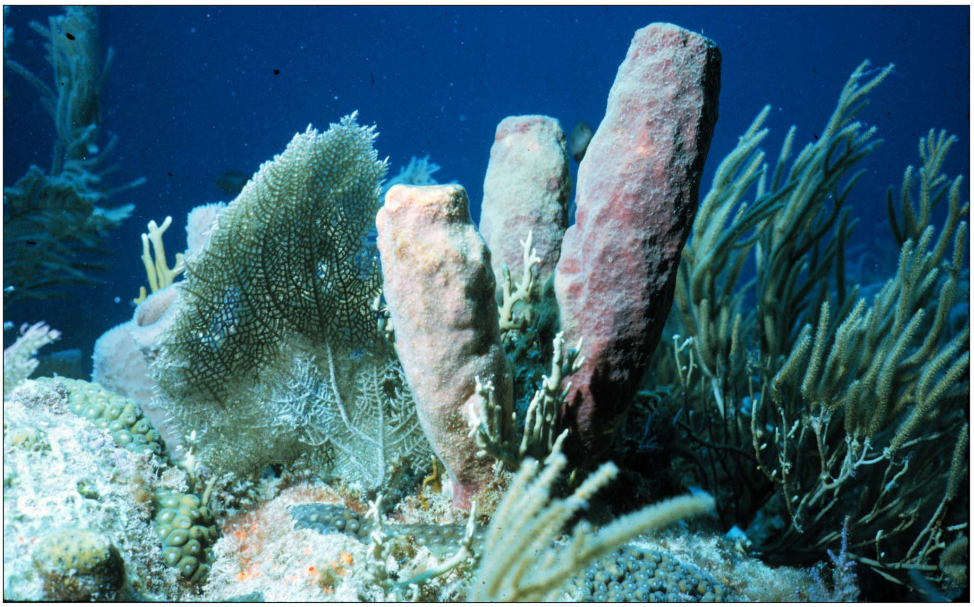
Hurricane Research Division (HRD) meteorologist Bradley Klotz spoke to a group of about 25 helicopter and aircraft pilots at the U.S. Coast Guard Miami Air Station on May 23rd. Brad presented information on how hurricanes form and intensify, the importance of these storms to the Earth's energy balance, and their impacts on coastal communities. He also shared information about NOAA's hurricane hunter aircraft, their capabilities while in the hurricane environment, and the types of data they collect. The Coast Guard Miami Air Station at the Opa-Locka Airport, known as the "busiest search and rescue unit in the world," has jurisdiction over an area that stretches from near Cocoa Beach in Brevard County to the Florida Keys and southward to Cuba. Although aircraft restraints prevent them from flying during severe storms, they perform search and rescue missions after the passage of storms to assist to those in need.

In May, hurricane researchers with AOML's Model Development Team were finalists in the science category at the Federal Employee of the Year awards banquet. The annual event is hosted by the South Florida Federal Executive Board. The team was acknowledged for its development of the advanced, high-resolution Hurricane Weather and Research Forecasting (HWRF) computer model. HWRF will be used operationally by the National Hurricane Center (NHC) beginning with the 2012 hurricane season for both the Atlantic and Pacific basins, and its improved forecasts of track and intensity have the potential to assist NHC in providing the public with more timely warnings to help mitigate the loss of life and property.

AOML's Model Development Team (clockwise from left to right): Lisa Bucci, Sundararaman Gopalakrishnan (team leader), Robert Black, Thiago Quirino, Stanley Goldenberg, Frank Marks, and Xuejin Zhang.

Intrinsic Art: The Beauty of a Coral Reef—Part 3

AOML coral researcher Dr. Jim Hendee wrote the following article as the final installation in a three-part series to promote greater awareness of the challenges that threaten coral reef ecosystems. Part 3 of the series was published in the April 2012 issue of DEON, a local south Florida magazine.



The awe-inspiring beauty of coral reef ecosystems around the world is imperiled by numerous threats; however, the three most prevalent are climate change, effects of over-fishing, and land-based sources of pollution. In the two previous issues of *DEON* magazine I discussed the effects of climate change and over-fishing on these beautiful ecosystems. This month I'd like to conclude this three-part series by discussing land-based sources of pollution (the two previous issues can be viewed at deonmagazine.com).

Pollution arrives at coral reefs near coastlines from land via runoff, wind, deforestation, storm water, coastal development, road construction, oil and chemical spills, and through deliberate injection, for instance, drainpipes. Such pollutant stresses can cause changes to the delicate structure of food chains and can have a deleterious affect on growth, reproduction, and larval settlement of coral reef inhabitants. There are many types of pollution, but most of them can be categorized as nutrients, toxicants (e.g., pesticides, pharmaceuticals, household chemicals), sediments, and marine debris.

Plastic bag entangled on coral—NOAA

Nutrients and toxicants arrive from agricultural runoff, storm water runoff, wastewater, industrial effluent, and from miscellaneous garbage that is swept to sea from coasts or ships. When excess nutrients such as nitrogen and phosphorous build up in the presence of sunlight and oxygen, algae and microscopic plants called phytoplankton respond (or bloom) by rapidly growing in numbers or in total weight of living material (biomass). Such a run-away process and ecosystem response is called eutrophication and ultimately results in a reduction in oxygen at night when the process of photosynthesis (producing oxygen) is replaced by respiration (consumption of oxygen).

Such cycles of surplus oxygen to little or no oxygen can result in the suffocation of animals (such as fish and invertebrates like crabs and lobsters) which use oxygen for growth and life processes. High levels of nitrates may also be directly toxic to coral, or may intensify the deleterious effects of an existing bacterial infection.

Excess sediment is another source of pollution and arrives from coastal erosion, land-clearing, road-building, and even dust. Sediment can smother corals and interfere with their ability to feed, grow, and reproduce. Light transmittance that is limited by suspended sediment impedes the growth of corals since the corals depend upon microscopic symbiotic plants (called zooxanthellae) living within their tissues. These tiny plants need light to produce oxygen which the corals in turn use for growth processes. Interestingly, Saharan dust from north Africa affects Florida and Caribbean reefs, while dust from the Gobi (China and Mongolia) and the Taklamakan (northwest China) deserts affect coral reefs across the north Pacific, including those in Korea, Japan, and the Hawaiian Islands.

Marine debris is another source of pollution and originates from ships or abandoned fishing gear and nets, sometimes called "ghost nets" because they still catch and entangle fish and other marine life long after they've been lost by fishermen. Such nets can also break and become entangled in reefs and eventually destroy habitat critical for those organisms (including the corals) that rely on the reefs as nursery and feeding areas. Debris such as plastic, glass, metal, and rubber can also arrive from rivers, streams, and storm drains. Even reefs far removed from land can suffer the fate of abandoned fishing gear. For instance, from 2000 to 2006, NOAA and partners removed over 500 tons of debris from the northwestern Hawaiian Islands.

Next time you're at the beach or out in the boat, remember that debris you might otherwise cast away could accumulate with other debris and imperil our coral reefs—beautiful treasures from nature that provide livelihoods, support tourism, fishing and diving, and protect our shores from storms. Every tiny piece of trash or toxic waste hurts, and every little bit you help, all adds up.

Marine debris gathered along Hawaiian coast—NOAA

Congratulations

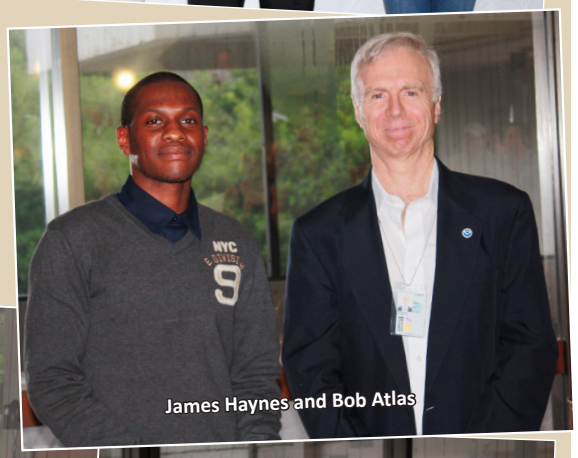

Gustavo Goni, Bob Atlas, and Shirley Murillo


Bob Atlas and Emy Rodriguez


Bob Atlas, Chris Meinen, Molly Baringer, and Rigoberto Garcia


Jun Zhang, Bob Atlas, and Sylvie Lorsolo


Bob Atlas, Michael Black, Shirley Murillo, Sim Aberson, Robert Rogers, John Kaplan, and Neal Dorst


James Haynes and Bob Atlas


Bob Atlas, Qi Yao, and Yeun-Ho Daneshzadeh


Bob Atlas, Elizabeth Forteza, and Vicki Halliwell


Bob Atlas and Jack Stamates

AOML's annual awards ceremony was held on June 6th to honor and applaud staff accomplishments. Dr. Bob Atlas, AOML Director, presented Certificates of Recognition, Certificates of Appreciation, and Federal Year-In-Service awards to more than 60 individuals who were recognized for their outstanding work efforts and achievements (a complete listing of award recipients appears on page 7). The event was organized and hosted by AOML's Office of the Director.

The following individuals received *Certificates of Appreciation* at the AOML Awards Ceremony on June 6th in acknowledgment of their outstanding work efforts:

Molly Baringer, George Berberian, Robert Castle, Charles Featherstone, Charles Fischer, James Hooper, Kyle Seaton, and Andrew Stefanick—For contributions at sea during the CLIVAR Repeat Hydrography Program A10 cruise (August 28-October 31, 2011).

Robert Black, Lisa Bucci, Stanley Goldenberg, Sundararaman Gopalakrishnan, Frank Marks, Thiago Quirino, and Xuejin Zhang—For contributions in developing the advanced HWRF high-resolution hurricane forecast model and its potential to provide more timely warnings and mitigate the loss of life and property.

Robert Castle—For contributions at sea during the CLIVAR Repeat Hydrography Program A20 and A22 cruises, Woods Hole, Massachusetts to Bridgetown, Barbados and return (March 24-May 15, 2012).

Yeun-Ho Daneshzadeh and Qi Yao—For outstanding dedication and support of scientific analysis of oceanographic data, resulting in numerous successful scientific presentations and publications on the Atlantic Meridional Overturning Circulation.

Gail Derr—For creativity and editing in developing an original layout and design for the AOML Strategic Plan for 2010-2015, resulting in an engaging document that allows AOML to effectively communicate its science priorities to NOAA leadership and the scientific community.

Neal Dorst—For effectively implementing a new Tropical Cyclone Frequently Asked Questions (FAQ) web site in Spanish, in partnership with the National Hurricane Center, resulting in increased awareness and understanding of hurricane science to a broader, international audience.

Manuel Fraga, James Haynes, and John McKeever—For going above and beyond the call of duty and working tirelessly throughout the night to bring numerous facility and information technology systems, as well as key pieces of laboratory equipment, back on line following a power outage caused by a lightning strike on the night of May 15, 2012.

Elizabeth Forteza, Vicki Halliwell, and Reyna Sabina—For months of dedication in maintaining the 24/7 U.S. Argo operations during a critical manpower shortage, ensuring that there were no gaps in this critical environmental data system.

Kelly Goodwin—For thoughtful and proactive leadership in the development of AOML's Strategy Execution and Evaluation (SEE)-related Integrated Response Plan and AOML's SEE-related Response Working Group.

Lewis Gramer—For pioneering efforts at integrating near real-time satellite, in situ, and other classes of data from over 120 coral reef ecosystem sites around the globe and for using these data to produce innovative and useful ecological forecasts.

Verena Hormann and Grant Rawson—For exceptional work at sea to carry out a test of an underway CTD system that led Oceanscience to improve this new observational platform.

Betty Huss—For contributions to shore communications during the CLIVAR Repeat Hydrography Program A10 cruise (August 28-October 31, 2011).

Derek Manzello—For outstanding initiative and service in the establishment of NOAA's Ocean Acidification Test Bed site at Cheeca Rocks, Florida Keys National Marine Sanctuary.

Shirley Murillo—For significant contributions to the Joint Hurricane Testbed, which have been essential to the success of this program.

Emy Rodriguez—For initiative in finding creative, cost-saving solutions to problems with international travel, especially during the CLIVAR Repeat Hydrography Program A10 cruise (August 28-October 31, 2011) and the AOML/DFO Hydrocarbon Fluorometry Experiment.

Erica Rule—For exceptional planning, organization, and operational support to NOAA and AOML during the NOAA Hurricane Seasonal Forecast rollout press conference and associated technology demonstration event.

Jack Stamates—For exceptional management of coastal research at Port Everglades and Biscayne Bay and your thoughtful outreach efforts to make the results of these studies available to managers and stakeholders.

Federal Year-In-Service Awards

5 Years	Gail Derr Sundararaman Gopalakrishnan James Haynes
10 Years	Manuel Fraga
15 Years	Gustavo Goni Shirley Murillo Michael Sam
25 Years	John Kaplan Nina Liebig Rickey Little
30 Years	Yeun-Ho Daneshzadeh
40 Years	Gladys Medina
45 Years	Robert Kohler

The following individuals received *Certificates of Recognition* at the AOML Awards Ceremony on June 6th in acknowledgment of their recent achievements:

Sim Aberson, Altug Aksoy, Michael Black, Neal Dorst, Jason Dunion, John Kaplan, Frank Marks, Shirley Murillo, Robert Rogers, Kathryn Sellwood, Eric Uhlhorn, Paul Willis—*National Aeronautics and Space Administration's 2011 Group Achievement Award* for outstanding contributions to the Genesis and Rapid Intensification Processes (GRIP) field campaign as members of the GRIP Science Team during the 2010 Atlantic hurricane season.

Evan Forde—*NOAA Administrator's Award* for outstanding communication of NOAA science, sharing the joy of science with students, and helping to foster a science-literate society.

Howard Friedman—*South Florida Federal Executive Board Certificate of Appreciation* for dedication and service as the Treasurer of the South Florida Federal Executive Board during FY-2011.

Maribeth Gidley—*March 2012 NOAA Team Member of the Month* for exceptional outreach efforts and mentoring of graduate and summer student interns.

John Kaplan—*Department of Commerce 2011 Bronze Medal* for providing skillful operational hurricane intensity models as demonstrated by the National Hurricane Center forecast verifications for the 2009 and 2010 seasons.

Sylvie Lorsolo, Frank Marks, John Gamache, and Jun Zhang—*AOML Outstanding Research Paper for FY-2011* (Lorsolo *et al.,* 2010: *Monthly Weather Review*, 138(9):3656-3670).

Derek Manzello—*AOML Outstanding Research Paper for FY-2011* (Manzello, 2010: *Coral Reefs*, 29(3):749-758).

Christopher Meinen, Molly Baringer, and Rigoberto Garcia—*AOML Outstanding Research Paper for FY-2011* (Meinen *et al.,* 2010: *Deep-Sea Research, Part I*, 57(7):835-846).

Shirley Murillo—*American Meteorological Society's Charles E. Anderson Award* for outstanding support of minorities and women to promote a more diverse workforce through mentoring, education, and community service.

Mark Powell—*American Meteorological Society 2011 Fellow* for outstanding long-term contributions to the atmospheric sciences, including more than 30 years of research that has advanced the state of tropical cyclone knowledge.

Kevin Sullivan—*National Science Foundation's Antarctica Service Medal* for research efforts conducted during the two-month U.S. CLIVAR/CO_2 Repeat Hydrography Program S4P cruise to the Southern Ocean.

Rik Wanninkhof—*American Geophysical Union's Editor's Citation for Excellence in Refereeing Award* for conscientious reviews of submitted papers to the *Journal of Geophysical Research* (Oceans) that have enabled AGU to maintain its high standards of quality.

Rik Wanninkhof—*Association for the Sciences of Limnology and Oceanography's 2012 John Martin Award* for your landmark paper entitled Relationship between wind speed and gas exchange over the ocean (Wanninkhof, *JGR*, 97(C5):7373-7382, 1992) that has had a significant impact on subsequent research in the field of oceanography.

Student Interns Arrive

AOML began welcoming its student interns in June. Over the summer, they will work with mentors in the three science divisions at AOML—Ocean Chemistry, Physical Oceanography, and Hurricane Research—to participate in field sampling efforts, perform research, and tend to a variety of technical tasks. Below is a synopsis of their summertime activities:

Joshua Alland will study the warm core development of tropical cyclones and the relationship of the warm core structure to tropical cyclone strength and intensification.

Alexis Avery will research the influence of marine debris on the environmental persistence of microbial source tracking markers.

Heather Coit will explore the potential exposure of beach-going populations to microbial contaminants and their relationship to marine seaweed debris.

Nicholas Danger will review stakeholder engagement activities in the Gulf of Mexico for the Integrated Ecosystems Assessments project.

Michael Fischer will explore how to improve methods for estimating sea surface pressure in hurricanes based on aircraft observations.

Hallee Meltzer will work to develop habitat suitability models for sport fish in Florida Bay.

Xavier Mendez will organize oceanographic data, as well as populate and test printed circuit boards in support of the Ship of Opportunity Program.

Camila Mirow will evaluate the connection between bacteria and beaches, boats, and buoys.

Casey Peirano will examine the skill of the SHIPS (Statistical Hurricane Intensity Prediction Scheme) hurricane model's rapid intensification index predictors at various stages of rapid intensification and for various geographical regions in the Atlantic and East Pacific basins.

Alexandra Ramos will work with climate and hurricane researchers to better understand the ocean's response and feedback to Atlantic hurricanes.

Rosimar Rios-Berrios will perform research to better understand the sensitivity of hurricane intensity predictions to model parameterizations and associated errors.

Aditya Shetty will explore the relationship of marine seaweed debris to microbial contaminants and assess their distribution and abundance.

Bryan Williams will work with the Hurricane Research Division's assimilation group and provide assistance in running and evaluating their Hurricane Ensemble Data Assimilation System (HEDAS) for the 2012 hurricane season.

Wei Xin will utilize a variety of bioinformatic methods to analyze metagenomic data obtained from methane ice worms in the Gulf of Mexico.

Summer students interning at NOAA's research facilities in South Florida got together on June 20th for a pizza party hosted at AOML. Interns and their mentors from the National Hurricane Center, Southeast Fisheries Science Center, Aircraft Operations Center, and AOML gathered in NOAA's Miami Regional Library to meet, mingle, and share information about their summer research projects and activities. The names of AOML's student interns who attended the event are denoted above.

2012 Summer Student Interns at AOML	AOML Mentors (Science Division)
Joshua Alland, NOAA Hollings Scholar Iowa State University	Sundararaman Gopalakrishnan and Thiago Quirino (Hurricane Research)
Alexis Avery, NOAA Hollings Scholar Winston-Salem State University	Maribeth Gidley and Christopher Sinigalliano (Ocean Chemistry)
Heather Coit University of Washington	Maribeth Gidley and Christopher Sinigalliano (Ocean Chemistry)
Nicholas Danger University of Miami	Christopher Kelble (Ocean Chemistry)
Michael Fischer Florida International University	Eric Uhlhorn (Hurricane Research)
Hallee Meltzer Miami-Dade School (South Campus) for Advanced Studies	Christopher Kelble (Ocean Chemistry)
Xavier Mendez Coral Gables Senior High School	Ulises Rivero (Physical Oceanography)
Camila Mirow Gulliver Preparatory School	Maribeth Gidley and Christopher Sinigalliano (Ocean Chemistry)
Casey Peirano, NOAA Hollings Scholar University of Oklahoma	John Kaplan (Hurricane Research)
Alexandra Ramos, NOAA Educational Partnership Scholar University of Puerto Rico	Chunzai Wang, Sang-Ki Lee, and David Enfield (Physical Oceanography)
Rosimar Rios-Berrios University of Puerto Rico	Tomislava Vukicevic (Hurricane Research)
Aditya Shetty Archimedean Upper Conservatory Charter High School	Maribeth Gidley and Christopher Sinigalliano (Ocean Chemistry)
Bryan Williams Florida State University	Altug Aksoy (Hurricane Research)
Wei Xin Smith College	Kelly Goodwin (Ocean Chemistry)

Welcome Aboard

Charita Atluri joined the staff of AOML's Physical Oceanography Division (PhOD) in May as a research associate of the University of Miami's Cooperative Institute for Marine and Atmospheric Studies (CIMAS). Charita will work with PhOD researchers to design and develop software, including decoders for new float types, for the U.S. Argo Data Assembly Center at AOML. She holds a Master's degree in computer science from Florida International University.

Dr. Geoffrey Cook joined the staff of AOML's Ocean Chemistry Division in June as a post-doctoral associate of the University of Miami's Cooperative Institute for Marine and Atmospheric Studies (CIMAS). Geoffrey will work with Dr. Chris Kelble to perform risk analyses for the Gulf of Mexico Integrated Ecosystem Assessment project. He recently earned his Ph.D. from the Scripps Institution of Oceanography. Prior to his arrival at AOML, Geoffrey worked in the Theoretical Ecology Laboratory of McGill University in Montreal, Canada.

NOAA Corps officer LCDR Stephen Meador joined the staff of the Office of the Director in May as the new Associate Director of AOML. LCDR Meador has been a NOAA Corps officer for 16 years and recently completed his fourth sea assignment while serving as the Commanding Officer on the NOAA Ship *Nancy Foster*. During his seagoing career, he has supported research missions across the globe, including the Arctic and Antarctic, and the Atlantic, Pacific, and Indian oceans. Ashore, LCDR Meador's assignments have included NOAA-OAR Headquarters in Silver Spring, Maryland, the NOAA Coastal Services Center in Charleston, South Carolina, and NOAA Hazmat on Governors Island, New York. He holds a Bachelor's degree in mechanical engineering from Oklahoma State University and a Master's degree in environmental health engineering from the University of Kansas.

Congratulations

The research article entitled *Relationship between wind speed and gas exchange over the ocean* by AOML oceanographer Rik Wanninkhof has been selected as the 2012 recipient of the John Martin Award from the Association for the Sciences of Limnology and Oceanography (ASLO). The award is presented annually to honor an aquatic sciences paper published between 10-30 years ago that has had a significant impact on subsequent research. Since its publication in the *Journal of Geophysical Research-Oceans* 20 years ago, Wanninkhof (1992) has been cited more than 1500 times. Rik will accept the John Martin award in July while attending the ASLO's Aquatic Sciences Meeting in Otsu, Japan.

Farewell

David Lindo-Atichati, a Cooperative Institute for Marine and Atmospheric Studies (CIMAS) research associate with AOML's Physical Oceanography Division (PhOD), departed AOML in June to begin a post-doctoral position with the Division of Applied Marine Physics at the University of Miami's Rosenstiel School. David will perform research on transport processes and their influence on larval dispersion, marine population connectivity, recruitment variability, and on other phenomena driving marine ecosystems across the tropical Atlantic. During his almost three years at AOML, David worked with PhOD researchers to assess and predict temporal and spatial oceanographic changes in the Gulf of Mexico. He earned a Ph.D. from the University of Las Palmas de Gran Canaria this past March.

Debra Willey, a Cooperative Institute for Marine and Atmospheric Studies (CIMAS) research associate with AOML's Physical Oceanography Division, has returned to work as a research associate with Rana Fine at the University of Miami's Rosenstiel School, the position she held before coming to AOML. During her three years AOML, Debbie's work involved running numerical models, specifically the HYCOM (HYbrid Coordinate Ocean Model) ocean model and the HWRF (Hurricane Weather Research and Forecasting) hurricane forecast model coupled to a one-dimensional ocean model. She also processed and analyzed observations for model evaluation and ocean data assimilation.

Erica Rule, AOML's communications and outreach coordinator, participated in the South Florida Aviation Fly-in Educational Expo (SAFEE) at the Opa-Locka Executive Airport on May 4-5th. SAFEE was sponsored by more than 31 organizations, including NOAA, to spark an interest in aviation among South Florida middle- and high-school students, as well as the general public. More than 2,000 students from the Broward and Miami-Dade county school districts attended the event, which featured displays of antique aircraft, information about aviation careers, and opportunities to meet with pilots and other aviation professionals.

Travel

Bob Atlas and Shirley Murillo attended the NOAA Testbed and Proving Ground Workshop in Boulder, Colorado on May 1-3, 2012. Bob also attended a NOAA climate strategy meeting in Boulder, Colorado on June 13, 2012.

Christopher Kelble and Michelle Wood attended the Gulf of Mexico Restoration Science Workshop in Stennis Space Center, Mississippi on May 6-8, 2012.

Jason Dunion, Sylvie Lorsolo, and Robert Rogers attended the NASA GRIP (Genesis and Rapid Intensification Processes) and HS3 (Hurricane and Severe Storm Sentinel) workshops in Greenbelt, Maryland on May 8-10, 2012.

Rik Wanninkhof attended the SOLAS (Surface Ocean Lower Atmosphere Study) Open Science Conference in Cle Elum, Washington on May 7-10, 2012.

Alan Leonardi attended a NOAA in the Caribbean meeting in St. Thomas, U.S. Virgin Islands on May 15-16, 2012.

Sim Aberson attended and made a presentation at the Fourth International Workshop on Extratropical Transition in Quebec, Canada on May 20-25, 2012.

Rick Lumpkin attended the Fifth World Meteorological Organization's Workshop on the Impact of Various Observing Systems on Numerical Weather Prediction in Sedona, Arizona on May 22-25, 2012.

Maribeth Gidley, Christopher Sinigalliano, and student intern Heather Coit attended the 2012 Gordon Research Conference on Oceans and Human Health in Biddeford, Maine in June 3-8, 2012.

Andrew Stefanick gathered expendable bathythermograph (XBT) data along the AX7 transect across the Atlantic Ocean from Cagliari, Italy to Miami, Florida on June 4-7, 2012.

Molly Baringer, Silvia Garzoli, Gustavo Goni, Rick Lumpkin, Christopher Meinen, Ulises Rivero, Claudia Schmid, and Rik Wanninkhof attended the 8th Annual Principal Investigator's meeting of the NOAA Climate Observations Division in Silver Spring, Maryland on June 24-27, 2012.

Jia-Zhong Zhang attended and made a presentation at the 22nd V.M. Goldschmidt Conference in Montreal, Canada on June 24-29, 2012.

Recent Publications *(AOML authors are denoted by capital letters)*

Chen, H., D.-L. Zhang, J. Carton, and R. ATLAS, 2011: On the rapid intensification of Hurricane Wilma (2005). Part I: Model prediction and structural changes. *Weather and Forecasting,* 26(6):885-901.

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GOES, M., N. Tuana, and K. Keller, 2011: The economics (or lack thereof) of aerosol geoengineering. *Climatic Change,* 109(3-4):719-744.

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Gimeno, L., V. Magaña, and D.B. ENFIELD, 2011: Introduction to special section on the role of the Atlantic warm pool in the climate of the Western Hemisphere. *Journal of Geophysical Research,* 116:D00Q01, 2 pp.

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Ryan, J.P., Y. Zhang, H. Thomas, E.V. Rienecker, R.K. Nelson, and S.R. CUMMINGS, 2011: A high-resolution survey of a deep hydrocarbon plume in the Gulf of Mexico during the 2010 Macondo blowout. In *Monitoring and Modeling the Deepwater Horizon Oil Spill: A Record-Breaking Enterprise,* Y. Liu, Z.-G. Ji, A. MacFadyen, and R. Weisberg (eds.). AGU Geophysical Monograph Book Series, 195: 63-75.

Shanks, O.C., M. Sivaganesan, L. Peed, C.A. Kelty, A.D. Blackwood, M.R. Greene, R.T. Noble, R.N. Bushon, E.A. Stelzer, J. Kinzelman, T. Anan'eva, C. SINIGALLIANO, D. WANLESS, J. Griffith, Y. Cao, S. Weisberg, V.J. Harwood, C. Staley, K.H. Oshima, M. Varma, and R.A. Haugland, 2012: Interlaboratory comparison of real-time PCR protocols for quantification of general fecal indicator bacteria. *Environmental Science and Technology,* 46(2):945-953.

Shay, L.K., B. Jaimes, J.K. Brewster, P. Meyers, E.C. McCaskill, E. UHLHORN, F. MARKS, G.R. HALLIWELL, O.M. Smedstad, and P. Hogan, 2011: Airborne ocean surveys of the Loop Current complex from NOAA WP-3D in support of the Deepwater Horizon oil spill. In *Monitoring and Modeling the Deepwater Horizon Oil Spill: A Record-Breaking Enterprise,* Y. Liu, Z.-G. Ji, A. MacFadyen, and R. Weisberg (eds.). AGU Geophysical Monograph Book Series, 195:131-151.

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AOML conducts research to understand the physical, chemical, and biological characteristics and processes of the ocean and the atmosphere, both separately and as a coupled system. The principal focus of these investigations is to provide knowledge that leads to more accurate forecasting of severe storms, better utilization and management of marine resources, better understanding of the factors affecting both climate and environmental quality, and improved ocean and weather services for the nation.