

2006 Federal Holidays

New Year's Day...

◇ Monday, January 2

Martin Luther King's Birthday...

◇ Monday, January 16

Washington's Birthday...

◇ Monday, February 20

Memorial Day...

◇ Monday, May 29

Independence Day...

◇ Tuesday, July 4

Labor Day...

◇ Monday, September 4

Columbus Day...

◇ Monday, October 9

Veterans Day...

◇ Friday, November 10

Thanksgiving Day...

◇ Thursday, November 23

Christmas Day...

◇ Monday, December 25

New Year's Day (2007)...

◇ Monday, January 1

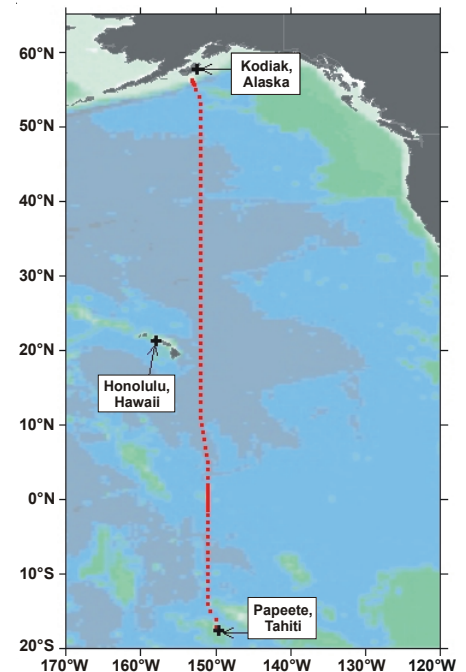
Cruise to Assess CO₂ Impacts in the Pacific Ocean

Investigators with AOML's Ocean Chemistry and Physical Oceanography Divisions boarded the R/V *Thomas G. Thompson* in mid February to participate in the P16N cruise of the Repeat Hydrography Program. They were joined aboard ship by more than 30 scientists from NOAA's Pacific Marine Environmental Laboratory and a dozen academic institutions for an intensive, six-week schedule of sampling operations. The suite of chemical and physical measurements to be gathered during the 4,500 nautical mile transect from Papeete, Tahiti (17°S) to Kodiak, Alaska (55°N), with a port stop in Hawaii, will be used to assess changes in anthropogenic carbon dioxide (CO₂) distributions and fluxes in the Pacific Ocean over the last decade. This transect was last sampled in 1991 as part of NOAA's Ocean Atmosphere Carbon Exchange Study (OACES).

Specific objectives of the P16N cruise are to: document the evolution and migration of anthropogenic CO₂ and other tracers in the Pacific Ocean; determine the biogeochemical and physical processes that control the extent and rate by which the world's oceans act as a net sink for and transporter of atmospheric CO₂; determine the large-scale ocean circulation; make estimates of ocean mass, heat, and freshwater fluxes; and assess the role of long-term variability in ocean temperature, salinity, and circulation in climate.

As atmospheric CO₂ concentrations continue to increase, understanding their potential impact on climate is critical for predicting global change. Moreover, increasing CO₂ levels in the ocean are causing the oceans to become more acidic and this is believed to adversely affect calcifying organisms. Data gathered during transect reoccupations of the Repeat Hydrography Program support the development of models that will more skillfully predict the role of the oceans in global climate change. Decadal reoccupation of hydrographic transects also provides a means for determining the extent of naturally-occurring and anthropogenic changes in the chemical and physical properties of the ocean.

The Repeat Hydrography Program is jointly funded by NOAA's Office of Climate Observations and the National Science Foundation. The effort supports both the U.S. CLIVAR (Climate Variability and Prediction) and Carbon Cycle Science programs.



Track of the P16N research cruise of the Repeat Hydrography Program from Papeete, Tahiti to Kodiak, Alaska.

New CREWS Monitoring Station Up and Running

In mid January, AOML's Integrated Coral Observing Network (ICON) team began installing the electronics and environmental sensors on the newest Coral Reef Early Warning System (CREWS) station located in the La Parguera Marine Reserve of southwest Puerto Rico. As a result of their efforts, oceanographic and atmospheric data are now being gathered from the station and posted on NOAA's Coral Health and Monitoring Program web site at www.coral.noaa.gov/crw/real_data.shtml in near real time.



Jeff Absten installs electronics in the uppermost chamber of the new CREWS station in La Parguera, Puerto Rico perched about 17 feet above the ocean surface.

Additional sensors are scheduled for installation in the coming months. The station was funded through NOAA's Coral Reef Conservation Program and is being jointly operated by AOML and the University of Puerto Rico's Department of Marine Science.

AOML Web Site Helps Nautical Racers Sail Smarter

Yacht teams competing in the 2005-2006 Volvo Ocean Race will, for the first time, be able to access an online collection of environmental observations to guide their navigational efforts. The teams will be using data from a web site created by Drs. Gustavo Goni of AOML's Physical Oceanography Division and Joaquin Trinanes of NOAA's CoastWatch Program (www.aoml.noaa.gov/phod/VOR). The site provides a compilation of satellite data products collected from a variety of sources including NOAA, the U.S. Navy, NASA, and the European Space Agency, as well as data products currently under development at AOML.

In November 2005, seven state-of-the-art racing yachts departed Sanxenxo, Spain to begin leg 1 of the 32,500 mile nautical event. During the eight-month long journey around the world, maps delineating surface winds, ocean currents, sea surface temperatures, wave height, and wave direction will help keep the yacht teams abreast of weather conditions while sailing in some of the most extreme environments on the planet.

Data from the site can be accessed every six hours via satellite during the at-sea portions of the race, providing competitors with near real-time observations to plot the safest, most efficient route. While in port, data from the site can be accessed without restriction as needed or required.

Provision of these data by AOML and the CoastWatch Program is part of a collaborative agreement between NOAA and the Volvo Ocean Race. In return for supplying environmental observations, NOAA is allowed access to the vast amount of oceanographic and meteorological data gathered by the yacht teams. Scientists and racers are thus able to exchange valuable information about complex weather and oceanographic conditions found throughout the world's oceans. "Feedback from race participants helps improve validation of our products," said Goni. "Each boat measures a number of parameters that we can use to fine-tune our models and the techniques used in producing our products."

Goni and Trinanes were first introduced to the Volvo Ocean Race almost four years ago when competitors of the 2001-2002 event had a port stop in Miami and visited AOML. Goni and Trinanes demonstrated how Internet-based oceanographic and meteorological data products derived at AOML could improve navigation. Their current involvement with the Volvo Ocean Race builds upon the partnership forged at that time.

"One of the keys to successfully navigating around the world is accurate selection of the fastest route," said Chris Bedford, official meteorologist for the Volvo Ocean Race. "By using global computer weather models and ocean current information, combined with the performance tables for each yacht, the fastest route can be calculated. NOAA data are vital for the route planning work of the race navigators who are constantly adjusting their strategy based upon the incoming wind, wave, and current information provided by AOML."

The Volvo Ocean Race is one of the world's premier sailing challenges. Competitors will make eight port stops (including two in the United States—Baltimore/Annapolis and New York City) during the grueling race across four oceans before reaching Gothenberg, Sweden, their final destination, in June 2006.



AOML's Volvo Ocean Race web site provides competitors with information about oceanographic and atmospheric conditions, enabling them to navigate with better safety, strategy, and speed.



Volvo Ocean Race yachts docked in Sanxenxo, Spain before the start of the 2005-2006 event.

First Aid/CPR-AED* Training Class



March 8, 2006

9:00 a.m. - 4:00 p.m.

First-Floor Conference Room

Contact Nancy Ash to register
or for more information

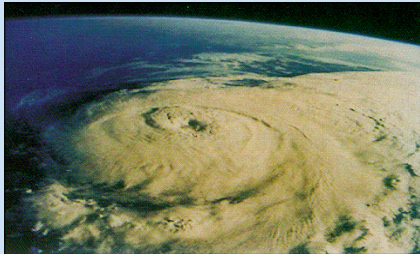
305-361-4544

Nancy.Ash@noaa.gov

Sponsored by American Red Cross

*Automated External Defibrillator

50th Anniversary Celebration...



National Hurricane Research Project (1956-2006)

Open House at AOML

Thursday, May 18th
9:00 a.m.-3:00 p.m.

Ceremonies and Celebration at AOML

Monday, May 22nd
3:00 p.m.-5:00 p.m.

Banquet at the Rusty Pelican

(present/former hurricane
researchers, friends, family,
and collaborators)
Monday, May 22nd
6:00 p.m.-?

Research Aircraft Tours

Opa-Locka Airport
Tuesday, May 23rd
9:00 a.m.-12:00 p.m.

50 Years of Hurricane Research Symposium

Rosenstiel School of Marine
and Atmospheric Science
Tuesday, May 23rd
12:00 p.m.-5:00 p.m.

Contact Neal Dorst for more info:
305-361-4311
Neal.M.Dorst@noaa.gov

AOML Welcomes New Assistant Administrator

NOAA's new Assistant Administrator for the Office of Oceanic and Atmospheric Research (OAR), Dr. Richard Spinrad, along with Dr. James Mahoney, Assistant Secretary of Commerce for Oceans and Atmosphere and the NOAA Deputy Administrator, visited AOML on January 10-11, 2006. AOML Director Dr. Robert Atlas and Deputy Director Judith Gray welcomed them to OAR's Florida research facility.

Drs. Spinrad and Mahoney addressed AOML's staff at an All-Hands Meeting during the afternoon of January 10th and discussed their plans to position OAR as the leading body for directing and defining NOAA's research and its priorities, emphasizing the importance of teamwork and communication. A question and answer session followed.

The remainder of their visit was spent learning about AOML's science programs, future plans, and science management. Presentations focused on the three main research themes at AOML: climate, ecosystems, and hurricanes. Science discussions were engaging, both in the formal presentations and during the informal walk-arounds when Dr. Spinrad had the chance to meet with individuals in the Hurricane Research, Ocean Chemistry, and Physical Oceanography Divisions and learn about their research projects.

Dr. Spinrad expressed appreciation for how well prepared all speakers were and stated that the presentations were "spot on." He also complimented AOML on what he guessed must have been extensive dry-runs and was particularly impressed with the enthusiasm shown by all employees with whom he interacted.

"I was very proud of the way we presented our science and our facility and was very glad to see the way Dr. Spinrad and others candidly discussed AOML's research and the issues we are facing," said Dr. Atlas. "The site review was successful due to the fantastic participation by all AOML staff."

AOML Deputy Director Judith Gray (far left) joined Wendy Abshire (University Corporation for Atmospheric Research), Jennifer Francis (Rutgers University), and Ada Monzon (Univision), as a panelist at the Women in the Atmospheric Sciences Luncheon held on February 1st during the American Meteorological Society's 86th Annual Meeting in Atlanta, Georgia. The event was organized by Shirley Murillo, a meteorologist with AOML's Hurricane Research Division and Chair of the AMS' Board on Women and Minorities.

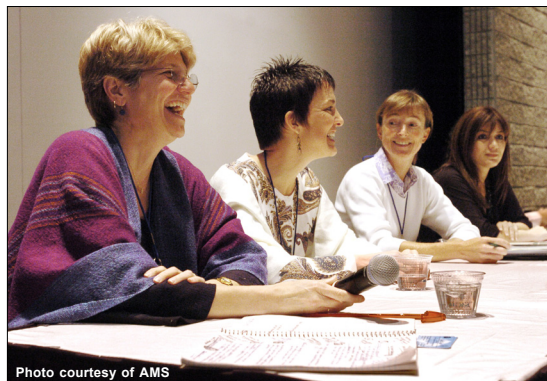


Photo courtesy of AMS



Drs. Michael LaGier of the Ocean Chemistry Division's Environmental Microbiology Laboratory, Richard Spinrad, and Tsung-Hung Peng.



Drs. Peter Ortner, Richard Spinrad, and Robert Atlas.



Dr. Richard Spinrad with a shallow water drifter used to track surface currents in Florida Bay.

February is National African-American History Month

Recent Publications*

- ABERSON, S.D., and B.J. Etherton, 2006: Targeting and data assimilation studies during Hurricane Humberto (2001). *Journal of the Atmospheric Sciences*, 63(1):175-186.
- Browder, J.A., R. Alleman, S. Markley, P.B. ORTNER, and P.A. Pitts, 2005: Biscayne Bay conceptual ecological model. *Wetlands*, 25(4):854-869.
- HENDEE, J.C., E.R. STABENAU, L. FLORIT, D. MANZELLO, and C. JEFFRIS, 2006: Infrastructure and capabilities of a near real-time meteorological and oceanographic in situ instrumented array and its role in marine environmental decision support. In *Remote Sensing of Aquatic Coastal Ecosystem Processes*, L.L. Richardson and E.F. LeDrew (eds.). Springer-Verlag, 135-156.
- Li, Y.-H., L. Menviel, and T.-H. PENG, 2006: Nitrate deficits by nitrification and denitrification processes in the Indian Ocean. *Deep-Sea Research, Part 1*, 53(1):94-110.
- McGillis, W.R., and R.H. WANNINKHOF, 2006: Aqueous CO₂ gradients for air-sea flux estimates. *Marine Chemistry*, 98(1):100-108.
- Michaels, P.J., P.C. Knappenberger, and C.W. LANDSEA, 2005: Comments on "Impacts of CO₂-induced warming on simulated hurricane intensity and precipitation: Sensitivity to the choice of climate model and convective scheme." *Journal of Climate*, 18(23): 5179-5182.
- Molinari, J., P.P. DODGE, D. Vollaro, K.L. Corbosiero, and F.D. MARKS, 2006: Mesoscale aspects of the downshear reformation of a tropical cyclone. *Journal of the Atmospheric Sciences*, 63(1):341-354.
- Rudnick, D.T., P.B. ORTNER, J.A. Browder, and S.M. Davis, 2005: A conceptual ecological model of Florida Bay. *Wetlands*, 25(4):870-883.
- Wang, W., and C. WANG, 2006: Formation and decay of the spring warm pool in the South China Sea. *Geophysical Research Letters*, 33(2):L02615, doi: 10.1029/2005GL025097.
- ZHANG, J.-Z., 2006: Enhanced sensitivity in flow injection analysis using a long pathlength liquid waveguide capillary flow cell for spectrophotometric detection. *Analytical Sciences*, 22(1): 57-60.

*Names of AOML authors appear in capital letters.

Dr. George Harvey Passes Away

On November 9, 2005, the Atlantic Oceanographic and Meteorological Laboratory lost one of its own. Dr. George Ranson Harvey, a former research oceanographer with AOML's Ocean Chemistry Division, passed away at the age of 67 in Inverness, Florida.

Harvey was born on December 30, 1937 in Boston, Massachusetts. He received a B.S. degree in chemistry from Boston College in 1960 and a Ph.D. in organic chemistry from the Massachusetts Institute of Technology in 1964.

After completing his education, Harvey worked for the Monsanto Company in St. Louis, Missouri in its Agricultural Research Department. He headed Monsanto's chemical metabolism program from 1964 to 1969, conducting research on the synthesis of herbicides, insecticides, hormones, and growth regulators. During this time frame, he was one of only a handful of scientists in industry who spoke out about the damaging health and environmental impacts of Agent Orange and other herbicides employed by the U.S. military in Viet Nam.

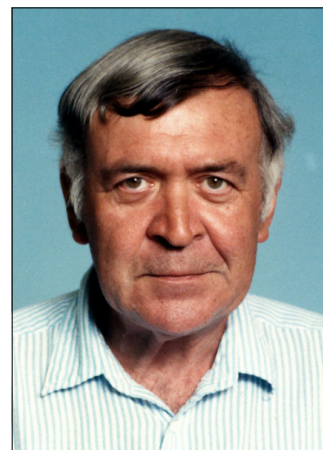
Leaving industry for academia, Harvey joined the Woods Hole Oceanographic Institution as an assistant scientist in 1969. He became an associate scientist in 1972 but left Woods Hole in 1977 to become the first principal investigator recruited into the newly formed Ocean Chemistry Division at AOML.

During Harvey's 20 years with the Division, he investigated the biogeochemistry of natural and synthetic halogenated organic compounds in the sea and the chemistry of humic substances. He authored or co-authored more than 50 publications and held three patents for work performed while at Monsanto related to the synthesis of useful agricultural products.

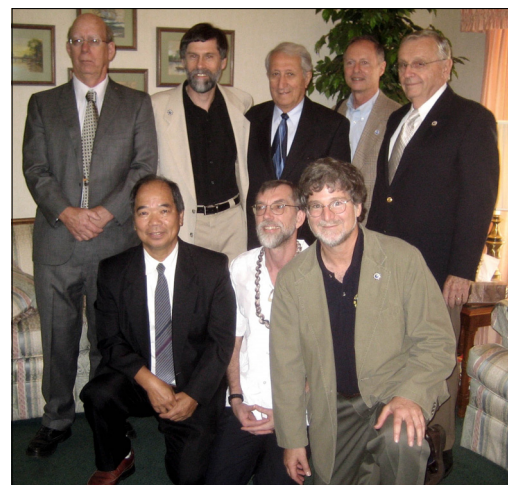
Harvey retired from federal service in 1997 but continued working for several more years as a chemistry professor at Miami-Dade College where he taught organic chemistry to nursing students and other future health professionals. He finally retired after more than 40 years as a research scientist to Inverness, Florida with his wife.

A memorial service celebrating Harvey's life was held December 10, 2005 at the Charles Davis Funeral Home in Inverness. Family and friends from across the U.S. attended, including a group of Harvey's friends and former colleagues from AOML. Dr. Peter Ortner, AOML's chief scientist and long-time member of the Ocean Chemistry Division, spoke on behalf of the group regarding all that Harvey had meant to his AOML "family." He recalled that as a young Woods Hole graduate student in 1977, Harvey had persuaded him to move to Miami and join the Ocean Chemistry Division. Upon his arrival at AOML, Ortner was immediately sent to sea aboard the NOAA Ship *Researcher* for a subtropical underwater cruise Harvey had organized.

Ortner presented Harvey's widow with an inscribed plaque of the *Researcher*. George Berberian, another long-time Ocean Chemistry Division scientist, also spoke and presented Harvey's widow with a NOAA flag that had flown at AOML. Both gifts were offered out of respect and appreciation for the many years of camaraderie and scientific collaboration spent with Harvey at AOML.



George Harvey
1937-2005



AOML scientists (current and former) who attended the memorial service for George Harvey included (standing) Dr. Thomas Carsey, Capt. John Tokar, George Berberian, Shailer Cummings, and Jack Kofoed, and (kneeling) Drs. Tsung-Hung Peng, Philip McGillivray, and Peter Ortner.

Welcome Aboard

NOAA Corps officer LT Nancy Ash joined the staff of the Office of the Director in January as AOML's new Associate Director. Ash will oversee facility maintenance operations, coordinate ship time, assist with dive missions, and tend to several other miscellaneous tasks. Prior to her arrival at AOML, she was a member of the Programs staff at NOAA's Aircraft Operations Center in Tampa, Florida.



Farewell

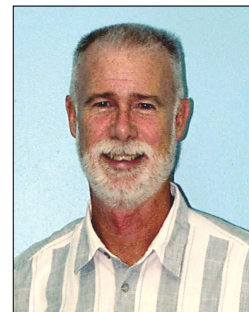
Claudia Garcia, a CIMAS Research Associate working in the Ocean Chemistry Division's Environmental Microbiology Laboratory, resigned in February to accept a position at the medical campus of the University of Miami. While with the Division, Garcia assisted Dr. Kelly Goodwin in developing molecular biological assays for monitoring water quality.

Benjamin Kates, a CIMAS Research Associate with AOML's Physical Oceanography Division, resigned in January after more than three years with the Division. Kates recently became part owner of a sailboat and plans to spend the coming months cruising the south Pacific. He departed from Panama in February. While with PhOD, he maintained, calibrated, and prepared instrumentation for the Division's field operations and participated in cruises aboard research and merchant vessels.

AOML's 2005 holiday-giving campaign benefitted several families in south Florida this past December. Employee contributions were used to purchase gift certificates from local grocery stores, which were given to eight families, all led by single mothers. Since the program's inception in 1998, AOML's holiday-giving campaign has helped 105 families. Thanks to Evan Forde for organizing and leading the effort and to all whose generosity helped make the holidays happier for many in our community.

Smooth Sailing

Steven Cook, an oceanographer with AOML's Physical Oceanography Division, retired in January after 35 years of federal service with NOAA. During his years at AOML, Cook managed the Global Ocean Observing System (GOOS) Center. In this capacity, he supervised the global surface drifter, expendable bathythermograph, and thermosalinograph programs and ensured that NOAA's requirements for the data these instruments collected were achieved. Prior to joining AOML in 1998, Cook worked for many years with the National Marine Fisheries Service and the National Ocean Service.



David Bitterman, a senior electronics engineer with AOML's Physical Oceanography Division, retired in January after completing almost 25 years of federal service with NOAA (all at AOML). Over the years, Bitterman was responsible for designing and building a variety of instruments (drifting buoys, expendable bathythermograph auto-launchers, inverted echo sounders, and more) for use by the Division in support of its field research programs. Although retired, Bitterman will continue working with the Division on a part-time basis as an affiliate of the Cooperative Institute for Marine and Atmospheric Studies.



Congratulations

Joseph Bishop, Hector Casanova, Jules Craynock, Jeffrey Judas, James Hendee, John Proni, Emy Rodriguez, Michael Shoemaker, and Jack Stamates, all with AOML's Ocean Chemistry Division, along with Scott Stolz (formerly with AOML's Office of the Director) and John Halas of NOAA's Florida Keys National Marine Sanctuary, are the recipients of a 2005 NOAA Bronze Medal. The group received the award for implementing a unique oceanographic and meteorological monitoring network in coral reef areas under goals established by NOAA and the U.S. Coral Reef Task Force. Non-federal group members include Louis Florit and Michael Jankulak, both affiliated with the Ocean Chemistry Division through the University of Miami's Cooperative Institute for Marine and Atmospheric Studies, and Erik Stabenau, a National Research Council post-doctoral scientist.

Hector Casanova, a NOAA Corps officer with AOML's Ocean Chemistry Division, is the recipient of a 2005 NOAA Bronze Medal. Casanova received the award as a member of a National Ocean Service team that helped forge an historic, long-term partnership with Mexico to increase the safe marine transportation of goods and services, including key energy shipments, in shared boundary waters.

Judith Gray, AOML's Deputy Director, is the recipient of a 2005 NOAA Bronze Medal. Gray received the award as a member of a NOAA-wide team that provided leadership in establishing the Coastal Storms Program and successfully completing the program's first pilot in Florida.

Elizabeth Forteza, a CIMAS Research Associate with AOML's Physical Oceanography Division, and Alberto Mestas-Nuñez, a CIMAS Assistant Scientist with AOML's Physical Oceanography Division, both became United States citizens on December 13, 2005. The swearing-in ceremony was one of south Florida's largest in recent years, with more than 12,000 immigrants representing over 100 countries taking the oath of allegiance.

Stanley Goldenberg, a meteorologist with AOML's Hurricane Research Division, was one of three recipients recently named a 2005 Commuter of the Year by South Florida Commuter Services in recognition of his long-term efforts to support and promote the use of public transportation in Miami-Dade County.

Travel

Jeffrey Absten, Hector Casanova, Jules Craynock, James Hendee, and Michael Jankulak installed electronics and sensors on the new Coral Reef Early Warning System (CREWS) station in La Parguera, Puerto Rico on January 10-13, 2006.

Silvia Garzoli attended an Argo Steering Team meeting in Hyderabad, India on January 16-18, 2006.

Robert Atlas attended a meeting of the Working Group for Space-Based Lidar Winds in Key West, Florida on January 17-20, 2006. He also attended the National Science Board's Task Force on Hurricane Science and Engineering Workshop in Arlington, Virginia on January 24, 2006.

Robert Atlas, Robert Burpee, Howard Friedman, Judith Gray, and Shirley Murillo attended the American Meteorological Society's 86th Annual Meeting in Atlanta, Georgia on January 29-February 2, 2006.

George Berberian, Robert Castle, Charles Fischer, and Kevin Sullivan will participate in the P16N research cruise of the Repeat Hydrography Program from Papeete, Tahiti to Kodiak, Alaska from February 3-April 2, 2006.

David Enfield sailed aboard the MV *Explorer* during its Salvador, Brazil to Capetown, South Africa transect as a scientist and Semester at Sea instructor on February 3-27, 2006.

Rick Lumpkin attended a PIRATA (Pilot Research Moored Array in the Tropical Atlantic) Steering Committee meeting in Natal, Brazil on February 6-7, 2006.

Robert Atlas, Silvia Garzoli, Gustavo Goni, Elizabeth Johns, Heike Lueger, Christopher Meinen, Peter Ortner, Tsung-Hung Peng, Ryan Smith, Rik Wanninkhof, and Jia-Zhong Zhang attended the American Geophysical Union's Ocean Sciences Meeting in Honolulu, Hawaii on February 20-24, 2006.

Joseph Cione attended the Third Workshop on the Utilization of Remotely Operated Aircraft/Unmanned Aerospace Vehicles for Global Climate Change and Weather Research in Las Vegas, Nevada on February 28-March 1, 2006.

Happy Holidays 2005



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

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