

## NOAA Administrator Hosts Miami-Area Meeting

Undersecretary of Commerce for Oceans and Atmosphere and NOAA Administrator Vice Admiral (VADM) Conrad Lautenbacher hosted an all-hands, town-hall style meeting for local NOAA, joint institute, and contract employees on March 22, 2004. VADM Lautenbacher addressed a full house at the University of Miami's Rosentiel School auditorium where he spoke about the new "White Water to Blue Water" initiative.



The initiative seeks to improve watershed and marine ecosystem-based management efforts throughout the Caribbean. NOAA and the United Nations Environment Programme have entered into a collaborative agreement to jointly assist the venture by providing technical information and expertise.

VADM Lautenbacher also spoke about the strategic planning process and funding issues, stressing that all NOAA line offices should work together cooperatively to promote NOAA and its mission. A question and answer session followed.

After concluding the meeting, VADM Lautenbacher visited AOML where he met with Acting and Deputy Directors Peter Ortner and Judith Gray. A brief tour of the facility highlighted several of AOML's current research programs.



*Administrative  
Professionals Day  
April 21, 2004*

## Surface Drifters Track Circulation Patterns in the Florida Keys National Marine Sanctuary

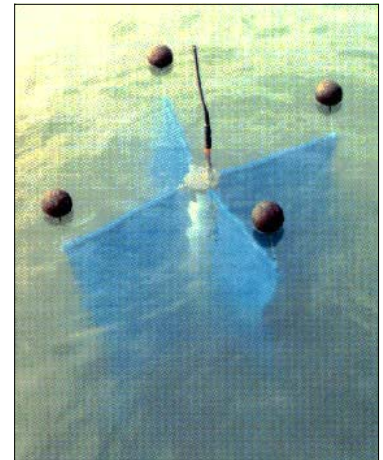
*Elizabeth Johns, Physical Oceanography Division*

The coastal waters of NOAA's Florida Keys National Marine Sanctuary encompass the coral reefs of the Florida Keys and the protected larval spawning grounds of the Dry Tortugas. These areas are in close proximity to waters of the Gulf of Mexico, the Atlantic Ocean, and Florida Bay. Effective resource management requires an understanding of the circulation and exchange of waters within this entire interconnected system.

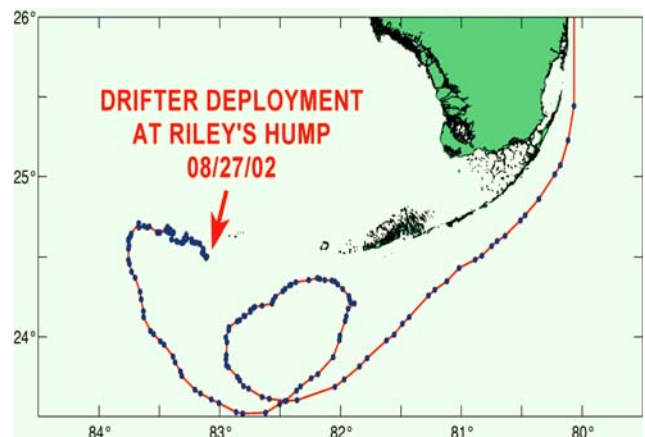
One way that scientists at AOML and the University of Miami's Rosenstiel School have been monitoring these regional circulation patterns is by satellite-tracked surface drifters. These drifters provide a means of viewing, in near real-time, the trajectories of the surface currents. The drifters are typically deployed during bimonthly interdisciplinary surveys aboard the University of Miami's research vessel *F.G. Walton Smith* in the Dry Tortugas near Riley's Hump and near the Shark River mouth in Everglades National Park.

The surface drifters are approximately 1 meter tall and are ballasted to float low in the water column. They are equipped with "sails" to allow the drifters to move with the water. The drifters are tracked by ARGOS satellites, and a series of fixes are used to compute their speed and direction.

The well-known snapper spawning grounds of the Dry Tortugas are located adjacent to a persistent recirculation feature known as the Tortugas Gyre, which provides an important mechanism for larval retention and distribution throughout the (continued on page 2)



A typical surface drifter shortly after deployment.



Trajectory of a satellite-tracked surface drifter deployed in the Dry Tortugas in August 2002.

(continued from page 1)



Surface drifter deployments are made from the University of Miami's research vessel *F.G. Walton Smith*.

Keys coral reef tract. The Tortugas Gyre, generally located to the south of the Dry Tortugas along the inshore front of the Loop Current, tends to form periodically over a period of weeks to months and then slowly drifts through the region until it is absorbed by the Florida Current offshore of the Florida Keys. The trajectory shown on the previous page is of a surface drifter deployed in the Dry Tortugas in August 2002. This drifter meandered slowly to the northwest until it was entrained along the edge of the Loop Current, made one revolution around the Tortugas Gyre, and then exited the area via the Florida Current.

This is only one example of how satellite-tracked surface drifters can be used to gain insight into the regional circulation features that affect the waters of the Florida Keys National Marine Sanctuary. Trajectories from many other drifters deployed in the region may be viewed at the project web site at [http://www.aoml.noaa.gov/sfcoo/SFP\\_drifters/](http://www.aoml.noaa.gov/sfcoo/SFP_drifters/).

## Detecting DNA with a Pencil

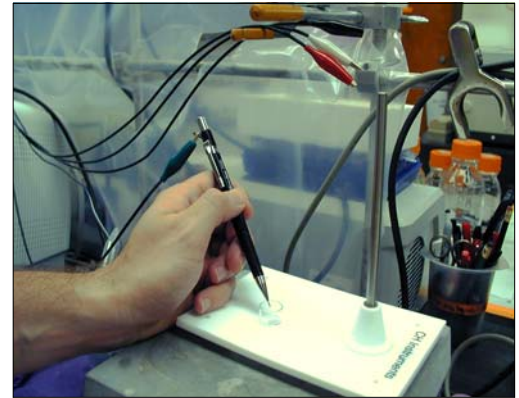
AOML's Environmental Microbiology Laboratory is working to capitalize on biotechnology advances to develop the next generation of remote sensing technology. This high tech objective uses a low tech approach—they detect DNA with a pencil. Dr. Michael LaGier, a University of Miami post-doctoral scientist working in Dr. Kelly Goodwin's laboratory, uses a carbon electrode (a modified mechanical pencil) to detect the electrical signal created by DNA captured by molecular probes. The goal is to adapt the technique to use on a buoy, allowing for remote detection of the DNA of harmful algae and fecal bacteria. To do this, the project is tackling issues of remote DNA extraction, specific DNA hybridization, and sensitive electrochemical detection of the target DNA.

Using electrochemical methods rather than fluorescence is a novel approach to oceanographic studies. Electrochemical detection offers devices that are small, inexpensive, simple in design, and have low power requirements. Incorporating the benefits of electrochemical detection into a remote biosensor should have a major impact upon coastal and marine ecosystem monitoring.

Present methods to monitor coastal water quality for microbial contaminants need improvement. Problems include issues with sample preservation, proper identification of species, and length of time to obtain results. Biosensors to monitor toxic organisms could provide early warning to close fisheries or beaches. Species-specific data generated by biosensors, in conjunction with measurement of environmental variables, could significantly contribute to the understanding of a variety of processes such as plankton dynamics, initiation of algal blooms, and the spread of coral disease. Economic benefits include reducing health and legal costs derived from consumption of contaminated fish and shellfish or from swimming in polluted waters. Benefits also include protecting aquaculture, sport and commercial fishing, and tourism.

By successfully addressing the major issues of sensitivity and selectivity facing electrochemical DNA detection, the technology developed by this project can provide an important tool for water quality managers. In addition, this work can benefit clinical assays, security surveillance, and food safety.

This project represents a collaborative effort between public, academic, and private sector scientists and engineers. AOML's Environmental Microbiology Laboratory, headed by Dr. Kelly Goodwin, collaborates with Dr. Joseph Wang's group at New Mexico State University, Dr. Jack Fell's lab at the University of Miami, Dr. Chris Scholin at the Monterey Bay Research Institute, and private companies.



DNA captured by molecular probes is detected by a carbon electrode (a modified mechanical pencil).



Dr. Michael LaGier in the Ocean Chemistry Division's Environmental Microbiology Laboratory.

## Join Team AOML



### Miami Corporate Run

May 6, 2004  
Bayfront Park  
6:45 p.m.

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## CBLAST Researchers Meet at AOML and University of Miami's Rosenstiel School

The third Principal Investigators Meeting of the Coupled Boundary Layer Air-Sea Transfer (CBLAST) program was held at AOML and the University of Miami's Rosenstiel School on February 18-20, 2004. Drs. Peter Black of AOML's Hurricane Research Division and Shuyi Chen of the Rosenstiel School's Meteorology and Physical Oceanography Division co-hosted the event.

Approximately 30 researchers met to review initial observational results obtained this past September 2003 from the NOAA WP-3D flights into Hurricanes Fabian and Isabel, as well as from buoy and float deployments in Fabian from an Air Force Reserve 53rd Weather Reconnaissance Squadron WC-130J aircraft. Coordination of observational analyses with CBLAST hurricane modeling studies was discussed at length. Researchers also discussed flight pattern strategies for the 2004 hurricane season and made preparations to ensure that all instruments are reinstalled on the WP-3D aircraft prior to the start of the season.

New understanding of the physics of ocean surface wave breaking, sea spray generation and its impact on air-sea fluxes, and the responses in both the atmospheric and oceanic boundary layers were reported from the observations, as well as from wave tank studies and numerical models. Plans were formulated for publishing a description of the CBLAST field experiment and preliminary modeling results and for presentations at two upcoming meetings.

CBLAST is funded by the Office of Naval Research and NOAA. The program seeks to provide improved parameterizations of air-sea fluxes for use in numerical models, ultimately leading to more skillful forecasts of hurricane intensity change.



The AOML-National Weather Service Employees Organization (NWSEO) negotiated collective

bargaining agreement went into effect on January 21, 2004. Learn more about the provisions of the bargaining agreement at:

<http://www.nwseo.org/oarindex.html>

## Stewart Diary Recounts Early Days of Ocean Research

A field diary that documents AOML founder and director Harris B. Stewart's first experience as a member of an oceanographic expedition has been transcribed. The electronic version of the file can be viewed on the Internet at <http://www.aoml.noaa.gov/spotlight/index.html>.

Stewart was invited to join the scientific party of the Northern Holiday Expedition in the summer of 1951. He had just arrived in La Jolla, California to attend graduate school at the Scripps Institution of Oceanography and eagerly accepted the invitation. The journey that ensued aboard the Scripps research vessel *Horizon* would log close to 7,000 nautical miles.

Intensive exploration of the seas using "modern" technology was just beginning in the early 1950s, funded by the U.S. Navy to increase knowledge about the oceans. Scripps was one of the institutions on the forefront of such research.

The Northern Holiday Expedition surveyed unexplored sections on nautical charts for the Pacific Ocean north of the San Francisco-Hawaii steamer lanes and south of the Aleutian Islands. It also completed detailed surveys of 10 seamounts in the Gulf of Alaska, three of which were new discoveries. The largest seamount, an 11,400-foot mountain with its summit a mile below the surface, was christened the "Scripps Seamount."

During the two-month long cruise, Stewart kept a diary that documented day-to-day ship activities including the retrieval of a 100-pound manganese nodule brought to the surface from a depth of three miles entangled in hydrographic wire. It was the first of many diaries he would write over the course of a distinguished marine science career that spanned several decades.

After his death in April 2000, the diary surfaced when Stewart's family donated all of his papers to AOML. It included ink and pencil entries, sketches of equipment and marine animals, data, notes, letters, whimsical poems, newspaper clippings, black and white photographs, and cruise instructions. Also found among Stewart's memorabilia were 12 additional diaries written mostly during his seafaring years of ocean exploration.

Transcription of the Northern Holiday Expedition diary was spearheaded by NOAA's National Ocean Service, Office of Oceanic and Atmospheric Research, and National Marine Fisheries Service as an informal effort to rescue and preserve written records that form part of the historical legacy of NOAA. NOAA's National Centers for Coastal Ocean Science, Southeast Fisheries Science Center, and AOML coordinated the document rescue effort of the diary and contributed graphics and editing expertise. Summer students at AOML transcribed the numerous handwritten journal entries into an electronic format. Transcription and subsequent publication of Stewart's 12 remaining diaries is planned.



Harris Stewart (left) aboard the R/V *Horizon* examines manganese nodules dredged from a North Pacific seamount during the 1951 Northern Holiday Expedition.

### Pre-Retirement Workshop for Federal Employees

March 30, 2004 — 8:00 A.M. - 5:00 P.M.

March 31, 2004 — 8:00 A.M.-12:00 P.M.

Southeast Fisheries Science Center Seminar Room

• NOAA's Mountain Administrative Support Center • Blue Cross-Blue Shield  
• AMEX Financial Services • Social Security Administration • LTC Partners  
(long-term care) • National Association of Retired Federal Employees

Contact Howard Friedman for more info (305-361-4319 — [Howie.Friedman@noaa.gov](mailto:Howie.Friedman@noaa.gov))

**March-April 2004  
Informal Research Reports\***

**March 9**

**The Heat Budget of the  
Western Hemisphere  
Warm Pool**

**Dr. David Enfield  
Physical Oceanography Division**

**March 23**

**Design of the Operational  
Tropical Cyclone Climatology  
Model (R-CLIPER)**

**Dr. Frank Marks  
Hurricane Research Division**

**March 25**

**Preliminary Science Results  
from the Coupled Boundary  
Layer Air-Sea Transfer  
(CBLAST) Program**

**Dr. Peter Black  
Hurricane Research Division**

**April 8**

**HRD Landfall Group Report:  
Onshore and Offshore Wind  
Flow at the Landfall of  
Hurricane Isabel (2003)**

**Mr. Peter Dodge  
Hurricane Research Division**

**April 27**

**Vortex alignment of the  
f and beta plane**

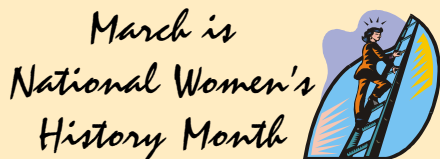
**Dr. Robert Jones  
Hurricane Research Division**

**April 28**

**The Saharan Air Layer:  
Insights from the 2003 and  
2004 Hurricane Seasons**

**Mr. Jason Dunion  
Hurricane Research Division**

*Presentations begin at 3:00 p.m. in the first-floor conference room. Coffee and tea are served at 2:45 p.m.*



**Severe Weather Poster Highlights NOAA Research**

A new poster that highlights NOAA's critical responsibility in observing and issuing accurate forecasts and warnings of severe weather—hurricanes, flash floods, tornadoes, and lightning—will be viewed by an estimated eight million schoolchildren nationwide due to a unique collaboration between NOAA and the National Science Teachers Association (NSTA). By combining resources, NOAA and the NSTA will reach a wide segment of America's youth to convey the importance of NOAA's mission while also providing an exciting glimpse into the scientific research associated with these dangerous weather phenomena.

The outreach effort was proposed and spearheaded by AOML's Evan Forde. Other NOAA team members who contributed their expertise to the project were Daphne Zaras (National Severe Storms Laboratory), Colin McAdie (National Hurricane Center), Jana Goldman (Office of Oceanic and Atmospheric Research's Public Affairs Office), and Neal Dorst (AOML).

NOAA's Office of Education and Sustainable Development provided funding for the joint venture. The NSTA assisted with graphic layout and design. Once completed, the poster received the NSTA's endorsement and was distributed to 55,000 NSTA members as a supplement in their April 2004 professional journals. Accompanying the poster was an article written by Forde about meteorology and NOAA's commitment to accurately forecasting severe weather in the interest of national safety and economy.

Educational outreach efforts are oftentimes constrained by the logistics and financial considerations associated with distributing materials. The successful collaboration between NOAA and the NSTA resulted in broad distribution at a minimal cost and will, most likely, influence the way future educational outreach projects are crafted by NOAA.

An additional feature of the poster effort is the creation of a NOAA Severe Weather Poster web site (<http://www.noaanews.noaa.gov/severeweather/>) where students can learn more about safety and emergency preparedness procedures to guard against loss of life and property. Once fully operational, the site will provide online weather related teacher resources and award NOAA weather radios as weekly prizes to the school of the first student who can accurately answer a severe weather quiz.



Evan Forde and NOAA Administrator VADM Conrad Lautenbacher (U.S. Navy, retired) hold a sample of the new NOAA-National Science Teachers Association severe weather poster.



Staff members reporting for work on April 1st encountered an unusual site—a large iguana placidly perched in the native species planter box outside the main entrance to AOML. Although iguanas are normally shy and retiring, this intrepid creature maintained its position for several hours, oblivious to the startled exclamations its presence elicited. Iguanas of all sizes roam freely on the grounds of AOML and occasionally appear in the most improbable places, especially if they happen to be made of molded plastic and it April Fool's Day.

## Welcome Aboard

Pedro Pena joins the staff of the Ocean Chemistry Division as an electronics technician working on contract to assist the Acoustics Research Group design and build electronic circuits. Pedro holds a B.S. degree in computer engineering from Florida International University.

Dr. Erik Stabenau joins the staff of the Ocean Chemistry Division as a National Research Council post-doctoral scientist. He will work with Dr. James Hendee to assist in the development of a chromophoric dissolved organic matter (CDOM) sensor for the Coral Reef Early Warning System (CREWS) stations. He will also assist with pCO<sub>2</sub> and coral bleaching-related data analysis, as well as develop his own research. Erik recently received his doctoral degree from the Marine and Atmospheric Chemistry Department of the University of Miami's Rosenstiel School of Marine and Atmospheric Science.

## Congratulations

Jason Dunion, a research meteorologist with AOML's Hurricane Research Division, completed his one-year term as President of the Greater Miami chapter of the American Meteorological Society in December 2003. Newly elected officers for 2004 include Vice President Neal Dorst and Secretary Steven Feuer, both research meteorologists with AOML's Hurricane Research Division.

## MS Walk

March 28, 2004

9:00 A.M.

George English Park  
(Fort Lauderdale)

*Proceeds benefit the National  
Multiple Sclerosis Society*

Team AOML walkers, joggers,  
and sponsors welcome

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## Farewell

Clarke Jeffris, an Information Technology Specialist with the Ocean Chemistry Division since November 1997, resigned from AOML on March 26, 2004. Clarke will undergo 16 weeks of intensive course work at the Training Academy of the Federal Bureau of Investigation (FBI) in Quantico, Virginia. Upon graduation, he will join the FBI work force as a Special Agent.

Wilma Jeffris, a CIMAS associate with the Ocean Chemistry Division's Environmental Microbiology Laboratory since October 2002, resigned from AOML on April 9, 2004. Wilma returns to Florida International University as a full-time student to complete her undergraduate degree in chemistry.

Monika Gurnee, Information Technology Specialist and Web Master with the Ocean Chemistry Division since July 1997, resigned from AOML on April 9, 2004. Monika is moving to the Melbourne, Florida, area where she plans to work as an independent contractor for Internet web services.

## Virginia Key Volunteers Contribute to NOSB Success

Volunteers from the Virginia Key science community once again contributed their time and expertise to help ensure the success of National Ocean Science Bowl's (NOSB) Florida regional competition. The annual marine science event was held at the Harbor Branch Oceanographic Institution in Fort Pierce, Florida on February 21st.

Ten volunteers from the University of Miami's Rosenstiel School of Marine and Atmospheric Science (RSMAS), NOAA's Southeast Fisheries Science Center (SEFSC), and AOML made the trip to Ft. Pierce to serve as moderators and judges. The competition challenged teams of science students from 17 Florida high schools with questions related to ocean biology, chemistry, geology, physics, navigation, geography, and public policy.

One of two teams representing the MAST Academy located on Virginia Key won the competition. They will join 24 other regional winning teams in Charleston, South Carolina on April 24-26, 2004 for the NOSB's nation finals.

Congratulations to MAST Academy and to the Virginia Key volunteers who helped support the next generation of marine scientists, educators, and policymakers. The NOSB is sponsored by the Consortium for Oceanographic Research and Education (CORE).



Virginia Key scientists who served as volunteers at the Florida regional NOSB competition included (standing): Kevin McCarthy (SEFSC), Mike Trapp (RSMAS), Chris Harrison (RSMAS), Jennifer Schull (SEFSC), Neal Dorst (AOML), Maria Bello (SEFSC), and Mareva Chanson (RSMAS), (kneeling): Lauren Rose, Erica Rule (AOML), and Nick Carrasco (AOML).

## Travel

Sim Aberson, Peter Black, Joseph Cione, John Gamache, John Kaplan, Christopher Landsea, Frank Marks, Mark Powell, and Robert Rogers attended the International Hurricane Conference in Charleston, South Carolina on March 1-5, 2004.

Rick Lumpkin made a presentation about AOML's Global Ocean Observing System (GOOS) Center at the City College of New York in Manhattan, New York on March 2, 2004.

Robert Kohler attended a NOAA Network Advisory Committee meeting in Silver Spring, Maryland on March 15-19, 2004.

Mayra Pazos and Claudia Schmid attended the CLIVAR-GSOP (Global Synthesis and Observations Panel) Data Planning Meeting on Ocean Observations in La Jolla, California on March 24-26, 2004.

Silvia Garzoli attended the annual Science Advisory Committee meeting of the Inter-American Institute for Global Change Research in Ottawa, Canada on March 31-April 3, 2004.

Christopher Landsea and Erica Rule attended the National Hurricane Conference in Orlando, Florida on April 5-9, 2004.

Derrick Snowden attended a Global Ocean Observing System (GOOS) Center meeting in Camp Spring, Maryland on April 12-16, 2004.

Molly Baringer, Steven Cook, Silvia Garzoli, Gustavo Goni, Robert Molinari, and Rik Wanninkhof attended NOAA's Office of Climate Observations Annual System Review Workshop in Silver Spring, Maryland on April 13-15, 2004.

Judith Gray attended a Mentor/Supervisor meeting of NOAA's Leadership and Career Development Program on April 19, 2004 and a Coastal Storms Initiative meeting on April 20-21, 2004 in Washington, D.C.

Gustavo Goni attended the First General Assembly meeting of the European Geosciences Union in Nice, France on April 26-30, 2004.

## Recent AOML Publications (March-April 2004)\*

Chave, A.D., D.S. Luther, and C.S. MEINEN, 2004: Correction of motional electrical field measurements for galvanic distortion. *Journal of Atmospheric and Oceanic Technology*, 21(2):317-330.

DUNION, J.P., and C. Velden, 2004: Impact of the Saharan Air Layer on Atlantic tropical cyclone activity. *Bulletin of the American Meteorological Society*, 85(3):353-365.

FORDE, E.B., 2004: Severe weather. *Science Scope*, 27(7):33-35.

FORDE, E.B., 2004: Severe weather. *The Science Teacher*, 71(4):42-44.

Guo, L., J.-Z. ZHANG, and C. Gueguen, 2004: Speciation and fluxes of nutrients (N, P, Si) from the upper Yukon River. *Global Biogeochemical Cycles*, 18(1):GB1038, doi: 10.1029/2003GB002152.

Harasti, P.R., C.J. McAdie, P.P. DODGE, W.-C. Lee, J. Tuttle, S.T. MURILLO, and F.D. MARKS, 2004: Real-time implementation of single-Doppler radar analysis methods for tropical cyclones: Algorithm improvements and use with WSR-88D display data. *Weather and Forecasting*, 19(2):219-239.

Pandya, R.E., D.R. Smith, M.K. Ramamurthy, P.J. Croft, M.J. Hayes, K.A. Murphy, J.D. McDonnell, R.M. Johnson, and H.A. FRIEDMAN, 2004: 11th American Meteorological Society Education Symposium. *Bulletin of the American Meteorological Society*, 85(3):425-430.

Saltzman, E.S., M. Aydin, W.J. De Bruyn, D.B. King, and S.A. YVON-LEWIS, 2004: Methyl bromide in pre-industrial air: Measurements from an Antarctic ice core. *Journal of Geophysical Research*, 109(D5):D05301, doi:10.1029/2003JD004157.

THACKER, W.C., S.-K. LEE, and G.R. Halliwell, 2004: Assimilating 20 years of Atlantic XBT data into HYCOM: A first look. *Ocean Modelling*, 7(1-2):183-210.

WARD, B., R.H. WANNINKHOF, P.J. Minnett, and M.J. Head, 2004: SkinDeEP: A profiling instrument for upper-decameter sea surface measurements. *Journal of Atmospheric and Oceanic Technology*, 21(2):207-222.

\*Names of AOML authors appear in capital letters.

## Bring Your Children to Work Day April 22, 2004

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

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