

VIMS Scientists Quantify Isabel's Impacts on the Bay

As Hurricane Isabel approached Hampton Roads, VIMS Dean and Director Don Wright was busy in his administrative role, helping Institute staff move vulnerable scientific equipment out of harm's way. But as a scientist, he couldn't resist placing one instrument directly in the storm's path.

That instrument, an Acoustic Doppler Current Profiler, or ADCP, has helped provide a unique quantitative record of the hurricane's impact on lower Chesapeake Bay and the Gloucester Point shoreline. Data from the ADCP show that Isabel created a 7-foot storm tide topped by 6-foot waves. At the height of the storm, wave crests were passing over the instrument once every 5 seconds, and the storm was forcing the entire depth of the York River upstream at a rate of 2 knots.

Wright notes that Isabel's large size compounded its impacts. "Because Isabel was so large, its winds, waves, and surge affected the Bay for an abnormally long time." The ADCP showed that storm conditions persisted in the Bay for nearly 12 hours.

Wright and colleagues anchored the ADCP in 28 feet of water several hundred yards seaward of the VIMS

campus, using long augers to secure the instrument to the muddy floor of the Bay. The instrument showed that wave-driven currents were strong enough to mobilize bottom sediments even at this depth, increasing water turbidity by a factor of two to three compared to fair-weather conditions.

The ADCP works by emitting sound waves that reflect off waterborne particles. By recording and analyzing these reflected waves, the instrument can measure the average current velocity in every 25-cm layer between the sensor and the water surface. It also measures turbulence, and the concentration of suspended particles.

Weather data provided by instruments atop VIMS' Byrd Hall show that maximum sustained winds on the campus reached 65 mph, with 90-mph gusts. The barometer bottomed out at 29.2 inches, with a rainfall accumulation of about 2.2 inches. Isabel's storm tide reached 7.9 feet above Mean Lower Low Water.

For additional data on Isabel's effects on the Bay and the VIMS campus, as well as photos and a video clip, visit www.vims.edu/newsmedia/topstories

Schaffner Elected ERF President

VIMS Professor Dr. Linda Schaffner is the newly elected president of the Estuarine Research Federation (ERF), the nation's leading scientific society for estuarine and coastal issues.

As ERF president, Schaffner chairs the Governing Board and presides at all board and business meetings. The board makes policy and is responsible for long-term planning and continuity of the Federation's programs and activities.

Past ERF President Dr. Dennis Allen, Director of the University of South Carolina's Baruch Marine Lab, says that "Defining what it takes to be a leader of a scientific society is not a simple task, but anyone who knows Linda would recognize that she possesses both the professional and personal skills necessary to be successful. Her broad background in estuarine science and coastal issues, strong work ethic, community spirit, and vision qualify her to be an excellent President. She has already generated the respect and support of a diverse governing board and we're all looking forward to working with her to make great things happen."

Schaffner plans to focus on several critical issues during her 2-year tenure, including strengthening the ERF journal *Estuaries*, enhancing the Federation's efficiency and public outreach efforts, and increasing international membership and links with foreign scientific societies.

"Estuaries and coastal systems all over the world suffer from the effects of urban sprawl, overfishing, invasive species, and other human activities," says Schaffner. "To meet these global challenges, ERF must increase its international membership and partner with scientific societies in other countries."

Schaffner has already begun her international effort with trips to Thailand and Korea, where she visited with colleagues to share knowledge and approaches concerning the effective

study and management of estuarine resources.

Prior to becoming President, Schaffner served on the ERF board for 6 years, first as a Member at Large, then Secretary, then President-Elect. As president, Schaffner says she is

trying to move ERF towards a culture of strategic thinking and planning. "I want our approach to be based on data analysis and brainstorming by our board members. As we begin to use these planning activities to formulate policy, I will be challenging the board members to identify tangible

goals and expected outcomes that we can use to gauge our successes."

Schaffner's research at VIMS focuses on the ecology of bottom-dwelling organisms and the processes of estuarine and coastal environments, including the effects of pollution and physical disturbances. She has authored or co-authored more than 20 peer-reviewed publications since 1990.

During the past 15 years, Schaffner has served on professional panels or committees for the Virginia Department of Environmental Quality, EPA's Chesapeake Bay Program, the National Science Foundation, Maryland's Chesapeake Bay Monitoring Program, the Swedish Environmental Protection Board, and many others. Schaffner also received the 2003 Outstanding Faculty Award from the Virginia State Council of Higher Education, and served as an Associate Editor for ERF's flagship journal *Estuaries* from 1998-2001.

The Estuarine Research Federation, founded in 1971, is a private, non-profit, non-partisan organization with members dedicated to advancing understanding and appreciation of the world's estuaries and coasts, to the wise use and management of these environments, and to making research results and management actions available to everyone. Academic researchers, public sector managers, teachers, consultants, students, and others interested in estuaries make up the 1,500-member organization.



Dr. Linda Schaffner

Isabel By the Numbers.....

Data illustrating Hurricane Isabel's impact on the VIMS campus

- 65 maximum sustained winds (mph)
- 90 maximum gusts (mph)
- 4.76 height of Isabel's storm surge (feet)
- 6.6 height of waves (feet)
- 3 feet of seawater in Boat Basin at height of Isabel's storm tide
- 29.2 inches of mercury (lowest barometric pressure)
- 2.2 inches of rainfall
- 820 tons of debris removed
- 40 percent of facilities maintenance buildings damaged
- 66 percent of maintenance, grounds, and housekeeping staff left temporarily without office space
- 88 percent of vessel support space damaged
- \$55,250 cost to demolish and dispose of Ferry House
- 700 linear feet of VIMS' piers destroyed
- 525 overtime hours by VIMS facilities staff