

Scientists from VIMS and Wales Initiate New Study of Turbulence and Sediment Movement in Chesapeake Bay Tributary

By Wanda Cohen

A team of five scientists from the University of Wales, Bangor is working with a team of VIMS scientists on a project to measure turbulence in the York River estuary during a full spring neap-tide cycle. The concept for the project was conceived several years ago when Dr. John Simpson, Head of the School of Ocean Science, University of Wales Bangor, was visiting VIMS.

Using an acoustic doppler current profiler, (ADCP), researchers measured currents and turbulence throughout the water column using reflected acoustic signals.

Basically, sound waves are emitted from the ADCP and reflected back creating a pulsating signal that scientists can analyze. The ADCP technology enables researchers to measure both currents and turbulence simultaneously throughout the water column. Initial experiments in the Irish Sea revealed that more turbulence occurs



Professor Colin Jago from Wales processing samples on the R/V Langley.

on the flood tide than during the ebb flow. This suggests that more particles are suspended on flood than ebb tides thereby moving more sediment upstream during the flood tide. The team of scientists from Wales and VIMS now wants to test this hypothesis in the York River estuary.

Turbulence affects the rates at which adjacent layers of water mix with each other and exchange momentum. In the water column, turbulence involves movement in all directions and also affects the ability of water to pick up and transport sediment from the bed. This is very important because it

determines where anything in the water will go – sediment, pollutants, eggs, larvae, and pathogens that may be in the water.

The scientists will deploy automated instruments for 15 days to observe and record the full spring-neap tide cycle.

Samples of water and sediment will also be collected. “Basically, we will measure everything that moves,” explains Simpson. Information gathered from experiments such as this provides a new dimension of data to strengthen dynamic models of movement in marine environments.

This collaboration is part of a formal agreement between VIMS and the University of Wales, Bangor established in 1998 to promote joint research and exchange programs for students and scientists. Over the past four years there have been various collaborations among scientists as well as a field course for VIMS students on the Bangor campus. During the summer of 2001, five students from Wales spent several weeks on the VIMS campus doing research. The



Research teams worked around the clock aboard the R/V Langley.

Drapers Company of London provides support for the exchange program, including the costs of the present visit to VIMS by the Wales team.

This latest experiment is closely related to a four-year National Science Foundation grant awarded in 1999 to Carl Friedrichs entitled “Sediment dynamics of a microtidal partially-mixed estuary,” which also focuses on ebb-flood asymmetries in turbulence and sediment suspension. Friedrichs’ NSF grant supported vessel operations, VIMS technical staff and field supplies for the collaborative experiment with the University of Wales. Friedrichs’ proposal on this topic resulted in his receiving the Presidential Early Career Award for Scientists and Engineers from Bill Clinton in 2000.

New Dean of Graduate Studies

Dr. Iris Anderson, Professor of Marine Science, Dept. of Biological Sciences has been named Dean of Graduate Studies. Anderson, who joined the VIMS faculty in 1993, received her B.S. from Colby College; her graduate work was completed at MIT and the Medical College of Virginia, VCU. Her primary research focuses on nitrogen and carbon cycling, primarily in shallow subtidal and intertidal systems. Anderson has worked extensively in Chesapeake Bay as well as in systems in Africa, Brazil and the Czech Republic.



Dr. Iris Anderson

“The School of Marine Science attracts the best and brightest students from across the nation,” said Anderson, “My immediate goals are to find additional funding sources for our students and to enhance teaching opportunities for VIMS faculty and students.” Anderson has served on the SMS admissions committee for 8 years and chair or co-chair for 3 of those years. “Twenty-nine students will enter in the fall of 2002,” said Anderson, “I am very excited about having the opportunity to work with these students and our faculty to continue to broaden the opportunities for students at VIMS.”

More Than 200 Attend VIMS Auction

The 4th Annual VIMS Auction attracted over 200 people to bid on items ranging from dinners at fine restaurants to oriental rugs to a week on the French Riviera. The event raised over \$28,000 to support the Hargis Library Endowment at VIMS. Annual Fund Board member Carrie Garland chaired the event with help from more than 30 volunteers, VIMS faculty, students and staff. The Auction Committee wishes to thank all the businesses and individuals who donated items for the auction.



Attendees placing silent auction bids in the VIMS Library.

The VIMS community is very grateful for the Auction committee and all who support the library that is vital to the quality of work by faculty, students and staff at the institute.