AMERICAN METEOROLOGICAL SOCIETY
PRESS RELEASE

Contact(s): Stephanie Kenitzer, AMS
(425) 432-2192
Kenitzer@ametsoc.org

Leslie Taylor
SoMAS Stony Brook
(631) 632-8621
Leetaylor@notes.cc.sunysb.edu

FOR IMMEDIATE RELEASE
30 July 2008

TIMING IS EVERYTHING: HOW VULNERABLE TO FLOODING IS NEW YORK CITY?

SBU Researchers Show How Advances in High-resolution Modeling Will Help Improve Storm Surge Forecasts

A report just released in the most recent issue of the *Bulletin of the American Meteorological Society* offers hope that a new high-resolution storm surge modeling system developed by scientists at Stony Brook University will better be able to predict flood levels and when flooding will occur in the New York metropolitan area, information crucial to emergency managers when planning for impending storms. The report also warns that flooding is dependent not just upon the intensity of the tropical storm, hurricane, or nor'easter, but also on the local phase of the tide at the time of the storm.

In a project funded by New York Sea Grant, Brian Colle, Associate Professor in the School of Marine and Atmospheric Science (SoMAS) at Stony Brook University, and colleagues tested the utility of coupling a state-of the art atmospheric model with an ocean model from the Stony Brook Storm Surge (SBSS) system in order to predict storm surges for the NYC metropolitan region. Colle and colleagues tested their combined model against Tropical Storm Floyd and a nor'easter from 11-12 December 1992, and found the model predicted peak water levels comparable (within 10 percent) to those measured during the storms at several water level gauges around the region.

"Ultimately, the goal is to provide emergency managers with a range of possibilities as to what may happen as the result of a storm, and this approach shows great promise," says Dr. Colle.

The modelers also performed simulations to assess the impact of parameters such as local tide level and wind intensity on flooding severity. Model simulations showed that if Tropical Storm Floyd had arrived in NYC a week earlier, coinciding with a spring (fortnightly) high tide, water levels would likely have been high enough for minor flooding to occur. Another simulation, which used wind levels of a Category 1 hurricane timed to arrive at spring high tide, predicted water levels likely to have caused significant flooding. These results suggest that the New York City metropolitan region was spared from flooding during Tropical Storm Floyd only because the storm's winds had weakened before reaching the region and because the strongest winds luckily occurred during local low tide.

"We're playing Russian roulette in some sense with these storms coming up the coast," says Colle. "If we have a high tide or spring high tide when we have one of these events, then we're in trouble."

If a category-3 hurricane hit NYC, the U.S. Army Corps of Engineers estimates that nearly 30% of the south side of Manhattan would be flooded. Storm surge flooding could threaten billions of dollars of property and have a grave impact on the lives of the millions of people who live in NYC. During the December 1992 nor'easter, storm tides over-topped some of the region's seawalls for only a few hours, but managed to flood the NYC subway and the PATH train systems at the train station in Hoboken New Jersey, shutting down these transportation systems for several days.

As sea level rises, NYC becomes even more vulnerable to storm surge flooding. It takes high water levels of only 1.5- 1.75 m (4.92 – 5.74 feet) above mean sea level to cause flooding over some of the southern Manhattan Island seawalls and global warming is expected to increase the rate at which sea level rises from 0.3 m (0.98 feet) per century to 0.5- .75 m (1.64 – 2.46 feet) per century.

"The vulnerability of the area speaks for itself as we've already had cases of flooding," says Colle. "When coupled with sea level rise, it's not going to take much of a storm to cause flooding as we go into the coming decades, so we are working to provide better forecasting of these events in the future."

The American Meteorological Society is the nation's premier scientific organization for those involved in the atmospheric and related sciences. The complete article is available online at http://ams.allenpress.com/archive/1520-0477/89/6/pdf/i1520-0477-89-6-829.pdf

###

Contact: Leslie Taylor, School of Marine and Atmospheric Sciences (SoMAS) Stony Brook University, leetaylor@notes.cc.sunysb.edu, 631.632.8621; Barbara Branca, New York Sea Grant, 631.632.6956

The School of Marine and Atmospheric Sciences (SoMAS) is the State University of New York's center for marine and atmospheric research, education, and public service. The expertise of SoMAS faculty places them in the forefront in addressing and answering questions about immediate regional problems, as well as long-term problems relating to the global oceans and atmosphere.

Part of the State University of New York system, Stony Brook now encompasses 123 buildings on 1,100 acres. In the nearly fifty years since its founding, the University has grown tremendously, now with more than 22,000 students and 1,900 faculty, and is recognized as one of the nation's important centers of learning and scholarship. It is a member of the prestigious Association of American Universities, the invitation-only organization of the best research universities in the country, and has been listed as one of the best universities in the world by the London Times.