

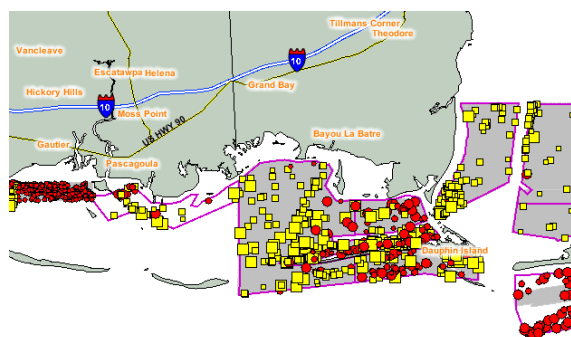


# Outstanding Accomplishments in Research

## Hazard Resilient Coastal Communities

One of NOAA's strongest commitments is to help guard the nation against loss of life and property. Whether the hazards are coastal or inland, or the losses felt immediately or gradually over time, NOAA's responsibility is to mitigate the escalating economic, societal, and environmental costs associated with environmental hazards. NOAA Research, including NOAA's National Sea Grant College Program, are concentrating efforts on a broad array of environmental information and decision support services and ecosystem management practices that contribute substantially to long-term hazard mitigation strategies.

### Web Site Maps Underwater Debris in Gulf



An online interactive NOAA map depicts the locations of marine debris off the Louisiana coast. has been charted.

A new NOAA web site offers free online maps of marine debris in the Northern Gulf of Mexico. Hurricanes Katrina and Rita inflicted severe damage on the Gulf Coast. Even though the surface looks calm, underwater marine debris poses a hazard to vessel traffic and commercial fishing gear. The maps can help fishermen avoid debris and keep them updated on the status of debris removal in fishing grounds. The web site, <http://gulfofmexico.marinedebris.noaa.gov/>, provides users with maps of debris-laden ar-

reas in the waters of Mississippi, Alabama and Louisiana. The maps indicate nautical position and other physical properties of each piece of submerged debris found during the NOAA Office of Coast Survey and Office of Response and Restoration's surveying effort, which began in September 2006. The Mississippi-Alabama Sea Grant Consortium is working with NOAA to promote the marine debris Web site.

### HazNet Website Provides Forum for Information Exchange

Sea Grant programs nationwide work together to better understand coastal natural hazards and develop ways to reduce their impacts on lives, property and coastal economies. The National Sea Grant HazNet website (<http://www.haznet.org/>) is a forum for information exchange on coastal hazards among Sea Grant programs and others in industry, government and the general public. The site is organized around eight content areas: hurricanes, erosion, tornadoes, earthquakes, tsunamis, flooding, volcanoes, and "general." The site includes links to information on man-made hazards, such as oil spills, and other hazards, including tornadoes, wild fire, and hail. Educational programs and activities for K-12 students and teachers are also available on the site.

### Modeling Advances Improve Tsunami Flood Planning

Computer models developed by NOAA's Pacific Marine Environmental Laboratory (PMEL) researchers are helping in the development of maps of future tsunami (inundation) flooding for coastal community planning of evacuation routes and other long-term planning. These maps require maintenance and upgrades as better data become available and coastal changes occur, and the NOAA Center for Tsunami Research, part of PMEL, monitors advances in tsunami modeling and incorporates improved technology into its inundation mapping efforts. [http://nctr.pmel.noaa.gov/inundation\\_mapping.html](http://nctr.pmel.noaa.gov/inundation_mapping.html)

Research is at the center of all National Oceanic and Atmospheric Administration services. NOAA's Office of Oceanic & Atmospheric Research (OAR) conducts research, develops products, and provides scientific understanding and leadership to support NOAA's mission to meet our nation's economic, social and environmental needs.

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## Improving Tsunami Research and Outreach

Hawaii Sea Grant researchers developed sophisticated models to predict coastal flooding and tsunamis generated by distant earthquakes. Since calculations are so complex that they could not be completed quickly enough in an emergency, Sea Grant researchers are pre-calculating tsunamis for different earthquake scenarios, which are prepared and stored in a computer model before a tsunami occurs. Hawaii Sea Grant researchers have also found that pandanus (hala) trees and bushy plants between buildings helped lessen the waves' impact. Tsunami warning signs, created by Oregon Sea Grant are now being posted in four states along the West Coast of the U.S. and in Thailand. The illustration on the sign shows a big wave and a figure running up a steep hill. The message is clear: When a tsunami is about to hit the coast, head for high ground. The illustration is now being used to warn coastal residents around the world, providing unmistakable instructions in the universal language of pictures.



## Sea Grant Develops Storm Surge Vulnerability Maps

The University of Puerto Rico Sea Grant Program (UPRSGCP) developed a storm surge flood model that assesses individual and community vulnerability on the coasts of Puerto Rico. New GIS maps were prepared by incorporating current coastal flood maps with satellite images and census data. The census data includes socio-economic and demographic information which produces a more accurate representation of which, and to what degree, coastal community members are at risk. In the future, these maps will be available to planners, managers, and public officials throughout the island via a new interactive software program that will allow them to click on census blocks and view pertinent information about who lives in these vulnerable coastal areas. The data from this research were also used to develop the National Tsunami Hazard Mitigation Program, which led to Mayaguez, the third largest city in Puerto Rico and hometown of UPRSGCP, being certified as the first tsunami ready city on the Island. These maps will greatly benefit the approximately 1.4 million people in Puerto Rico that live in flood-sensitive zones.



*Vulnerability maps combine coastal flood information with satellite images and census data*

## PREEMINENT RESEARCH

NOAA's long-term commitment to conducting preeminent research includes employing federal scientists and extramural researchers to develop and deploy new observing technologies, developing new analytical and forecast tools, building predictive models, and using new information technology to share information. Research plans and products are developed in partnership with academia and other federal agencies, and are peer-reviewed and widely distributed. The National Sea Grant College Program focuses on enhancing the understanding, conservation and sustainable use of the nation's coastal and marine resources. A network of 30 university based-programs in every coastal and Great Lakes state, Sea Grant activities are funded principally by NOAA. NOAA Research Labs are working to improve the forecasting, observing, and modeling tools that will help our NOAA partners assess and minimize risk.

## VALUE TO SOCIETY

Coastal areas of the U.S. comprise only ten percent of our land mass, and yet they are home to more than 54 percent of Americans. Risks to life, property, and the environment from coastal natural hazard events will increase with growth of coastal populations over the next several decades. NOAA Research and Sea Grant Programs nationwide are exploring ways to help communities become more hazard resilient.

### To Learn More, Visit These Sites:

Sea Grant Coastal and Natural Hazards: <http://www.seagrant.noaa.gov/themesnpa/coastalnaturalhazards.html>  
NOAA Tsunami Website: <http://www.tsunami.noaa.gov/>

### To Work or Study at OAR, Visit These Sites:

Hollings Scholarships: <http://www.orau.gov/noaa/HollingsScholarship/>  
NOAA Careers: <http://www.careers.noaa.gov>  
Knauss Fellowships: <http://www.seagrant.noaa.gov/knauss/>

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*OAR's mission is to conduct research, develop products, provide scientific understanding and leadership and to conduct outreach towards fostering NOAA's evolving environmental and economic mission.*