CSR Partner Researchers Provide Critical Storm Surge Information During Hurricane Sandy.

CSR partners, Stevens Institute and Rutgers University, along with several private and government collaborators and their collective suite of 200 sensors in the New York and New Jersey coastal regions, provided critical water level data along with state-of-the-science storm surge forecasting to emergency responders and urban and coastal communities during Hurricane Sandy. Utilizing Stevens’ New York Harbor Observing and Prediction System (NYHOPS), researchers were able to accurately predict the surface currents and rising waters surrounding New York City and the NJ coastline.

Prior to and after Sandy made landfall, CSR and Stevens received numerous requests for data and served as a key resource for groups including USCG Sector NY, New York State and New York City Office of Emergency Management, Con Edison, NYC DEP, Long Beach Island, NJ, the City of Hoboken, NJ, and divisions within NOAA (National Weather Service, National Center for Environmental Prediction, National Hurricane Center, etc.). Coastal flood elevations in New York Harbor were the highest in all ~350 years of New York City history.

During the storm, the Rutgers University team conducted real-time ocean data collection from a glider and monitored the accuracy of various storm prediction models, all with the aim of improving our scientific understanding of this historic and destructive event. The Port Mapper Tool developed by CSR partners from MIT was used by senior U.S. Coast Guard leadership to inform cargo redirection during the week-long closure of the Port of NY/NJ. Designed to identify port capacity and cargo handling capabilities, the tool effectively mapped alternative port locations for diverting vessels. To learn more about CSR research partner activities during Hurricane Sandy, please click on the following weblink: CSR - Hurricane Sandy.

In the days following Hurricane Sandy, Stevens hosted seminars to discuss the storms impacts and the region’s response and recovery efforts. The seminars included, Transportation and Maritime Safety, Security and the Resumption of Trade, presented by Mr. Bradford Slutsky, Customs and Border Protection (CBP), and Hurricane Sandy in Perspective - Reflections from Science & Technology Studies, hosted by Stevens Science & Technology’s program faculty. Both seminars were open to the Stevens community and to the general public.

UPRM, Rutgers and USCG Sector San Juan, Conduct HF Radar Vessel Detection Exercise in Mona Island Passage.

CSR researchers from the University of Puerto Rico at Mayaguez (UPRM) and Rutgers University (RU), collaborating with the US Coast Guard (USCG), Sector San Juan Command, have successfully demonstrated ship tracking capability of a High Frequency Radar (HFR) network operation in the Mona Passage off the west coast of Puerto Rico (PR). Using two HFR emplacements on the west coast of PR and a HFR transmitter unit operating from remote Mona Island, the team easily tracked large commercial vessels and successfully spotted 110’ Island-class USCG cutters running test tracks through the coverage zone. HFR coverage was also substantially increased with the additional Mona Island signal.
HFR technology, primarily used for measuring ocean surface currents, can also track ships, monitor ocean waves and even locate tsunamis offshore. The CSR Tropical Testbed maintained by UPRM and RU consists of two HFR Tx/Rx (transmitter and receiver) emplacements on the west coast of PR at the Fuerza Unida de Rápida Acción (FURA) and Club Deportivo del Oeste (CDDO) looking out into the Mona Passage, a high interest region identified by the USCG during a CSR annual meeting held in San Juan, in 2010.

Welcome support from the PR Dept. of Natural Resources and the Environment enabled an early planning visit to Mona Island in 2011 and the recent real-time “multi-static” HF Radar network evaluation experiment conducted November 3 – 10, 2012. Preliminary results indicate that system coverage increased significantly, thus enhancing maritime domain awareness in the area. Additional post processing of the data will provide insight as to how to maximize vessel tracking capabilities and range expansion.

The US Integrated Ocean Observing System (IOOS) through its regional components CariCOOS and MARACOOS helped support field logistics, data management and communications. For additional information on this exercise and CSR’s Tropical Testbed, please contact Dr. Jorge Corredor, Dept. of Marine Sciences, UPRM, at jorge.corredor@upr.edu.

CSR Director Discusses MDA at Third Annual USCG-CREATE Maritime Risk Symposium.

Dr. Julie Pullen, CSR Director, served as a panelist at the 3rd Annual Maritime Risk Symposium, co-sponsored by the U.S. Coast Guard and the National Center for Risk and Economic Analysis of Terrorism Events (CREATE), held in Los Angeles, CA, November 14 - 16, 2012. The panel session entitled Deterrence Through Resilience in the Maritime Domain, was moderated by Captain William Csizar, LANT-1, USCG. In addition to Dr. Pullen, the panelists included Dr. Henry Willis, RAND Corporation, Dr. Dane Egli, National Security Strategies, The Johns Hopkins University, and Dr. David Alderson, Naval Postgraduate School.

The symposium was attended by USCG leadership, DHS representatives and other maritime security stakeholders and industry and government thought-leaders. The theme of this year’s symposium was Reducing Costs and Increasing Effectiveness in the Maritime Environment.

Dr. Thomas Wakeman gives Keynote Address at the 1st European Maritime Transport Regulation Forum in Florence, Italy.

Dr. Wakeman, Deputy Director, Center for Maritime Systems and co-Director Maritime Systems Master's Degree Program at Stevens Institute of Technology, provided the keynote address to an international audience at the 1st European Maritime Transport Regulation Forum, hosted by the Florence School of Regulation, at the European University Institute, on November 9, 2012, in Florence, Italy. Dr. Wakeman’s talk entitled Ports: How to Regulate Logistics Interfaces? was attended by a diverse group of maritime stakeholders, including members of international maritime associations and the European Commission. The forum also included a talk by Olaf Merk, Manager Port-Cities Programme, Organisation for Economic Co-operation and Development (OECD).

Additional Center News:

CIMES receives DHS Impact Award for their work in providing sea ice imagery to assist the USCG Cutter Healy to successfully navigate frozen Arctic waters and help a disabled fuel tanker to reach Nome, Alaska. Locked in by massive sheets of ice, the small coastal city was at risk of running out of heating fuel in the middle of the winter, until the tanker could successfully be brought into port.

Dr. Elizabeth "Liz" Lennon, Postdoctoral Researcher, joins the CSR research team, assisting Dr. Jeffrey Nickerson in the Center for Decision Support Technologies at Stevens Institute of Technology. Dr. Lennon’s work will help advance CSR’s research in the area of information visualization for enhanced decision support. Lennon is an alumnus of Stevens Institute, receiving her PhD in Systems and Chemical Engineering in May 2011 and a Master’s of Engineering in Systems Engineering in 2007. Prior to joining CSR, Dr. Lennon served as a Postdoctoral Research Associate at the Information Sciences Institute, at the University of Southern California.

Dr. Elizabeth Lennon, joins the CSR research team. Lennon’s research will focus on information visualization to efficiently and effectively enhance decision support systems.
Stevens first Maritime Systems Master's Degree Fellow, **Brandon Gorton**, accepted an employment offer from Pacific Northwest National Laboratory, in Richland, WA. Following the completion of his Master's degree in December 2012, Brandon will assume a full-time position as a Global Threat Reduction Specialist in the Physical Protection Implementation Group. Brandon will defend his Master's thesis entitled *Estimation of Acoustic Diver Detection Distances in a Shallow Water Environment*, on December 3, 2012 at the Stevens Institute of Technology campus in Hoboken, NJ.

**Dr. Hady Salloum Visits Plum Island to Discuss Opportunities for Collaboration.** The Plum Island Animal Disease Center's Director of Operations, Mr. Doug Ports, and the Security Manager, Mr. Jim Palmieri, hosted Dr. Hady Salloum, Director of Advanced Research Programs at Stevens Institute of Technology, on November 9th, 2012. The meeting included an island and facility tour. Discussions were focused on potential collaboration between Stevens and the Plum Island Animal Disease Center to leverage and advance current technologies in support of the Plum Island mission and operations and which may also have broader application to the U.S. Department of Homeland Security (DHS) objectives. Plum Island offers the potential to be a viable test location for emerging technologies of interest to Stevens as a DHS Center of Excellence for maritime security. A follow up meeting is planned to be held at Stevens to continue the discussions and explore how the two organizations may collaborate.

Stevens **Doctoral Dissertations Aim to Optimize Vessel Cargo and Airline Baggage Inspection Strategies.** Stevens PhD candidates **Ana Lisbeth Concho** (Summer Research Institute 2011 alumni) and **Stuart Van Weele**, recently completed doctoral dissertations utilizing a systems engineering approach to develop enhanced processes and algorithms for the efficient and cost-effective inspection of cargo and airline baggage. The respective titles of the dissertations are: **Design of Screening and Surveillance Strategies for Multiple Applications**, Stevens Doctoral Dissertation 2012, Ana Lisbeth Concho, and **Optimization of Baggage and Cargo Container Inspection Strategies via Genetic Algorithms**, Stevens Doctoral Dissertation 2012, Stuart Van Weele. Copies of the student dissertations are available upon request. Please contact **Beth Austin DeFares**, CSR Director of Education, for more information.

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