



Center for Maritime, Island and Remote and Extreme Environment Security

A DHS Center of Excellence

CO-LED BY THE UNIVERSITY OF HAWAII IN HONOLULU FOR MARITIME AND ISLAND SECURITY AND STEVENS INSTITUTE OF TECHNOLOGY IN HOBOKEN, N.J. FOR PORT SECURITY, THE CENTER WILL STRENGTHEN MARITIME DOMAIN AWARENESS AND SAFEGUARD POPULATIONS AND PROPERTIES UNIQUE TO U.S. ISLANDS, PORTS AND REMOTE AND EXTREME ENVIRONMENTS.

National Center for Island, Maritime & Extreme Environment Security (CIMES) – University of Hawaii

Recent Successes

CIMES 1st Annual Review

CIMES held their first Annual Review meeting at the University of Hawaii, Manoa on January 12-14th. The COE presented the progress of its research and education activities during their first year. The event was well attended by key maritime stakeholders, including representatives from the USCG and CBP, and CIMES Advisory Committee. Participants were also provided a tour by CAPT Aaron Davenport, Commanding Officer of the USCGC JARVIS, and a tour of USCG Sector Honolulu by CAPT Barry Compagnoni.



Presentations from the annual review meeting are available on the CIMES website at <http://cimes.hawaii.edu/events/>. For those interested in the CIMES Annual Report, please contact the DHS Program Manager, Theophilos Gemelas.

Project Spotlight: Decision Support Systems

An effective Decision Support System is imperative in modern persistent surveillance programs. CIMES Decision Support/Data Fusion program is crafted to not only capture and digest information provided by CIMES' program sensors, but also incorporate the wide variety of additional data provided by open sources. Factors such as weather, for example, which may have an effect on sensor performance or model predictions, will be effortlessly included in the data analysis.

The objective of this project is to achieve automation and integration for rapid interpretation of a diverse range of physical data sets, including measurements from HF radars, acoustic sensors, and satellite instruments.

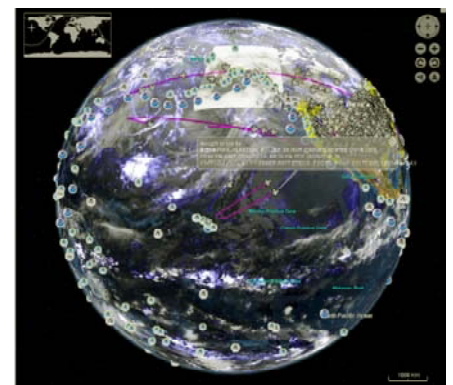
Once these data are integrated in the system, researchers will develop criteria that will enable patterns and classification schemes to be constructed to empower users with increased analysis capability and intuition to inform real-time decision making.

Researchers have begun the development of an integrated web-based data integration, fusion/analysis, and visualization system. They are currently integrating over 315,000 layers of existing external data sources including

archival and live data from collaborators at the Geographic Information Network of Alaska (GINA) that include hundreds of layers of Advanced Very High Resolution Radiometer (AVHRR) and moderate resolution imaging spectroradiometer (MODIS) satellite data.

During the next reporting period researchers will interface directly with CIMES researchers to include their data within the data integration/fusion system.

The image below demonstrates a new full-screen mode, onscreen controls (upper right), as well as the new Layer Manager with the ability to identify favorites, display metadata, define objects and airspaces on the surface, trace vessel tracks, and do pop-up data. Along with these features, they have begun developing analytics and interactive measurement tools for the system.



National Center for Secure and Resilient Maritime Commerce (CSR) – Stevens Institute of Technology

Recent Successes

CSR 1st Annual Review

On January 21 and 22, the Stevens Institute of Technology held their first Annual Review in conjunction with their Winter Meeting in San Juan, Puerto Rico. The meeting was attended by CSR partners, the DHS Program Manager, and DHS representatives from DHS S&T's Borders and Maritime Security Division, USCG, and CBP. CSR researchers reported on and discussed their activities over the past year as well as their future research and education plans, performance metrics, collaboration with other COEs, and outreach to stakeholders. Presentations from the meeting will be posted on CSR's website: www.stevens.edu/CSR.

Dr. Michael S. Bruno Appointed to the U.S. Naval Research Advisory Committee

Dr. Michael S. Bruno, CSR's Director and Dean of the Schaefer School of Engineering & Science, has been appointed to the Naval Research Advisory Committee (NRAC) by the Secretary of the Navy.

The NRAC is a body of 15 civilians pre-eminent in the fields of science, research and development, who serve a term of two years on the committee, subject to re-appointment. The NRAC is the senior scientific advisory group to the Secretary of the Navy, the Chief of Naval Operations, the Commandant of the Marine Corps and the Chief of Naval Research.

“This is a profound professional honor for Dean Bruno, and a great honor for Stevens Institute of Technology,” said

Stevens' Provost & University Vice President George P. Korfiatis. “Mike Bruno's role on the NRAC, and his wide expertise in technology applications for port and maritime security, will benefit our armed forces on the high seas and in our home ports, enabling them to defend our homeland and our allies with a superior technological edge.”

Project Spotlight: CSR Small Vessel Experiment

In November 2009, CSR conducted a coordinated experiment in the New York Harbor to determine the current limits of technologies for detecting and tracking small vessels. The experiment involved CSR partners as well as the Sandy Hook Pilot Association, which provided a vessel as a reference. The experiment also leveraged capabilities being provided for other government agencies, including NASA, NGA, NOAA, and NSF.

The purpose of the experiment was to determine the approximate minimum vessel size that can be detected using available sensing technologies, with the aim of assisting the CSR research team in planning future, integrated sensing system development. During the experiment, CSR recorded vessel acoustic signatures as part of a multi-layered approach to Maritime Domain Awareness as well as environmental noise in the surrounding area. CSR was able to record the acoustic signature of a 26-foot vessel up to 3 Km. CSR is in the process of analyzing the data to match satellite images and HF Radar with recorded acoustic data.

Upcoming Events

The National Center for Secure and Resilient Maritime Commerce (CSR) Summer Research Institute

The CSR will offer its inaugural Summer Research Institute, June 8 – July 30, 2010, on the campus of Stevens Institute of Technology in Hoboken, NJ. The Summer Research Institute will provide qualified undergraduate and graduate students from CSR partner schools a unique opportunity to participate in an intensive eight-week research program designed to tackle critical issues in maritime domain awareness, emergency response, and maritime system resilience to enhance our nation's maritime security.

Summer Program Overview:

- Students will engage in thought provoking seminars and lectures by CSR researchers, maritime industry and government experts.
- Participate in collaborative multi-disciplinary, hands-on research, through modeling and simulation projects, data collection, and real-time analysis.
- Engage in field visits to ports, laboratories, and industry and government sites.
- Work as part of a motivated team to prepare final reports and present research findings, and conclusions to CSR researchers and DHS officials.
- Selected team projects will be featured at DHS conferences and meetings.



Questions/Comments

If you have any questions or comments about the DHS Center for Maritime, Island and Remote and Extreme Environment Security, please send an email to any of the following:

- University of Hawaii, Center Director – Roy Wilkens RWilkens@hawaii.edu
- Stevens Institute of Technology, Center Director – Michael Bruno Michael.Bruno@stevens.edu

If you would like to be added/removed from this distribution list or have any additional questions about the Centers, please contact the DHS Program Manager, Theophilos Gemelas at Theophilos.Gemelas@dhs.gov or the Program Coordinator, Tara Duggan at Tara.Duggan@associates.dhs.gov.

