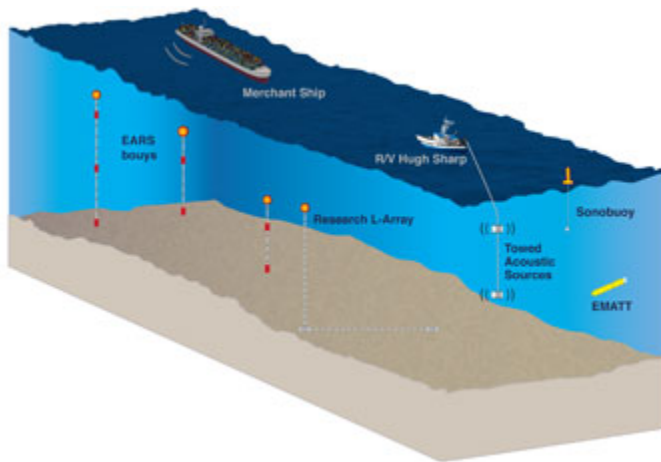


Navy Researchers, Reservists Evaluate Novel Passive Sonar Surveillance Methods

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The Littoral Depth Discrimination Experiment 2012 (LIDDEX12) used a bottom-moored combined horizontal and vertical array, three bottom-moored vertical Environmental Acoustic Recording System (EARS) arrays as well as sonobuoys to record transmission of low-level controlled sources from two XF4s at variable depths, two EMATTs, and surface ships-of-opportunity.

(Photo: U.S. Naval Research Laboratory)

The U.S. Naval Research Laboratory and the Office of Naval Research (ONR) this past summer worked together to develop and field-test waveguide-invariant-based methods off the New Jersey coast. The sea trials were part of a continuing experiment to exploit acoustic guide sources at the ocean surface for use in passive signal processing in littoral regions.

Navy Reserve officers Cmdr. William Holmgren and Lt. Cmdr. Kendra Ryan provided support to NRL scientists Laurie Fialkowski, and Drs. Altan Turgut, Jeffrey Schindall, and Peter Mignerey during the sea trials designated the Littoral Depth Discrimination Experiment (LIDDEX).

Operating from the University of Delaware's research vessel R/V Hugh R. Sharp, the LIDDEX research team deployed several bottom-moored acoustic arrays and sonobuoys in order to record acoustic transmissions from loud surface ships and quiet controlled sources, including XF4s and Expandable Mobile ASW Training Targets (EMATTs).

The support from ONR Naval Reserve officers, Fialkowski said, was instrumental as they assisted NRL scientists with the assembly, deployment, recovery, and breakdown of all hardware and assisted with the programming of field equipment.

The littoral environment is challenging for passive acoustic technologies. The high-quality acoustic measurements and the time-coincident oceanographic measurements taken during LIDDEX are being used to demonstrate the robustness of waveguide-invariant-based signal processing methods in shallow water environments where maritime traffic and noise is typically concentrated and problematic.



Operating from the University of Delaware's College of Earth, Ocean, and Environment (CEOE) research vessel, R/V Hugh R. Sharp, NRL scientists Laurie Fialkowski, Altan Turgut, Jeffrey Schindall, and Peter Mignerey, and Navy Reserve Science and Technology Program 38 reservists Cmdr. William Holmgren and Lt. Cmdr. Kendra Ryan, conducted a week-long sea trial of the Littoral Depth Discrimination Experiment (LIDDEX12) off the New Jersey coast.

(Photo: University of Delaware)

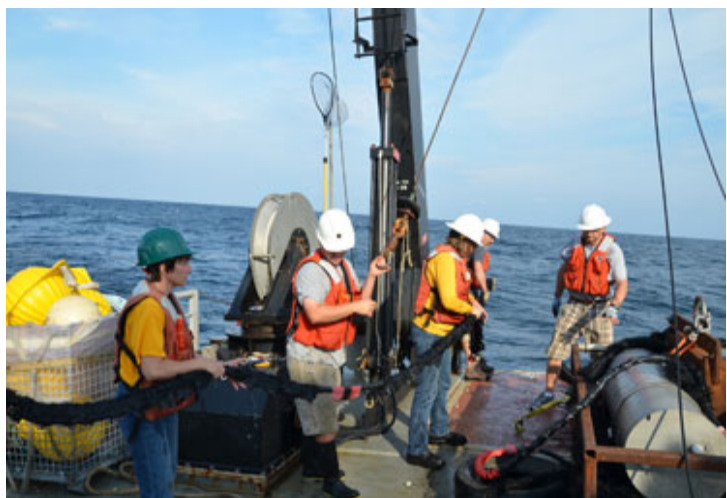
The Littoral Depth Discrimination Experiment used a bottom-moored combined horizontal and vertical array, three bottom-moored vertical Environmental Acoustic Recording System (EARS) arrays as well as sonobuoys to record transmission of low-level controlled sources from two XF4s at variable depths, two EMATTs, and surface ships-of-opportunity.

The primary objective of LIDDEX is to develop passive sonar surveillance methods that are robust for all types of littoral environments. The underwater environment in littoral regions, in addition to being spatially and temporally dynamic, is also highly susceptible to the variations of seasonal climate.

"Acoustically speaking, our project aims to explore the extremes of seasonal variations of the environment," Fialkowski said. "After using the summer measurements to test and improve our methods, we will test them again in the winter environment."

A second experiment is scheduled to take place in early 2014 when the winter weather is expected to provide vastly different environmental conditions. The winter experiment will use many of the same recording systems and low-level controlled sources, as well as continuous collection of oceanographic data.

The NRL Acoustics Division has responsibility for planning and executing a broad-spectrum program in underwater acoustic phenomena with a strong collaboration and cooperation with other navy and university laboratories, both foreign and domestic.



Scientists from the U.S. Naval Research Laboratory's Acoustics Division and ONR Navy Reserve officers recover acoustic research equipment aboard the University of Delaware's research vessel, R/V Hugh R. Sharp. The team conducted a weeklong sea trial of the Littoral Depth Discrimination Experiment (LIDDEX12) on the New Jersey continental shelf.



(Photo: U.S. Naval Research Laboratory)

Cmdr. Holmgren deploys an Expendable Mobile ASW Training Target (EMATT) from the University of Delaware's research vessel, R/V Hugh R. Sharp during the weeklong sea trial of the Littoral Depth Discrimination Experiment (LIDDEX12) off the coast of New Jersey.



(Photo: U.S. Naval Research Laboratory)

Cmdr. Kendra Ryan and Dr. Altan Turgut, aboard R/V Hugh R. Sharp, deploy a surface float for one

of the research arrays on the New Jersey continental shelf. Scientists from the U.S. Naval Research Laboratory's Acoustics Division conducted a weeklong sea trial of the Littoral Depth Discrimination Experiment (LIDDEX12) on the New Jersey Shelf.

(Photo: U.S. Naval Research Laboratory)

About the U.S. Naval Research Laboratory

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- See more at: <http://www.nrl.navy.mil/media/news-releases/2013/navy-researchers-reservists-evaluate-novel-passive-sonar-surveillance-methods#sthash.mtwQsdAf.dpuf>