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Meteorology Professor, NPS Team Take Dip in SOCAL Waters

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U.S. Navy photo by Javier Chagoya

Meteorology Professor, NPS Team Take Dip in SOCAL Waters

By Javier Chagoya

Above is a bottom to top view of the Wave Glider, Thresher, now collecting data offshore of Point Mugu, Calif. Thresher is a Sensor Hosting Autonomous Remote Craft (SHARC). It is equipped with a near-surface turbulence sensor and three-levels of temperature and humidity sensors designed to support the study of atmospheric ducting effects on radar and communication signals. The SHARC sensor development is sponsored by Consortium for Robotics and Unmanned Systems Education and Research (CRUSER) project at NPS.

“The time and location of Thresher’s deployment was selected so that the measurements can be coordinated with four other SHARCs deployed by the Navy’s Space and Naval Warfare Systems Center Pacific (SPAWAR SSCPAC). We have many other measurement platforms as part of the Coupled Air-Sea Processes and Electromagnetic ducting Research - West coast field campaign (CASPER-West). CASPER-West includes the new research vessel R/V Sally Ride, the research platform R/P FLIP, NPS’ Center for Interdisciplinary Remotely Piloted Aircraft Studies (CIRPAS) Twin Otter aircraft, the shore site at Point Mugu Sea Range, and several meteorology and ocean wave buoys,” said Wang, the lead PI of the CASPER project.

Wang’s research is intent on studying the atmospheric effects on Electromagnetic Wave (EM) propagation. The end game is to understand and predict the effects of atmospheric refractive properties along the EM propagation path through extensive in situ measurements and fine-scale modeling of the lower atmosphere. CASPER is an NPS-lead multi-university collaborative effort sponsored by the Office of Naval Research (ONR) under its Multidisciplinary University Research

Initiative (MURI). The first field campaign of CASPER was conducted two years ago offshore of Duck, N.C.

NPS' Sensor Hosting Autonomous Remote Craft (SHARC), also known as a Wave Glider, is an autonomous ocean vehicle powered solely by wave motion. Thresher is one of two wave gliders in NPS' inventory. The craft's propulsion design relies on ocean water flow across a series of louvers for forward motion and a rudder controls direction. The craft generates its own electrical power through an array of photovoltaic panels on its topside.

According to Wang, Thresher is the only Wave Glider she knows of equipped to sample near surface turbulence and temperature/humidity gradient.

The NPS team deployed Thresher Oct. 4, and has been collecting data continuously since. Wang reports that Thresher was serviced just once on Oct. 15, where kelp was pulled away. The opportunity also allowed the team to get a sample of the onboard high-rate data. It will continue its measurements until Oct. 23, when CASPER-West field campaign ends.

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