

Wave Glider USVs

Overview

Interest in the use of autonomous systems in the U.S. Navy has grown rapidly over the past decade. Several departments at NPS are now employing a variety of unmanned systems in their research. NPS possesses two Wave Gliders, and one of these will have a towed acoustic modem integrated by this summer thereby serving as a communications node to the Littoral Gliders while submerged. This capability will allow remote command and control, data exfiltration, and improved tracking and navigation of the submerged gliders. The other Wave Glider will have a new suite of environmental sensors integrated into its payload for improved measurements of the atmospheric and oceanic parameters in quantifying the near surface environment, specifically including atmospheric turbulence measurements for research in areas of air-sea interaction and environmental effects on radar wave propagation.



Research will also be conducted with both Wave Gliders in the area of continuous system monitoring, transmission, archival storage and visualization routines for extended operations. This will include exposing collected data products via Web browsers using open standards (HTML5, XML, KML place marks, SVG images, X3D Graphics) with hourly updates of mobile offshore-monitoring activities, and the hosting of archival data-collection projects by NPS faculty and students. Launch and recovery in Monterey is planned using the [NOAA R/V FULMAR](#) and the [MLML R/V JOHN H. MARTIN](#).

Planning for exercises in Monterey Bay, Port Hueneme and San Francisco will help to establish the infrastructure and experience necessary for regular conduct of at-sea unmanned research missions by NPS students and faculty. Test results will be shared. [Inquiries](#) about other proposal and project possibilities are welcome.

Calendar

- The [mailing list](#) is active.
- The [calendar](#) is now listing dates for missions, meetings, presentations, training, and events.
- Team members can [link this calendar in your personal Outlook calendar](#).

Contracts

- We have an MOA and support in place for multiple at-sea launch and recovery exercises utilizing the NOAA [R/V Fulmar](#).
- [Taygeta](#) supports hardware and software design and construction on multiple vehicle projects.

Data collection

- Wave Glider Management System (WGMS) is powerful, initial training was great.
- [NPS MOVES](#) is building a local infrastructure for archiving, dissemination and visualization.
- [MBARI](#) is helping us set up a [Spatio-Temporal Oceanographic Query System \(STOQS\)](#) data server ([flyer](#) and [default query](#)).

Equipment

- TODO: Configuration and support for the two NPS [Liquid Robotics WaveGlider SV2](#) vehicles.
- TODO: Configuration and support for supporting sensors and add-on capabilities (both current and future).
- Liquid Robotics has provided extensive technical information, available on USW shared drive:
 - (inside NPS Intranet) at `\\special\usw\LiquidRobotics`
 - Please do not share this information outside of NPS without permission.

Operations

- Monterey Bay and California central coast ([map](#))
- [NPS CENETIX](#) Maritime Interdiction Operations (MIO) Exercises
- [NPS CAW](#), Point Mugu and Port Hueneme

Launch and recovery

- NOAA support vessel [R/V Fulmar](#) ([capabilities](#)) (NPS POC: Smith)
- MLML support vessel [R/V JOHN H. MARTIN](#) (NPS POC: Smith)
- Launch not supported: [USCGC HAWKSBILL](#) Monterey (NPS POC: Bordetsky)

Partnerships

- Liquid Robotics [Cooperative Research and Development Agreement \(CRADA\)](#) - preparation in progress.
- [MBARI](#) has tremendous experience operating Wave Gliders and is helping with the [STOQS](#) system ([flyer](#) and [default query](#)).

Projects

- CRUSER: [Acoustical tracking, communication, and command and control of autonomous underwater gliders](#)
- CRUSER: [Near-surface atmospheric measurements and modeling](#)
- OPNAV: [Regular at-sea operations with data collection and visualization support](#)

Sponsors

- [NPS Undersea Warfare Program](#)
- [Consortium for Robotics and Unmanned System Education and Research \(CRUSER\)](#)
- [Office of Naval Research \(ONR\)](#)
- [OPNAV NPS Naval Studies Program](#)



Welcome to your new space!

Team members are welcome to add information, post blog entries, and edit this space.

Recent space activity

[Brutzman, Donald \(Don\) \(CIV\)](#)

[Wave Glider USVs](#) updated Nov 15, 2014 • [view change](#)

[Mine Warfare Technology Symposium](#) updated Jun 10, 2014 • [view change](#)

[Coastal Trident 2014 Opportunities for Research](#) updated May 10, 2014 • [view change](#)



[Smith, Kevin \(CIV\)](#)

[Successful Launch and Recovery Testing](#) updated Apr 17, 2014 • [view change](#)

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Space contributors

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- [Smith, Kevin \(CIV\)](#) (2006 days ago)
- [Wang, Qing \(CIV\)](#) (2050 days ago)
- [Kropp, Shana Contractor](#) (2104 days ago)
- [Sharrock, Nancy \(CIV\)](#) (2138 days ago)