

New VIMS professor joins “Gliderpalooza”

By David Malmquist

Maiden voyage of underwater vehicle is part of coast-wide effort

(October 2, 2013) Given the nature of his research, Assistant Professor Donglai Gong might be excused for gliding into his new faculty position at the Virginia Institute of Marine Science. Instead, he’s jumping right in, with his first field project the deployment of an unmanned ocean glider that will join a dozen others in a coordinated effort to simultaneously observe the coastal waters of the entire eastern seaboard.

Gong’s deployment is part of “Gliderpalooza,” a two-month effort that aims to combine data collected by gliders with information from satellites, moorings, and land-based, high-frequency radar to paint a detailed picture of ocean properties and currents along the continental shelf from Nova Scotia south to Georgia. He plans to launch his glider during the week of October 7th, from a spot just offshore of VIMS’ Eastern Shore Lab in Wachapreague, Virginia.

Gliders are torpedo-shaped autonomous underwater vehicles that combine changes in buoyancy with a pair of fins to propel themselves through the water. They use a variety of instruments—CTDs, acoustic and optical sensors, nutrient analyzers—to collect data that are then sent via satellite to a ship or shore-based lab. Gong says their most valuable feature is the ability to perform extended missions over a vast region.

In addition to VIMS, partners in Gliderpalooza are Dalhousie, Rutgers, and North Carolina State universities; the Woods Hole Oceanographic Institution, the Skidaway Institute of Oceanography; the Universities of Maine, Massachusetts, Delaware, and Maryland; and Teledyne Webb, Inc.

Gliderpalooza began in early September and is scheduled to run through October. Its goal is to provide a comprehensive picture of temperature, salinity, chlorophyll levels and other fundamental ocean properties as the north-west Atlantic shifts from summer to winter conditions. The annual shift coincides with peaks in animal migration and hurricane activity, as well as the return of undergraduates who can use the collected data in their classes.

Dr. Oscar Schofield, a professor of marine science and co-director of Rutgers’ Coastal Ocean Observation Laboratory, coined the term Gliderpalooza. He says the program “allows all the regional observatories to work together to gather information. It’s part of the effort to create a single integrated ocean observatory along the East Coast of North America.”



Asst. Professor Donglai Gong with his new Slocum glider.

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Indeed, major funding for Gliderpalooza comes from the Mid-Atlantic Regional Association Coastal Ocean Observing System, or MARACOOS, which itself is part of the Integrated Ocean Observing System. “IOOS” is the U.S. component of the Global Ocean Observing System, a UN-sponsored network for observing, modeling, and analyzing ocean properties to support fisheries management, navigation, storm monitoring, and other operational ocean services worldwide. Additional funding for Gliderpalooza is provided by EPA, NASA, the Office of Naval Research, the Southeast Coastal Ocean Observing Regional Association (SECOORA), and private parties.

As if participating in Gliderpalooza weren’t enough for a maiden voyage, Gong plans to extend his glider’s mission by pointing the new vehicle even farther offshore.

“In addition to studying the continental shelf,” he says, “we’re sending our glider across the continental slope and almost to the Gulf Stream before heading back. Our goal is to collect preliminary data for future studies of the slope sea. We’re building towards a larger study, leveraging the resources and knowledge that MARACOOS and the broader observing community can provide.”

Though he has high hopes for his participation in Gliderpalooza, Gong’s previous experience—on missions to mid-Atlantic and Arctic waters before arriving at VIMS last year—has taught him to expect the unexpected.

“Every mission is different,” he says, “and the first mission of any vehicle is always nerve-racking. Our glider doesn’t yet have a track record, so we’ll have to find out the hard way what it’s intrinsic reliability is. We are going into offshore conditions, with lots of waves and wind—a lot of potential for things to go wrong. The best we can do is prepare the glider in the lab, to make it as reliable as we can before launching.”

To see how Gong and his glider fare, and to follow the progress of all the people and instruments involved in Gliderpalooza, visit the MARACOOS blog at <http://maracoos.org/blogs/main>.



Slocum Glider: VIMS Professor Donglai Gong with a previous Slocum glider aboard the USCGC Healy in the Arctic.