Seaglider: Autonomous Undersea Vehicle

Narrator: The Seaglider — a 9-foot unmanned, remote-controlled submarine deployed by the Applied Physics Laboratory at the University of Washington.

Craig Lee: It carries a variety of sensors. It measures temperature and salinity, oxygen concentration in the ocean and chlorophyll. It dives from the surface to 1000 meters or roughly 3000 feet.

What the Seaglider does is it can stay out for long periods of time. The current record is roughly nine months on a single mission, on a single set of batteries. And it can swim for long distances; 4000 kilometers, 4500 kilometers during this period of time. No…no active propulsion in that sense. It's all done by making the glider either heavy or buoyant so it rises or sinks changing it's attitude so it changes the direction of the wings. And those wings project vertical motion to the horizontal and the glider squirts forward.

The glider has a GPS, just like the GPS that you would use for hiking. When it's at the surface, it uses that GPS to figure out where it is. It gets a fix the same way you get a fix when you're hiking or driving.

The glider has a satellite telephone. This allows the glider to call home and download its data to us. And it allows us to talk to the glider so we can actually issue new instructions to it.

Narrator: Able to stay out for months at a time, Seagliders make ideal observers of long-term climate change. And Seagliders go places where people don't want to be.

Craig L.: The Labrador Sea in the middle of winter, the Gulf of Alaska in the middle of winter, in the Arctic underneath the ice — these are all places that are very difficult to get to and very difficult to stay in. We can put gliders into those places and sample fairly routinely. And we've done a lot of very long missions, a lot of missions in very demanding environments. For a lot of environments, we take a lot of risk with our vehicle.

Narrator: For the record, Seagliders are numbered, not named.

Craig L.: They definitely have their own personalities. Some are better behaved than others. We call them some names, but none that… none that we could put on video.