

Wave Gliders deliver METOC data in the Gulf of Mexico to reduce risk during seismic operations.

CHALLENGE

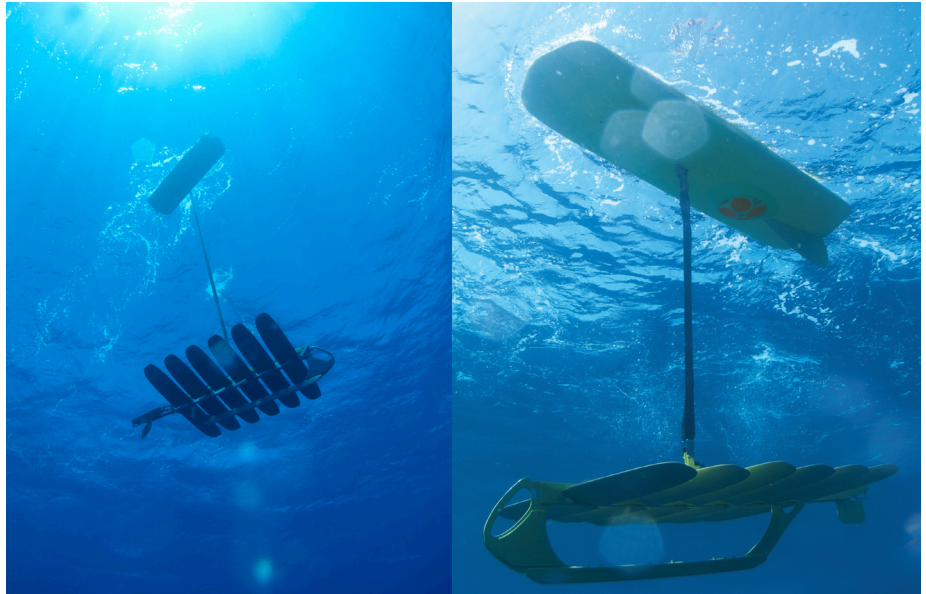
During seismic surveying, commercial vessels tow multiple acoustic streamers which listen to the reflection of acoustic energy beneath the surface. To optimize data the vessels and streamers may need to pass close to oil platforms. Weather conditions and varying water currents can add to the risk of these close pass operations.

SOLUTION

Wave Gliders can be deployed near platforms to measure current speed and direction as well as weather data. This information is relayed in real-time to the streamer towing survey vessels to allow safer navigation.

RESULTS

Wave Gliders provided real-time METOC data in a busy shipping route, reducing risk by providing the client with the required situational awareness. The Wave Glider also saved the customer money by freeing up ships that would have been needed to collect this data, making them available for other operations.



The Wave Glider platform

The Wave Glider® is the first autonomous marine vehicle (AMV) that harnesses kinetic energy from wave action to produce forward propulsion in the ocean; in an environmentally friendly manner. The vehicles are completely self-sustaining, using solar panels to power their payloads. The platform includes navigational and control systems, and communicates to an operations center via satellite. Navigational and operational control with full security can be transferred to a local set-up via a master/slave system. This technology provides persistent ocean presence and a reliable data acquisition platform.

Real time measurements of currents and weather

The Gulf of Mexico is rich in natural oil and gas resources. It is also home to some of the busiest shipping routes in the world. In the process of seismic exploration, commercial vessels tow multiple acoustic streamers that are listening for the reflection of acoustic energy from the seafloor. Because of the size of the operation and the vulnerability to surface currents and inclement weather, real-time measurements of currents and weather are critical to safe operation and close passes.

Wave Glider Advantages

Wave Gliders allow for greater situational awareness in the form of real-time weather and current measurements. Using the Wave Glider in the over populated area is a fraction of the cost of traditional monitoring services. With an ability to operate 24 hours a day, 7 days a week independent of weather conditions, the Wave Glider is an ideal platform for critical and persistent operations.



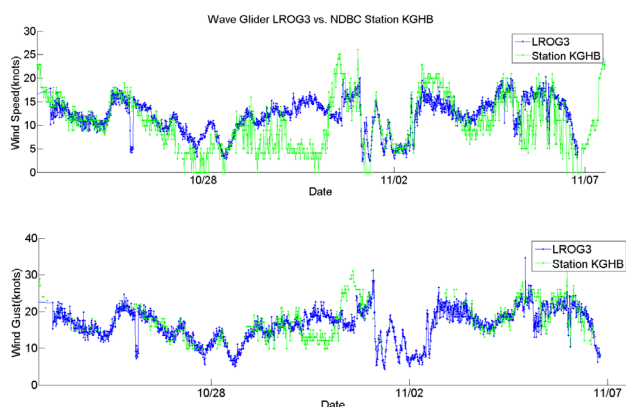
CASE STUDY: Wave Gliders deliver METOC data in the the Gulf of Mexico to reduce risk during seismic operations.

Flextrend

Results	Wave Glider 1	Wave Glider 2
Number of current measurements	17265	1753
Number of weather measurements	6839	710
Distance travelled	961 (nm)	116 (nm)
Days in water	49	5
Average vehicle speed	1.2 knots	1.0 knots
Maximum vehicle speed	2.5 knots	2.8 knots
Maximum wind speed	23.5 knots	21.4 knots
Maximum current speed	1.7 knots	1.5 knots



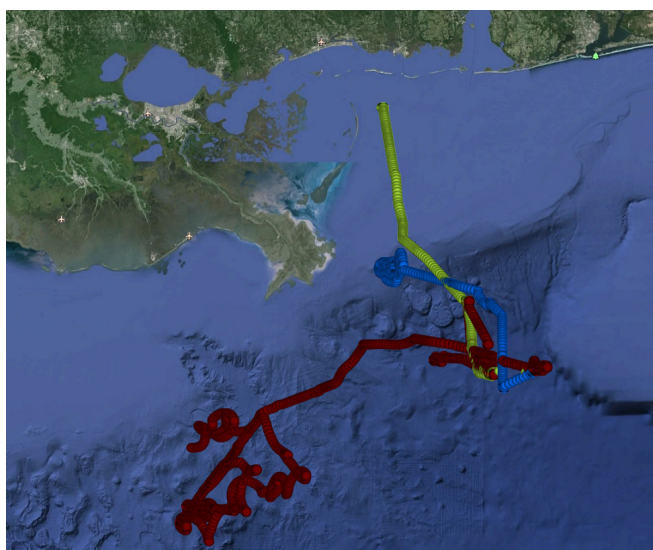
Above is the cruise track of the commercial vessels WG Amundsen (red) and WG Cook (orange). The Wave Glider held station within the survey area while providing real-time weather and current measurements.



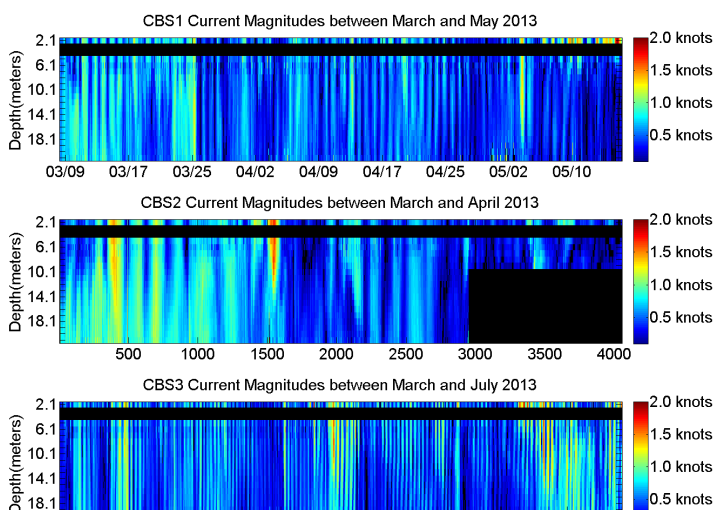
Wind data from the Wave Glider coincides with data from the KGHB station. Please note the differing heights of the anemometers Wave Glider (1 meter) KGHB (110 meters).

Fourpoint

Results	Wave Glider 1	Wave Glider 2	Wave Glider 3
Number of current measurements	8885	4056	17724
Number of weather measurements	9305	4377	20797
Distance travelled	812 (nm)	302 (nm)	1621 (nm)
Days in water	68	30	146
Average vehicle speed	1.1 knots	0.7 knots	0.8 knots
Maximum vehicle speed	2.8 knots	2.5 knots	3 knots
Maximum wind speed measured	27.6 knots	38.1 knots	37.1 knots
Maximum current speed measured	3.5 knots	3.0 knots	3.0 knots



Positions of Wave Glider 1 (blue), Wave Glider 2 (yellow) and Wave Glider 3 (red), during the METOC missions.



Time series of the ADCP current magnitudes from the vehicles show irregular variability between 0.1 and 2 knots. Knowing the magnitude and direction of these currents in real-time is critical to the safe navigation of the streamer vessel.

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