

# The Wave Glider delivers important Metocean and environmental monitoring data in the Chukchi Sea.

## CHALLENGE

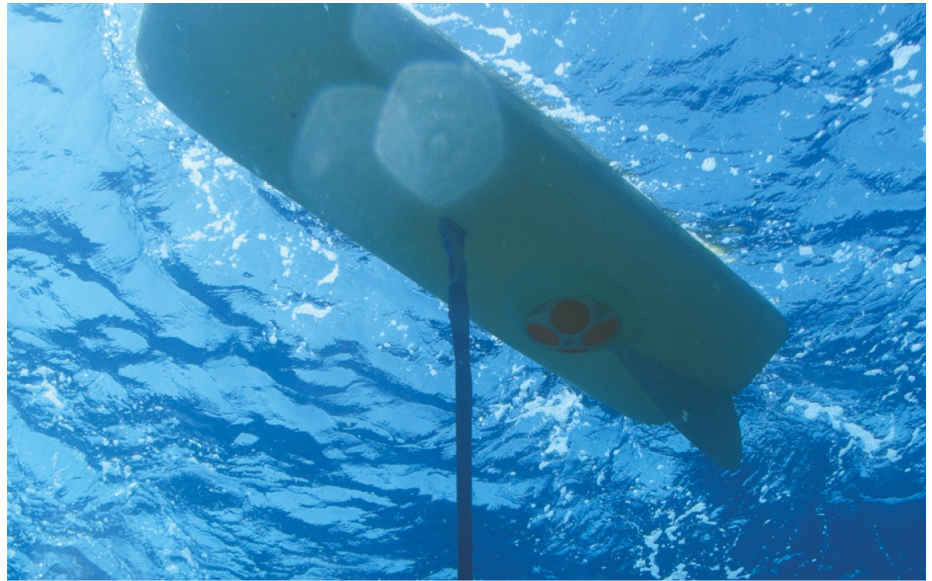
Collection of critical environmental data needed to protect arctic environments can be difficult and costly. Proving the use of unmanned and remotely piloted Wave Gliders for these tasks can reduce cost and risk since they require no people nor fuel offshore.

## SOLUTION

Deploy a Wave Glider in the Klondike Block area of the Chukchi Sea. Monitor its ability to navigate, hold station and report oceanographic weather and current data in real-time.

## RESULTS

The Wave Glider safely conducted operations and transmitted uninterrupted oceanographic data while holding station 100% of the time.



*Wave Glider equipped with ADCP sensor.*

## 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.

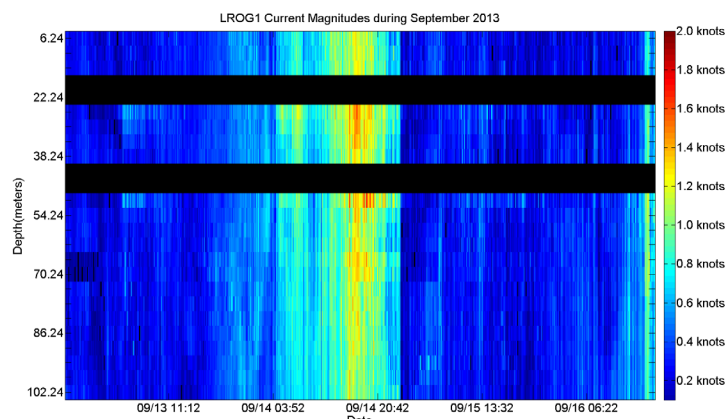
## Real time measurements of currents and weather

This proof of concept mission was to test the Wave Glider's METOC capabilities in the Chukchi Sea off the northwest coast of Alaska. After deployment, the Wave Glider was remotely navigated to a station in the survey block, where it continuously collected valuable METOC data with its 300 kHz acoustic doppler current profiler (ADCP) and a weather station. The Wave Glider successfully collected the data on specification and ahead of schedule saving the operator time and reducing operating cost. In addition, using a Wave Glider eliminated the need for additional ships measuring currents, making them available for other operations. The Wave Glider operated 24 hours a day, 7 days a week independent of weather conditions.

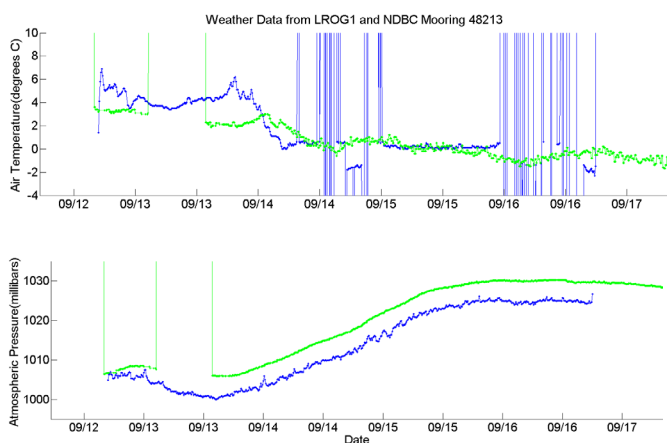
## CASE STUDY: The Wave Glider delivers important Metocean and environmental monitoring data in the Chukchi Sea.

### Results

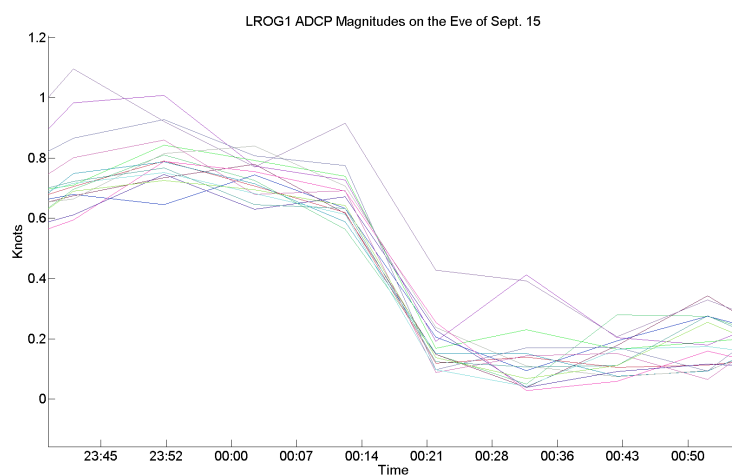
Number of current measurements	565
Number of weather measurements	582
Time on station (within 1 km of waypoint)	100%
Distance travelled	500 (nm)
Days in water	5
Average vehicle speed	1.4 knots
Maximum vehicle speed	2.9 knots
Maximum wind speed measured	25.3 knots
Maximum current speed measured	1.7 knots



*The current magnitudes measured by the Wave Glider show a gradual increase throughout the water column on 9/14, with a dramatic decrease on the eve of 9/15.*



*Weather data from the Wave Glider and NDBC mooring 48213 agree reasonably well.*



*In the above image we see the dramatic decrease amounts to approximately 1 knot over a time period of 1 hour throughout all bins measured, over 100 meters of the water column. Knowledge of this kind of variability is critical to the safe navigation of commercial vessels in and around oil rigs.*

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