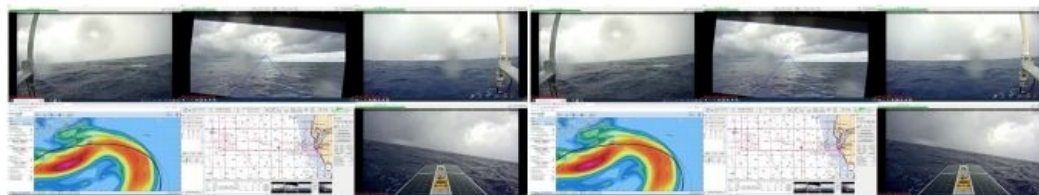


# Solar-powered USV Completes 800 Nautical Mile Offshore Loop Current Monitoring Mission



SeaTrac Systems, in collaboration with the Woods Hole Group (WHG), has successfully completed a 21-day over-the-horizon deployment of SeaTrac's SP-48 solar powered uncrewed surface vehicle (USV) in the Gulf of Mexico. The 4.5-metre USV travelled over 800 nautical miles in three weeks, operated 24/7, and navigated strong ocean currents (> 2 knots) as it conducted a mission to map

and monitor the Loop Current using an acoustic Doppler current profiler (ADCP).

The goal of the mission was to evaluate the ability of the SP-48 to conduct survey work that has traditionally relied on large conventional vessels that are expensive, carbon intensive and keep crews at sea for up to 60 days at a time. The data these vessels collect are vital for oil and gas stakeholders in the Gulf of Mexico, and thus the ability to perform this type of data collection with a solar-powered USV (or fleet of USVs) would lower the cost and environmental impact of this critical monitoring activity.

## Real-time Mapping Mission Run From Remote Operations Centre

"SeaTrac's system successfully made several passes into currents greater than 1.5 knots, demonstrating a key milestone for USVs to detect strong currents at the edge of the Loop Current without losing their manoeuvrability. The real-time data quality compared favourably to data collected from traditional vessel-mounted surveys for the sea state conditions encountered during the mission," commented Jill Storie, EddyWatch and SurveyWatch programme manager at WHG.

The mission was run from the SeaTrac remote operations centre in Marblehead, MA, where the piloting team leveraged SeaTrac's custom control software and the onboard systems for enhanced situational awareness. Four onboard cameras provided 360-degree viewing around the USV, while an AIS transceiver enabled the USV to broadcast its position and detect other vessels in the area. Real-time USV health and status information were available to the operators, and alerts were set up to notify them of key considerations, including the range and closest point of approach for vessels in the area, battery levels, charging rate, weather conditions and communications status.

The data from the 300kHz Teledyne Workhorse Monitor ADCP was packaged by the onboard payload computer and sent back over satellite to the WHG oceanographers and SeaTrac team every ten minutes. The current data from SeaTrac's USV was monitored for quality control and directly compared to the WHG network of proprietary drifting buoys. The ADCP data also informed the dynamic mission planning for the USV by providing regular updates to the piloting team about the observed current profiles.

## New Hydrospatial Data Collection Paradigm

"SeaTrac is excited to have demonstrated its ability to operate over the horizon for extended periods of time in a challenging environment like the Loop Current, where sustainable, regenerative and storable power for propulsion is required to navigate the ocean currents reliably. The team is planning to get back out into the Gulf in the coming months to test and better understand the operational limitations of the system," noted SeaTrac operations director Hobie Boeschstein.

"Looking forward, we envision multiple boats intelligently working together to create networks of data collection platforms at a cost below that of a single ship. The unique nature of the SP-48 platform presents a new paradigm of data collection that will provide ocean stakeholders with more data at less risk, cost and environmental impact," Boeschstein added.



SeaTrac's USV provides offshore Enhanced Situational Awareness with HD 360° still shots and AIS alerts within 10 nautical miles.

