



The Long-Range, High Endurance Unmanned Underwater Vehicle

Seaglider has a range of practical applications for academic, agency and military oceanographers:

- Physical, Chemical and Biological Oceanography
- Tactical Oceanographic Surveys
- Marine Environmental Monitoring and Time Series Data Collection and Reporting

- Collect data from the ocean for months at a time...
- Perform persistent surveillance and reconnaissance...
- Acquire data at a fraction of the cost of traditional vessels and instruments...

Seaglider is a deep-diving UUV designed for missions lasting many months and covering thousands of miles. Seaglider measures temperature, salinity and other quantities in the ocean, sending back data using global satellite telemetry. More than 80 Seaglider UUVs have been delivered worldwide, collecting ocean physical properties and performing various other missions for oceanographers, including the U.S. Navy, government agencies and research organizations.

Seaglider Milestones

- First to complete a 3,800-km mission
- First to complete a 7-month mission
- First to conduct a multi-glider mission

iRobot Seaglider

*The long-range, high endurance
Unmanned Underwater Vehicle*

Economically study the
physical, chemical and
biological properties
of the ocean

Deploy for up to 10 months
of data collection

Collect, refresh and
redirect data from around
the world in real time



Seaglider uses state-of-the-art oceanographic instrumentation to precisely measure and report a multitude of data, including temperature and conductivity as a function of depth, dissolved oxygen concentrations, ocean current variation, backscatter and multiple trophic level biomass. These measurements enable the development of sound velocity profiles that are critical for characterizing acoustic propagation models and monitoring oceans in great detail. Seaglider's modular architecture accommodates a variety of sensors:

- Sea-Bird CT
- Sea-Bird Dissolved Oxygen Sensor (43F)
- Paine Pressure Sensor
- Aanderaa 4330 Optode
- WET Labs Fluorescence and Backscatter (ECO Triplet)

Applications

- Physical, chemical, and biological oceanography
- Tactical oceanography
- Long-term, long-range Maritime reconnaissance
- Navigation aid

Operational Modes

Transect survey:

- Profiles through a sequence of waypoints

Virtual mooring:

- Continuous profiles at a single location

Surface drift:

- Remains in surface position with antenna up for GPS and data telemetry

Bottom loiter:

- Maintains negative buoyancy on bottom for specified time

Sub-surface porpoise:

- Profiles within specific depth range without surfacing

Basic Robot Specifications

Body Size:

- 1.8 m long, 30 cm max. diameter

Wing span:

- 1 m

Antenna mast length:

- 1 m

Weight:

- 52 kg (dry)

Maximum Depth

- 1000 m

Maximum Travel Range / Duration

- 4600 km (650 dives to 1 km depth)

Battery Endurance

- Lithium primaries, 24V and 10V packs, 17 MJ
- Up to 10 month run-time (mission dependent)

Typical Speed

- 25 cm/s (1/2 kt)

Glide Angle

- 16-45° (1:3.5 to 1:1 slope)

Mechanical Features

- Isopycnal hull
- No external moving parts
- Low drag, flooded fiberglass fairing

Electrical Features

- Ultra-lower power micro-processor
- 256 MB Compact-FLASH memory
- 4 serial channels available for sensors
- 1 frequency channel available for sensors

RF Data Telemetry:

- Iridium satellite data telemetry

Software

- Complete data transmitted after every dive
- Web-based information interface
- Control and system commands transmitted on any dive

Guidance and Control

- Dead reckoning between surface GPS fixes using 3-axis digital compass
- Kalman filter prediction for mean and oscillatory currents
- Acoustic altimetry systems for near-bottom dives
- Bathymetry map system for low-energy dives



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