

EcoMapper AUV

GENERATE HIGH-RESOLUTION MAPS OF WATER QUALITY, WATER CURRENTS, BATHYMETRY, AND SONAR IMAGERY

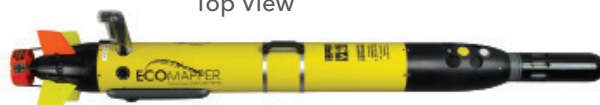
YSI introduces a unique system for collecting water quality data. The EcoMapper™ AUV (Autonomous Underwater Vehicle) with YSI's 6-Series sensors provides researchers and scientists with a data collection platform unmatched in its flexibility and capability. This vehicle can measure water quality, currents, and bathymetry at a continuous interval for missions ranging from 8-12 hours long.

Features Include:

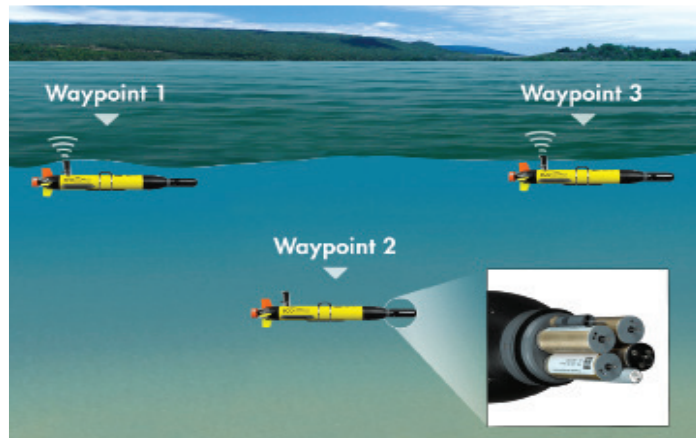
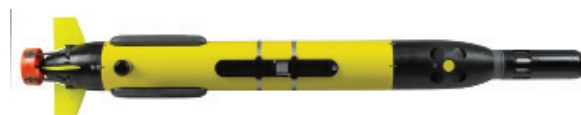
- Vehicle is easily deployed by one person
 - Wide-area survey without a workboat or associated staff
 - Intuitive mission-planning software for quick and easy survey design and execution
 - Undulation through the water column provides data in both the horizontal and vertical planes
 - Geo-referenced data
 - Options to measure up to 8 water quality parameters, bottom mapping, and water profiling
 - Reliable autonomous platform with DVL
 - Robust and simple to use - minimal operator training
- Bow with integrated sensor package includes YSI's water quality sensor bulkhead, and depth sounder
 - Rugged, lightweight carbon fiber and marine-grade aluminum construction
 - Launch from the shore or small boat
 - Li-Ion batteries = long run-time and quick recharge
 - Near-coastal operating depth – bays, rivers, lakes (to 328 ft depth)
 - Built-in moisture detectors with fail-safe emergency buoyancy system for asset recovery

ECOMAPPER

Top View

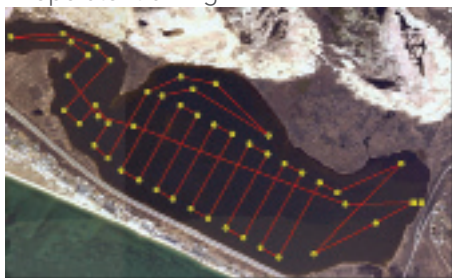


Bottom View

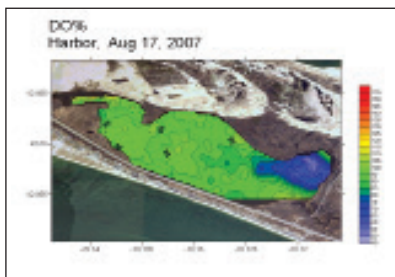


"Screenshot from VectorMap mission planning software showing a "lawnmower"-style mission path drawn onto image of saltwater lagoon."

"Once deployed, the EcoMapper communicates while on the surface and acquires a GPS fix at waypoints identified in the mission plan."



"Dissolved oxygen data collected from saltwater lagoon mission."



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EcoMapper AUV Specifications

EcoMapper Vehicle Specs

Dimensions	Diameter Length Weight	5.8 in, 14.73 cm 60.1 in (152.65 cm) Standard, 63.6 lbs (160.8kg) with DVL
Depth Rating		100m (328 ft)
Endurance		8-10 hours at 2.5knot speed; batter configuration dependent
Speed Range		2.5 knots max on surface / 3.5 knots max underwater
External Hook-Up		Data: wireless 802.11g Ethernet Power: 2-pin DC voltage
Navigation		Surface: GPS (WAAS Corrected) Subsurface: A0 Bottom tracking to 40m with DVL; B) Dead reckoning with compass, depth sensors and vehicle speed
Tracking		Internal Data Log; Programmable Resolution
Software		VectorMap: Mission Planning and Data Viewing Sonar Mosaic: Processes sonar records for overlay to Vector Map
Energy		600-800 WHrs of rechargeable Lithium-ion batteries, depending on vehicle configuration
Power		12-18 VDC
Onboard Electronics		Intel ATOM processor with Windows XP embedded , 80GB disk drive for data collection

Sensors & Accessories

Integrated Sensors		CTD: <u>Conductivity</u> Range 0 - 100mS/cm; Resolution: 0.001 to 0.1mS/cm; Accuracy: $\pm 0.5\% + 0.001\text{mS/cm}$ <u>Temperature</u> Range: -5 to 50°C; Resolution: 0.01°C; Accuracy: $\pm 0.15^\circ\text{C}$ <u>Depth</u> Range: 0 to 656ft (200m); Resolution: 0.00ft (0.001 m); Accuracy: $\pm 1\text{ ft } (\pm 0.3\text{ m})$ <u>Salinity</u> Range: 0 to 70ppt; Resolution: 0.01ppt; Accuracy: $\pm 1\%$ or 0.1 ppt Also: height from bottom, three-axis digital compass
Optional Water Quality Sensors		<u>Blue-green algae phycocyanin</u> Range: 0 to 280,000 cells/mL; Detection Limit: 220 cells/mL; Resolution: 1 cell/mL; Linearity: $R2 > 0.9999$ <u>Blue-green algae phycoerythrin</u> Range: 0 to 200,000 cells/mL; Detection Limit: 450 cells/mL; Resolution: 1 cell/mL; Linearity: $R2 > 0.9999$ <u>Chlorophyll fluorescence</u> Range: 0 to 400 $\mu\text{g/L}$; Detection Limit: 0.1 $\mu\text{g/L}$; Resolution: $\pm 0.1\ \mu\text{g/L Chl}$; Linearity: $R2 > 0.9999$ <u>Optical dissolved oxygen</u> Range: 0 to 50 mg/L; Resolution: 0.01 mg/L; Accuracy: $\pm 0.1\ \text{mg/L}$ or 1% <u>ORP</u> Range: -999 to 999 mV; Resolution: 0.1 mV; Accuracy: $\pm 20\ \text{mV}$ <u>pH</u> Range: 0 to 14 units; Resolution: 0.01 unit; Accuracy: $\pm 0.2\ \text{unit}$ <u>Rhodamine</u> Range: 0 to 200 $\mu\text{g/L}$; Resolution: 0.1 $\mu\text{g/L}$; Accuracy: $\pm 5\%$ or 1 $\mu\text{g/L}$ <u>Turbidity</u> Range: 0 to 1,000 NTU; Resolution: 0.1 NTU; Accuracy: $\pm 2\%$ or 0.3 NTU
Sonar		Triple-frequency 260/330/770 kHz
Doppler Velocity Log		<u>Bottom Tracking</u> Frequency: 1MHz; Min. to Max. Range: 0.06 to 35 m; Velocity: $\pm 10\ \text{m/s}$; Accuracy: $\pm 0.2\ \text{cm/s}$; Resolution: 0.001 m/s; Internal Sampling Rate: up to 70 Hz
	6-Beam	Down-looking DVL for precise, bottom-track navigation and high-resolution bathymetry. 4 velocity beams and 2 vertical beams (one up, one down).
	10-Beam	Up- and down-looking DVL for precise surface and bottom-track navigation and high-resolution bathymetry. 4 velocity beams and 1 vertical beam (down) for bathymetry/altimetry and 4 velocity and 1 vertical beam (up) for vehicle/surface location <u>Single-beam</u> Altimeter Frequency: 500 kHz; Min. to Max. Range: 0.06 to 80 m; Velocity: $\pm 10\ \text{m/s}$; Accuracy: $\pm 0.2\ \text{cm/s}$; Resolution: 0.001 m/s; Internal Sampling Rate: up to 70 Hz
Security System		Safety tow float: Emergency airbag recovery system Acoustic pinger: Underwater location and tracking Iridium Communications



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