



NEW

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 8-14 hours long.

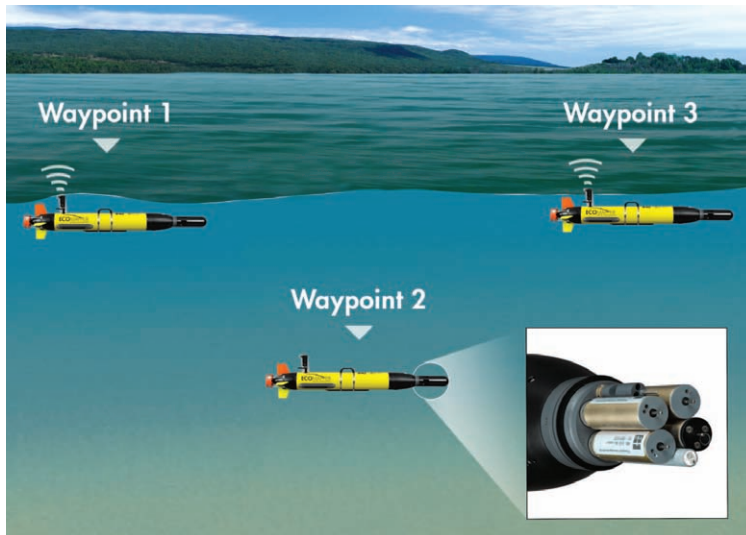


Top view



Bottom view

- 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



EcoMapper Platform

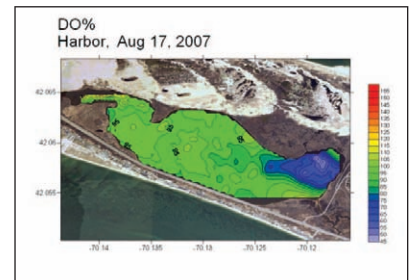
- Reliable autonomous platform with DVL
- Robust and simple to use – minimal operator training
- Bow with integrated sensor package includes YSI's water quality sensor bulkhead, and depth sounder
- Rugged, lightweight carbon fiber and marine-grade aluminum construction
- Launch from the shore or small boat
- Li-Ion batteries = long run-time and quick recharge
- Near-coastal operating depth — bays, rivers, lakes (to 200 ft depth)
- Built-in moisture detectors with fail-safe emergency buoyancy system for asset recovery

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

Between waypoints, the EcoMapper dives to a specified depth and dead reckons—or uses DVL bottom-track—to the next waypoint.



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



Dissolved oxygen data collected from saltwater lagoon mission.



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EcoMapper Vehicle Specifications

Dimensions	Diameter Length Weight	5.8 in, 14.73 cm 60.1 in (152.65 cm) standard; 63.6 in (160.8 cm) with DVL 45 lbs (20.41 kg) standard; 60 lbs (27.2 kg) with DVL
Depth Rating		200 ft (60 m)
Endurance		8-14 hours at speed of 2.5 knots; battery configuration dependent
Speed Range		1-4 knots
External Hook-up		Data: wireless 802.11g Ethernet Power: 2-pin DC charge voltage in
Navigation		Surface: GPS (WAAS corrected). Subsurface: A) Bottom tracking to 40 m 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 VectorMap UVC: Underwater Vehicle Control, operation, run mission, remote control
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; 80 GB disk drive for data collection
Communication		RS-232 2.4 GHz WiFi radio link when on the surface to download missions and upload collected data
Propulsion System		2-blade cast bronze propeller
Control		Four independent control planes
Operating Temperature		-5 to 45°C
Storage Temperature		-10 to 70°C

Sensors & Accessories

Integrated Sensors		CTD: <u>Conductivity</u> Range: 0 to 100 mS/cm; Resolution: 0.001 to 0.1 mS/cm; Accuracy: ±0.5% + 0.001 mS/cm <u>Temperature</u> Range: -5 to 50°C; Resolution: 0.01°C; Accuracy: ±0.15°C <u>Depth</u> Range: 0 to 656 ft (200 m); Resolution: 0.001 ft (0.001 m); Accuracy: ±1 ft (±0.3 m) <u>Salinity</u> Range: 0 to 70 ppt; Resolution: 0.01 ppt; Accuracy: ±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: R ² > 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: R ² > 0.9999 <u>Chlorophyll fluorescence</u> Range: 0 to 400 µg/L; Detection Limit: 0.1 µg/L; Resolution: ±0.1 µg/L Chl; Linearity: R ² > 0.9999 <u>Optical dissolved oxygen</u> Range: 0 to 50 mg/L; Resolution: 0.01 mg/L; Accuracy: ±0.1 mg/L or 1% <u>ORP</u> Range: -999 to 999 mV; Resolution: 0.1 mV; Accuracy: ±20 mV <u>pH</u> Range: 0 to 14 units; Resolution: 0.01 unit; Accuracy: ±0.2 unit <u>Rhodamine</u> Range: 0 to 200 µg/L; Resolution: 0.1 µg/L; Accuracy: ±5% or 1 µg/L <u>Turbidity</u> Range: 0 to 1,000 NTU; Resolution: 0.1 NTU; Accuracy: ±2% or 0.3 NTU
Sonar		Side-scan: Dual-frequency 330/800 kHz
Doppler Velocity Log		<u>Bottom Tracking</u> Frequency: 1MHz; Min. to Max. Range: 0.06 to 35 m; Velocity: ±10 m/s; Accuracy: ±0.2 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 Altimeter</u> Frequency: 500 kHz; Min. to Max. Range: 0.06 to 80 m; Velocity: ±10 m/s; Accuracy: ±0.2 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