The Wave Glider
Transform How You Understand the Ocean

The ocean plays a critical role in our commerce, security, and climate. Despite the importance of the ocean to our lives, we know far less about the ocean than we do about space or the surface of our planet. The ocean presents a difficult, dangerous, and harsh environment in which to operate especially over long durations.

The Wave Glider® revolutionizes how we explore and understand the world's oceans by gathering data in ways or locations previously too costly or challenging to operate. Powered by waves and solar energy, the Wave Glider is an unmanned surface vehicle that allows organizations to build a network of sensors to better understand all aspects of ocean activity.

The Wave Glider Advantage

24x7 Long-Duration Operations
Station keeping or mobile data collection for up to 12 months with no fuel, emission, or crew at sea

Real-Time Communications Gateway: Linking Sea Floor to Space
Provides immediate situational awareness and accelerated decision making

Proven at Sea
Over 1 million nautical miles traveled to date with operations through doldrums and hurricanes/typhoons

Open & Extensible Platform
Add new sensors and software capabilities. Integrate and operate with other systems

Lower Risks & Cost of Ownership
Do more with less while keeping people out of harm's way

LIQUID ROBOTICS®

The Wave Glider
Transform How You Understand the Ocean (continued)

Convert Waves & Sun into Propulsion and Energy

The Wave Glider uses the latest advancements in energy harvesting and propulsion to enable a mobile sensor-hosting platform that can operate over long durations in the open ocean. The combination of wave-propulsion and stored solar energy enables persistence, continuous data collection, and real-time communications.

No Need for Fuel or a Crew

The Wave Glider converts wave motion into propulsion using a unique two-part architecture that leverages the difference in motion at the ocean surface and below.

And an Extra Boost from the Sun

A solar energy system powers sensors, communications, and enables a thruster propulsion system that provides additional navigational agility and thrust for challenging ocean conditions.

- Water Speed: 1 – 3kts
- Battery Storage: .9 – 4.5kWh
- Avg. Continuous Power: 5 – 20W
  (surge capability available)
- Max Solar Collection: 156W
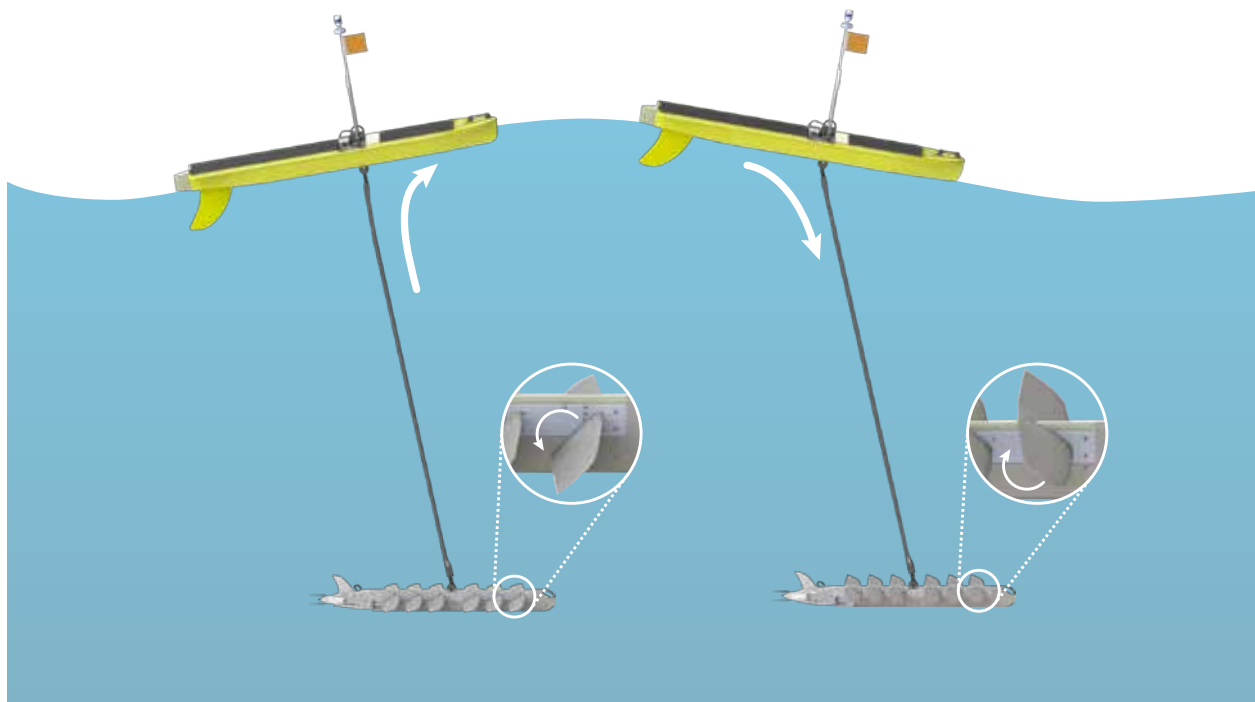
The Wave Glider
Transform How You Understand the Ocean (continued)

Autonomous Navigation: Real-Time Communications

Wave Gliders can operate individually or in fleets to create a network effect for data collection and monitoring. Autonomous navigation and real-time communications are key capabilities that allow low cost, dependable operations. Key features include:

- Precise and programmable course navigation
- Station keeping within a 40m radius (CEP90)
- Vessel detection and collision avoidance
- Multi-vehicle fleet operations
- Sea-side control and 3rd party navigation support

Open Sensor & Payload Architecture

The Wave Glider offers unrivaled flexibility for sensor and payload integration. An extensible payload design makes it easy to reconfigure or adjust payloads on the fly. An optimized motion and sound isolation system makes the Wave Glider well suited for towed acoustic sensor applications.

- Plug and play payload component design
- Multiple sensor placement options
- Payload health check sensors
- Massive towing capacity up to 500kg*

Massive Towing Capability — Tow cable assembly attached to Wave Glider sub

Software to Build & Extend Solutions Quickly

Software lies at the heart of Wave Glider and the solutions built upon it. Wave Glider software is built upon open standards to facilitate rapid solution design and integration with 3rd party systems. Key components include:

Regulus Operating Environment
The on-board operating environment, based upon Linux and Java, for on-board command and control of all Wave Glider functions including sensors.

- In-situ data processing enhances payload effectiveness with capabilities like pre-processing and data compression for real-time downloads
- Autonomous navigation and vessel avoidance
- At-sea mission reconfiguration

Wave Glider Management System (WGMS)
A web-based console for mission management, enables both piloting and data management. Both browser and programmatic interfaces allow users or applications to perform the following:

- Access piloting tools and program navigation
- Issue commands to vehicles and payloads
- Extract mission and sensor data for reporting or integration into 3rd party applications

Wave Glider missions can be run by Liquid Robotics, partners, or customers.

*Assumes proper design of towbody for minimal drag.

The Wave Glider

Transform How You Understand the Ocean (continued)

One Platform: Many Applications and Payloads

The Wave Glider platform can accommodate multiple sensors per mission. Liquid Robotics and an ecosystem of partners work to develop, deliver, and support solutions and applications that include the following:

Industries	Solutions & Potential Applications
Defense	Anti-Submarine Warfare, Gateway Communications, Surface Vessel Warfare
Maritime Domain Awareness	Border Protection, Illegal Fishing, Trafficking & Smuggling, Marine Protected Area
Environmental Assessment	Meteorological & Oceanographic Measurements, Tsunami & Seismic Monitoring, Fisheries Stock Management
Oil & Gas, Other Minerals	Hydrocarbon Monitoring, Hyperlocal METOC, Seismic Survey, Gateway Communications

Wave Glider Platform Includes:

- **Wave Glider:** Float, Umbilical, and Sub (with thruster)
- **Compute & Power:** Command & Control Unit with 980Wh Battery, Solar Panels
- **Sensors:** Automatic Identification System (AIS) Receiver, Water Speed Sensor, Weather Station, Additional Sensors Supported
- **Payloads:** 7 Modular Bays (93L) for Sensors/Payloads
- **Communications:** Iridium, GSM Communications, Wi-Fi
- **Command & Operational Software:** Regulus Operating Environment and Wave Glider Management System (WGMS)
- **Service Items:** Tool Kit for Basic Service Requirements, Launch and Recovery Equipment, Reusable Crates

Both Liquid Robotics and partners support integration of sensors and payloads. Additional options available (e.g. battery pack, colors, towbodies, etc.)

Visit our website for a list of full specifications and sensors supported by Liquid Robotics.

3.05M

Weight: 150kg

8.0M (standard)

2.13M

Rev 1.0