

Global Explorer

Multi-Purpose Long-Duration Solar Powered Autonomous Surface Vehicle



Overview:

The Global Explorer Autonomous Surface Vehicle is a multi-purpose long-duration solar powered marine robotic platform intended for use in bay, coastal, and open ocean environments. The platform provides a low-cost alternative to high-cost crewed vessel operations allowing organizations to make better use of limited budgets. The platform can remain deployed for days, weeks, or months at a time enabling more data collection and/or surveillance than would otherwise be possible by typical crewed operations.

Scientific Applications:

- Harmful Algal Bloom Monitoring
- Carbon Eddy Flux Research
- Estuary Monitoring
- Reservoir Water Quality Monitoring
- Coastal / Cross-Shelf Transects
- Station Keeping Weather Buoy
- Current Profiling
- Water Column Profiling
- Hurricane / Storm Monitoring
- Satellite Calibration / Validation
- Pollution Monitoring

Civil & Military Applications:

- Launch Range Safety
- Port / Harbor Surveillance and Security
- Off-Shore Asset Monitoring
- Homeland Security
- Search & Rescue
- Hazardous Spill Monitoring
- Plume Detection and Tracking
- Mine Detection

Benefits:

- Autonomous Navigation
- Long Duration / Solar Powered
- Environmental Friendly (Clean / Quiet)
- Large Payload Capacity
- Rugged, Reconfigurable, Customizable
- Water Flow-Through Sampling System
- Deployable from Trailer, Ship, Aircraft
- Low Cost Compared to Conventional Operations

Specifications:

Mechanical:

- Self Righting Fiberglass Deck/Hull
- Weight: ~3600 lbs.
- Length: ~25ft.
- Width: ~7ft.
- Draft: ~2 ft.
- Mast: ~11 ft.
- Radar Reflectors / Day Shapes

Electrical:

- Solar Powered (Wind Powered optional)
- Battery Bank: 24 Marine Rated Gel Cell
- 24 Volt Main Bus
- USCG Approved Navigation Lights

Propulsion:

- Cruise Speed: ~2 - 2.5 knots
- Electric Motor and Rudder

Payload Support:

- Payload Bays (Forward, Center, Aft)
- Water Flow-Through Sample Intake with De-bubbling System
- Power: 24V, 12V, 5V
- Capacity: ~500-800 lbs
- Vertical Profiling (optional)
- ADCP Portal (optional)

Communications:

- Two-Way Real Time Communications
- Iridium Satellite – Global
- Cellular – Regional
- 900MHz Spread Spectrum – Line of Sight
- WAN / LAN – Integration & Test
- Proximity Ops R/C – Deployment/Recovery

Navigation Modes:

- Free Drift
- Remote Control
- Waypoint Path Tracking
- Station Keeping
- Adaptive Feature Tracking

Operator Interface:

- Graphical User Interface
- Vehicle Commanding & Configuration
- Telemetry Monitoring (Plots, Tables)
- Summary State Download
- Nautical Chart Display (Planning & Monitoring)
- Google Earth Visualization
- Onboard Camera View
- External Command/Telemetry Interface

All specifications are subject to change. Customization options are available.

Carl Schirtzinger,
Mechanical and Electrical Systems, Field Support
zeinc@verizon.net



John Higinbotham,
Vehicle Control Systems, Ground Systems,
Engineering, Integration, Mission Planning,
Operations Support
john.higinbotham@emergentspace.com