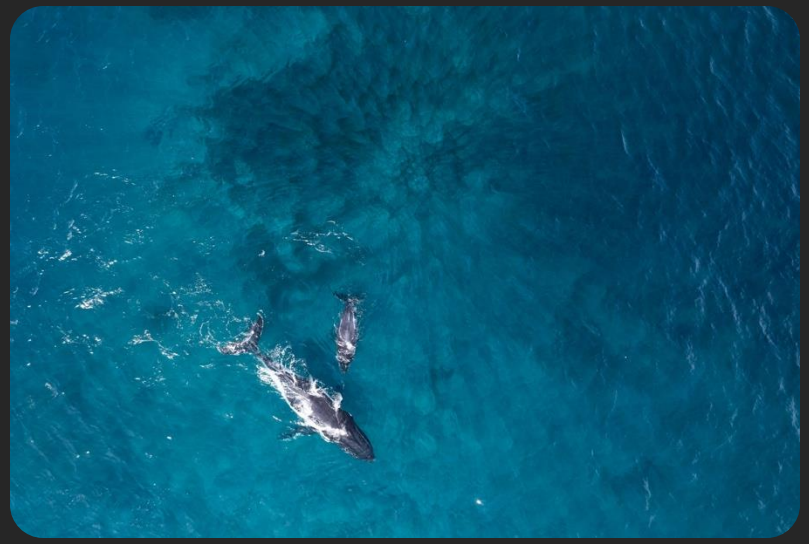
BlueOcean
MARINE TECH SYSTEMS

Ocean Data Collection and Sovereign Development.

Australian Forum for Operational Oceanography
Sam Ward, Operations Manager, BOMTS Australia

Our vision.

Is a future where **scalable, distributed undersea autonomy** provides an **asymmetric advantage** to secure maritime environments and enable data-driven stewardship of our oceans.



BlueOcean LOCUS AUV Glider

Our mission.

Is to advance persistent remote autonomous platforms and software to enable efficient real-time intelligence gathering, improved situational awareness, and data-driven decision-making in the most challenging situations and underwater environments.

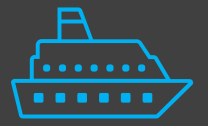
Introduction.

At Blue Ocean we design, develop, and operate long-endurance uncrewed underwater vehicles (UUVs) and C4ISR software solutions to enhance defence maritime surveillance, environmental monitoring, and subsea operational capabilities.

UUV Product Development

C4ISR Software Development

Data-as-a-Service (DaaS)



Field Operations & Sustainment

Our products and solutions are designed to enable remote undersea operations at scale.

First experience of Sovereign Development UK: USV development 2013.

- UK National Oceanography Centre selected **ASV Ltd** and **MOST (AV) Ltd** to develop long-endurance USV prototypes.
- Project delivered under the Government-backed **SBRI program**.
- Funded by **Technology Strategy Board**, **NERC**, and **DSTL**.
- Aim: create autonomous surface vessels capable of **multi-month ocean data collection**.
- Utilised **advanced sensors** and **innovative energy systems** for persistent operations.
- Selection process highlights the growing importance of **autonomous marine technologies** for research, environmental monitoring, and national security.

ASV
C-Enduro

MOST
Autonaut

UK Sovereign USVs – OEMs.

SEICHE - Autonaut

XOCEAN

Australian USV OEM – OCIUS: Bluebottle.

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Ocius
3,389 followers
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Operational Milestone in Maritime Autonomy

Ocius Bluebottle BB709 has just returned after an extraordinary 165 continuous days at sea and on mission - all without a crew onboard. This is another milestone for Bluebottle uncrewed surface vessels – delivering persistent operational maritime surveillance capability.

Bluebottles compliment crewed vessels in a teamed environment, by providing:

Persistence: Bluebottle BB709 achieved 165 days uninterrupted, with cueing of crewed vessels when required.

Crew requirements: Zero onboard personnel, eliminating human risk and freeing human involvement for the highest value tasks.

Cost efficiency: Low operational costs due to zero fuel, no crew and low logistics.

Sustainability: Optimised energy use and smaller footprints mean lower emissions.

#Ocius #AutonomousSystems #MaritimeSurveillance #USV #Innovation #OceanTech #FutureOfMaritime

135 5 comments · 4 reposts

Why Australia needs Glider Data.

Blue Ocean MARINE TECH SYSTEMS

Glider Payload	Parameters / Data Collected	Environmental Importance	ADF Importance
1. GPCTD Sensor	- Conductivity- Temperature- Pressure- Sound Velocity- Density	- Tracks ocean warming & stratification- Identifies water-mass movement & mixing- Supports weather & climate models- Essential for ecosystem monitoring & marine heatwave detection- Baseline for fisheries & habitat studies	- Salinity & water-mass identification- Improves sonar performance & ASW- Supports submarine navigation & torpedo guidance- Oceanographic profiling for naval ops- Enhances underwater comms & environmental characterisation
2. SeaOWL Optical Sensor	- Backscatter- Chlorophyll-a- FDOM	- Monitors phytoplankton & HAB events- Indicates productivity & nutrient changes- Tracks pollution, runoff & organic matter- Supports coastal water-quality reporting	- Underwater visibility prediction- Assists ASW & mine countermeasures- Detects biological activity affecting submarine detection
3. OCR504I Irradiance Sensor	- 443 nm irradiance- 490 nm irradiance- 555 nm irradiance- 655 nm irradiance	- Measures sunlight penetration & productivity- Detects turbidity, sediment plumes & runoff- Tracks offshore & coastal water-quality trends- Satellite ocean-colour validation	- Indicates water clarity for optical systems- Supports submarine detection- Optical sensor calibration
4. Oxygen Optode 4831	- Oxygen concentration- Air saturation	- Detects hypoxia & low-oxygen zones- Tracks climate-driven deoxygenation- Supports ecosystem health assessments- Indicates biological activity & carbon-cycle processes	- Supports submarine operations & acoustics- Assists search & rescue operations- Tracks conditions affecting torpedo/UUV performance
5. Passive Acoustic Monitoring (PAM)	- Ambient noise- Vessel signature analysis- Marine mammal & fish acoustics	- Tracks marine mammals & migration- Measures noise-pollution impacts- Supports fisheries & biodiversity monitoring- Detects illegal fishing & anthropogenic noise	- ASW & vessel detection- Classifies acoustic sources- Tracks vessel traffic patterns

UUVs Gliders International OEMs.

- **AUD $350k – $480k = x1 Vehicle** - dependant on configuration and payload
- **Long lead times** for repair and sensor calibration
- OEMs based in USA and France – Not supported in the Northern Hemisphere

ALSEMAR
SEAEXPLORER

Teledyne
Slocum G3

Scale - Why it matters.

Transforms undersea operations from isolated deployments into persistent, resilient, and cost-effective networks.

Persistent Maritime Presence

Broadening of Instantaneous Geographic Reach

Resilience & Redundancy through distributed mass

Cost-Effective Force Multiplication

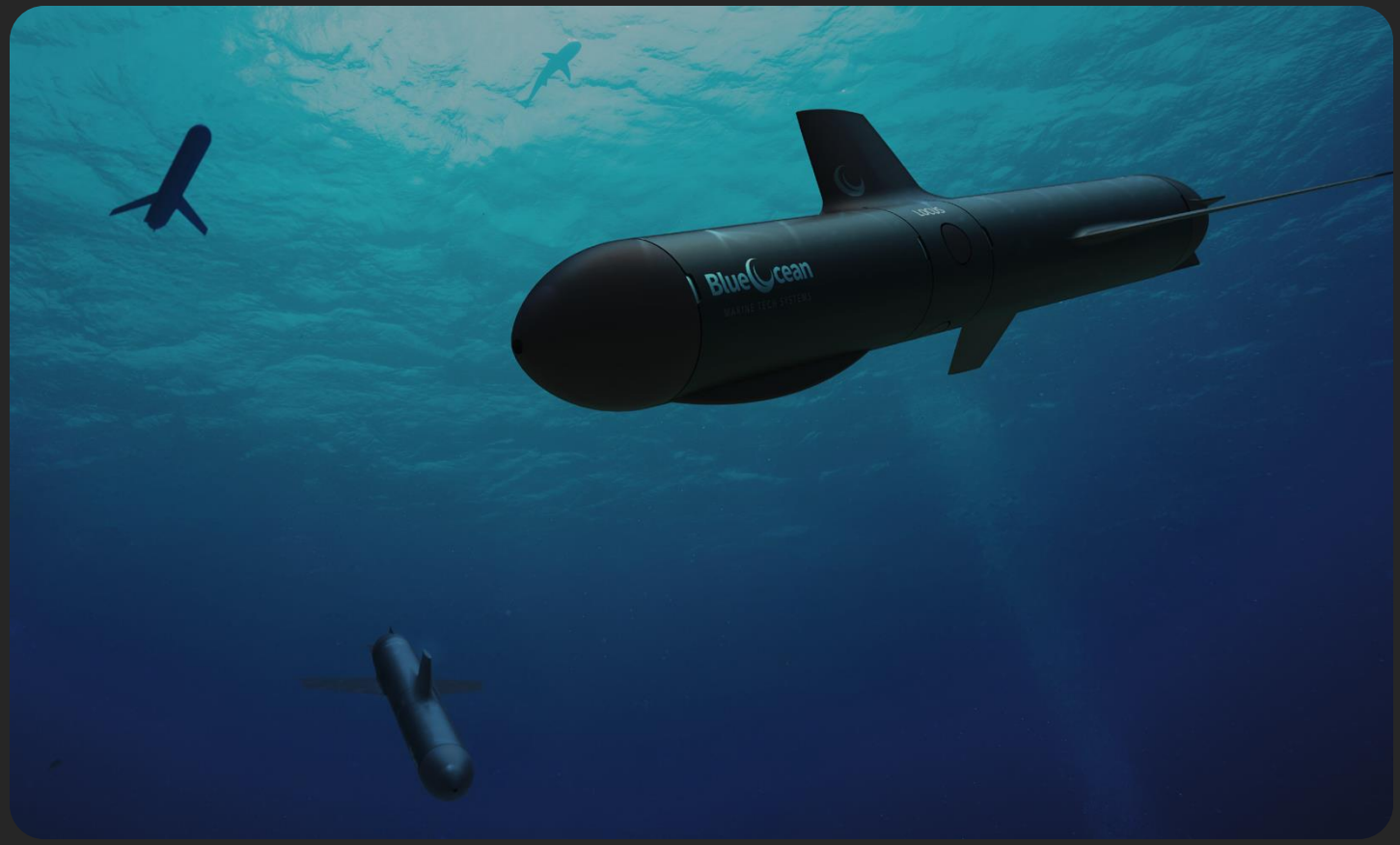
Enhanced C4ISR and Decision Superiority

Strategic & Asymmetric Advantage

To achieve necessary ‘mass’ to enable wide area environmental monitoring and surveillance – large fleets of UUVs (100’s to 1,000’s) are required.

Key Challenges.

- Affordability
- Scalability
- Efficiency of operations at scale
- Security
- Sustainability
- Interoperability
- Adaptability
- Trust
- Data
- Communication



LOCUS.

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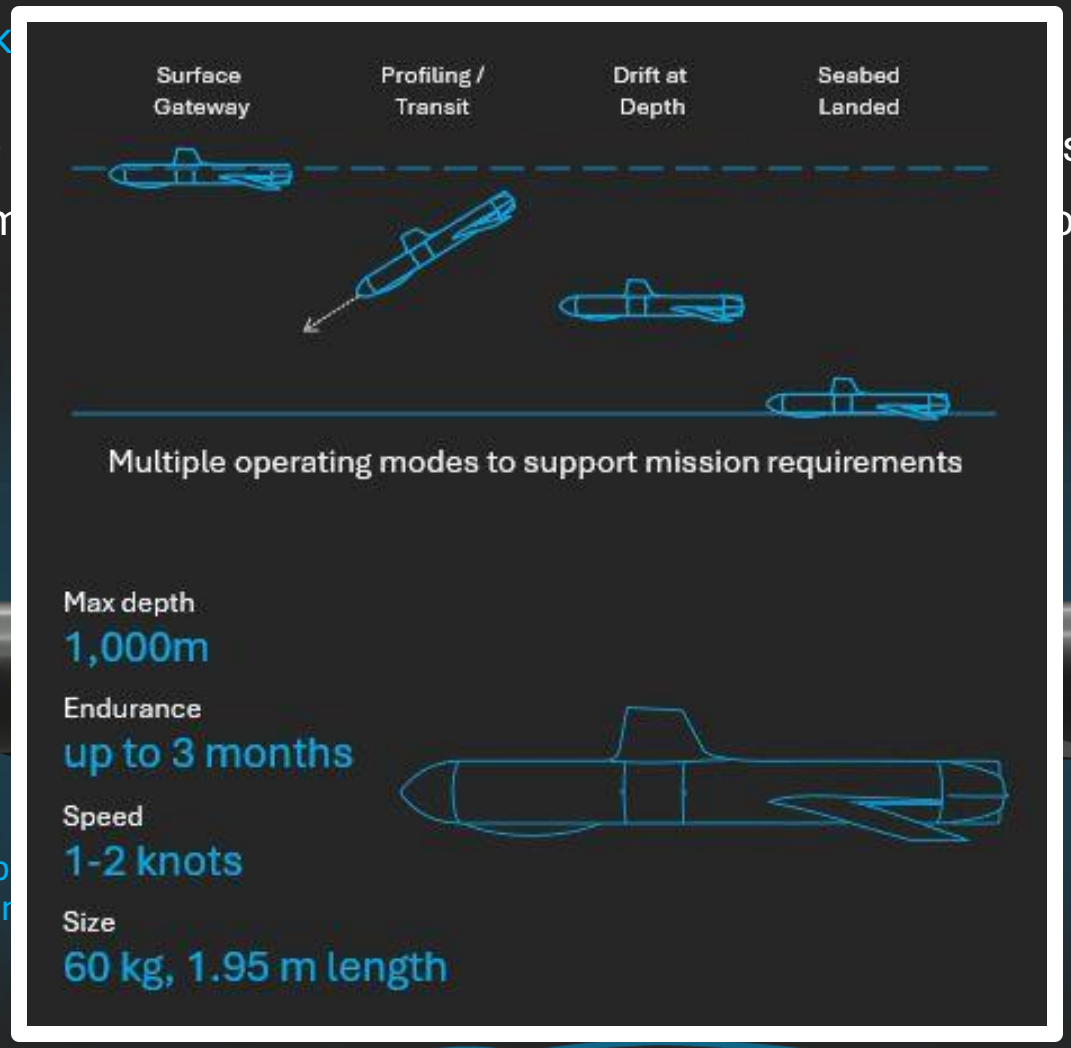
AUV glider for persistent, network

Dual use technology. Affordable sign.

Remote command, control & com operation & sustainment.

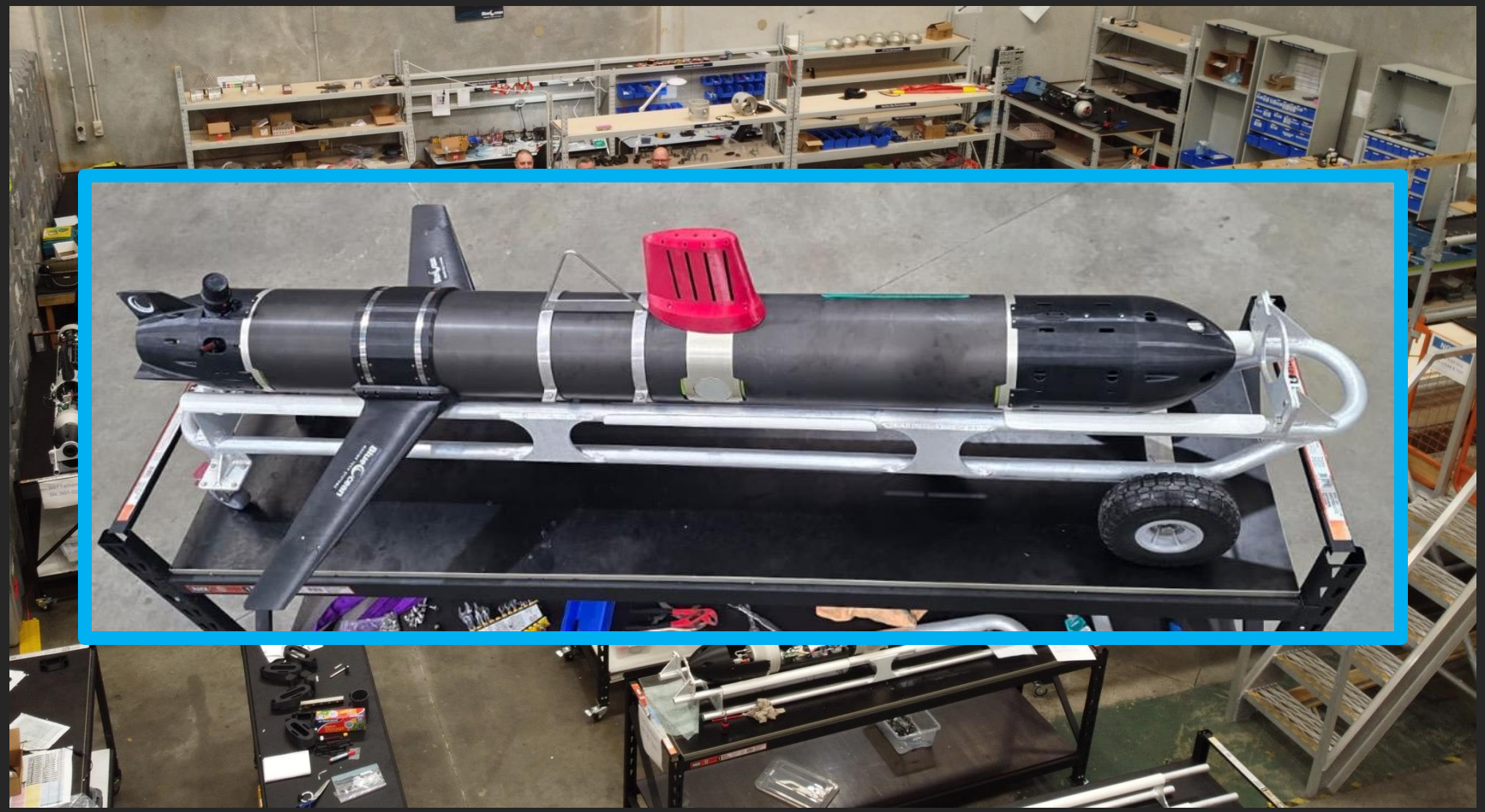


Ultra-efficient
Buoyancy propulsion

Designed for stab
seabed landi

Long distance, low probability of intercept underwater communication

Sovereign Development - WA Industry benefits.



BOMTS Workforce Development Collaboration with North Metro TAFE (Product Development Manager's electronics students)

- -Students employed on short-term contracts to build Australian UUV gliders
- -Successfully completed 25 gliders in 8 months
- -3 of 6 students offered ongoing roles at BOMTS
- -Remaining students receive strong references and valuable industry experience

SeaSuite®.

Blue Ocean MARINE TECH SYSTEMS

Flexible, vehicle agnostic C4ISR platform for maritime operations.

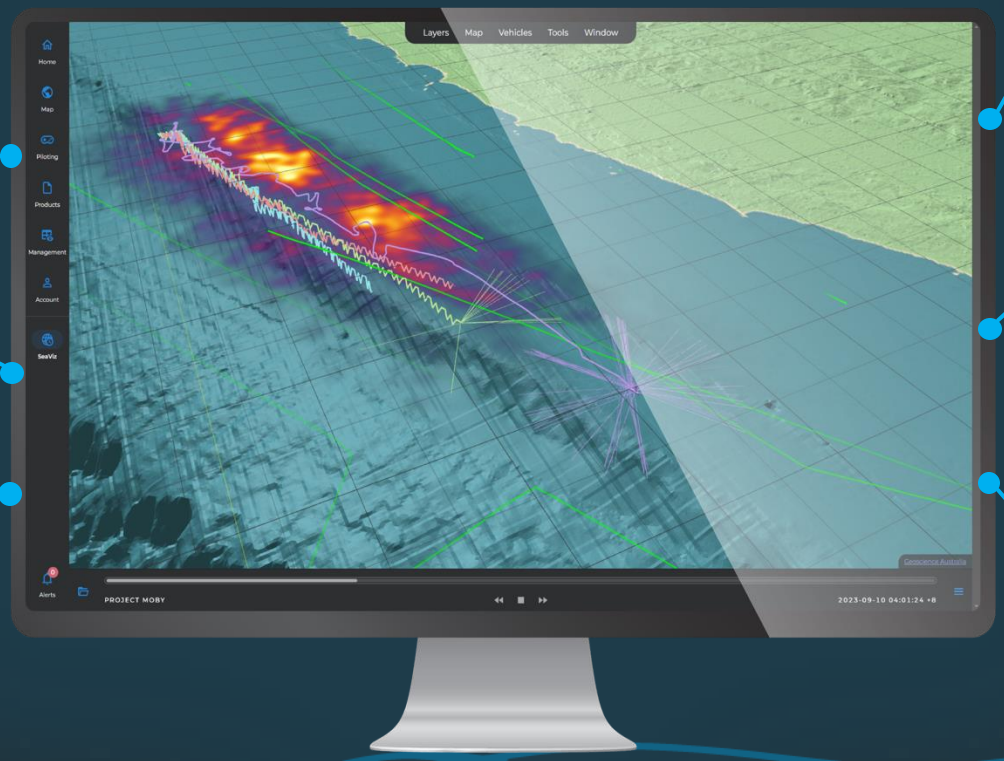
4D data visualisation. Situational awareness. Interoperability. Scalable fleet command & control.

Mission planning, C2 & fleet autonomy.

Near real-time visualisation

Streamlined C2 and goal based planning

Data management and analysis



One operator/supervisor to many AUVs

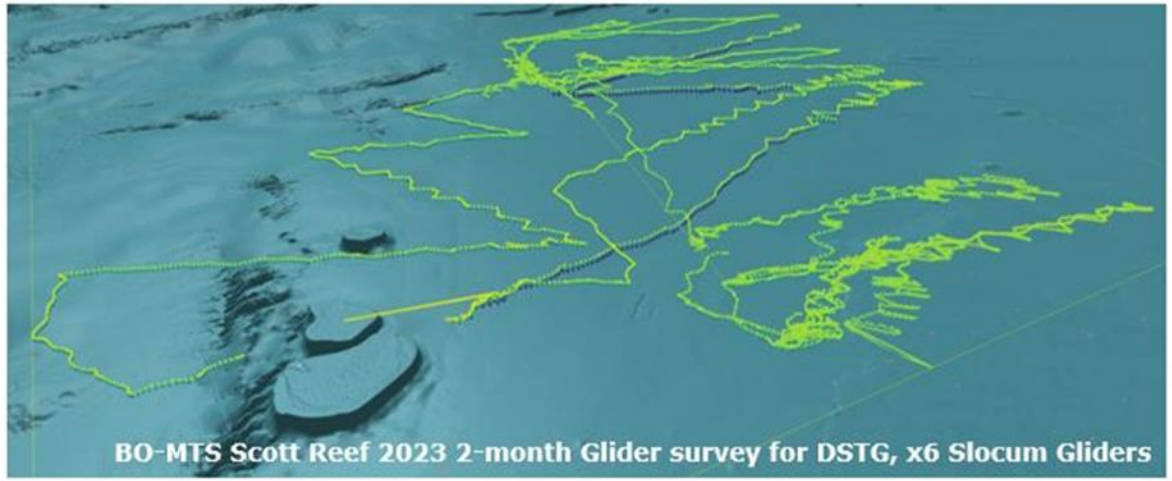
Time synchronised dataset replay

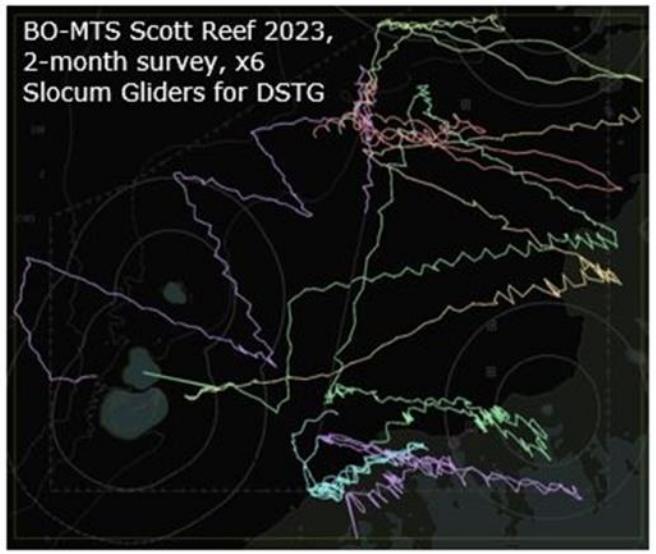
3rd party data aggregation and visualisation

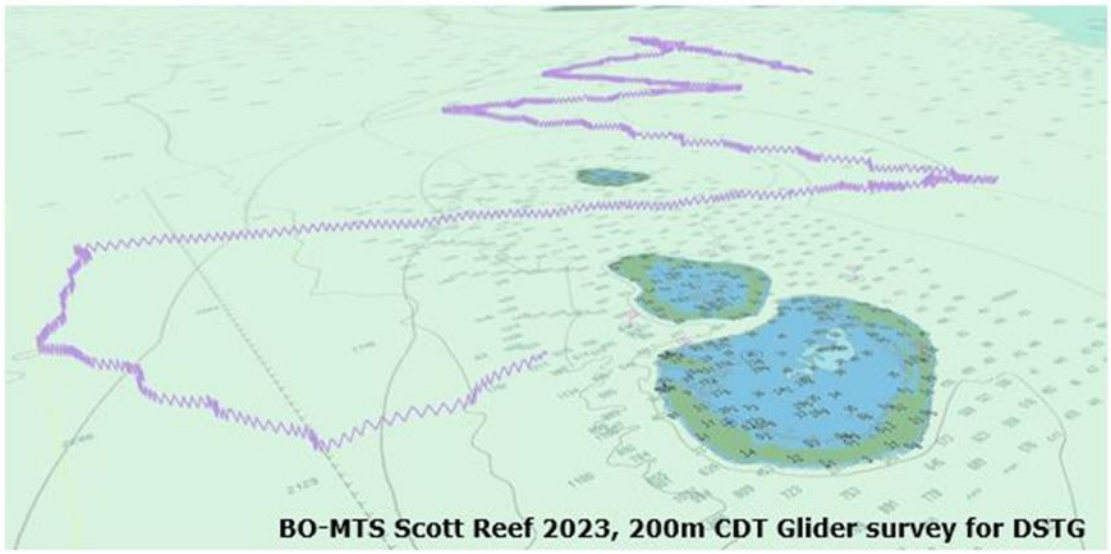
Case Study: Project Northwest Shelf DSTG.

SCOTT REEF:

- x6 Gliders for Environmental Monitoring Survey in 2023 for The Defence Science and Technology Group (DSTG) :
- Passive Acoustic Monitoring
- Met-Ocean
  - Ocean data study, in direct comparison with Surface Water Ocean Topography



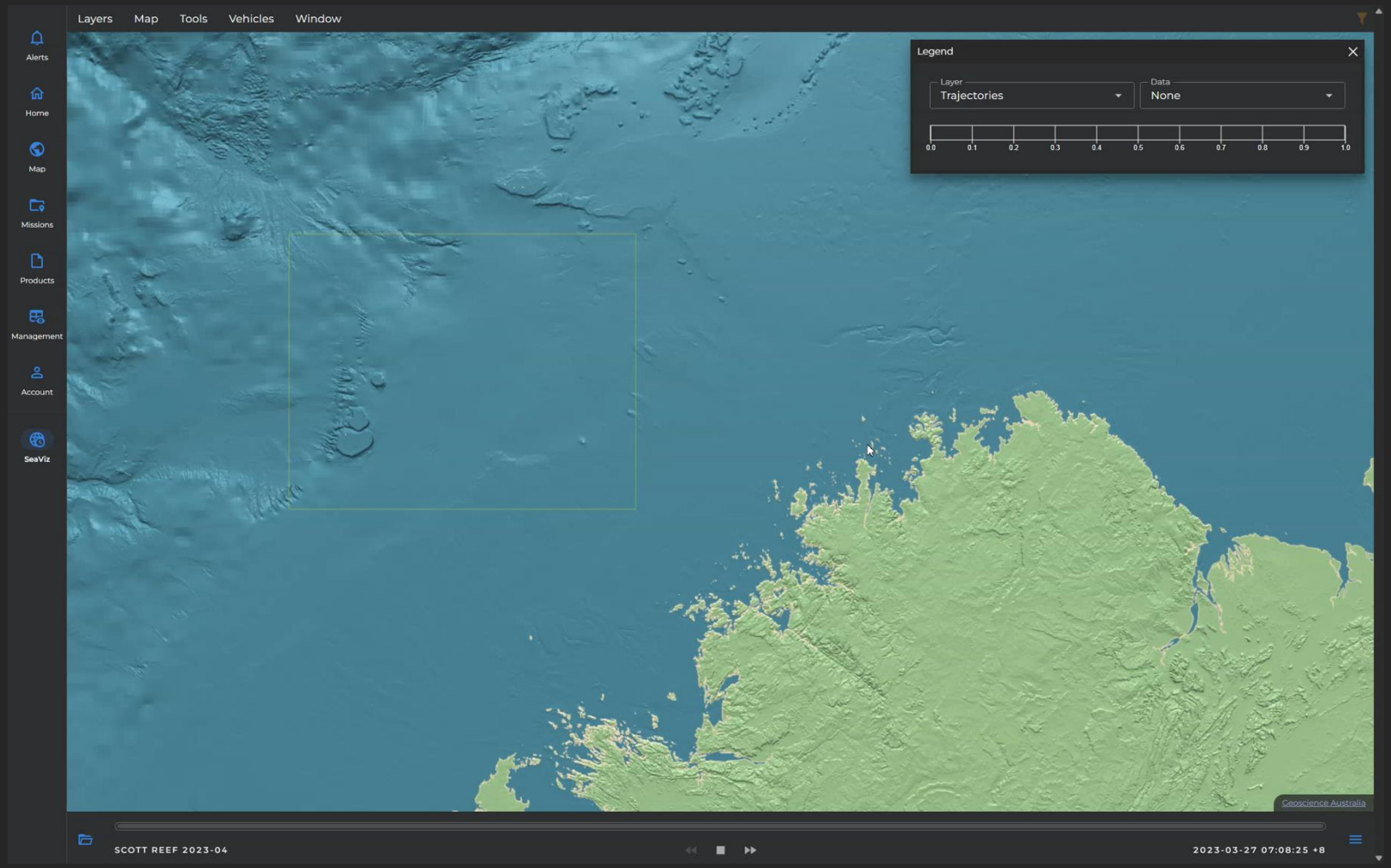




The Gliders successfully operated through Cyclone Ilsa (April 2023) demonstrating how these platforms are unphased by weather and can deliver 24/7 Ner-Real-Time data collection during survey operations.

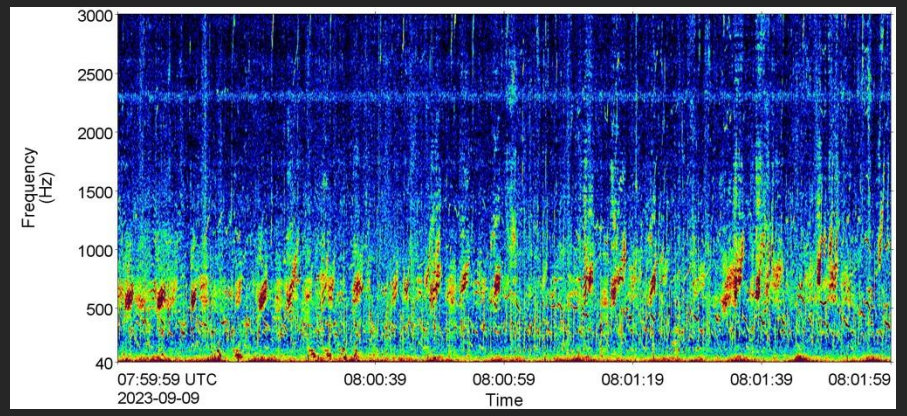
A Spotter Buoy Mooring was also deployed to compliment the Gliders data sets. This also monitored successfully in Real-Time throughout Cyclone Ilsa.

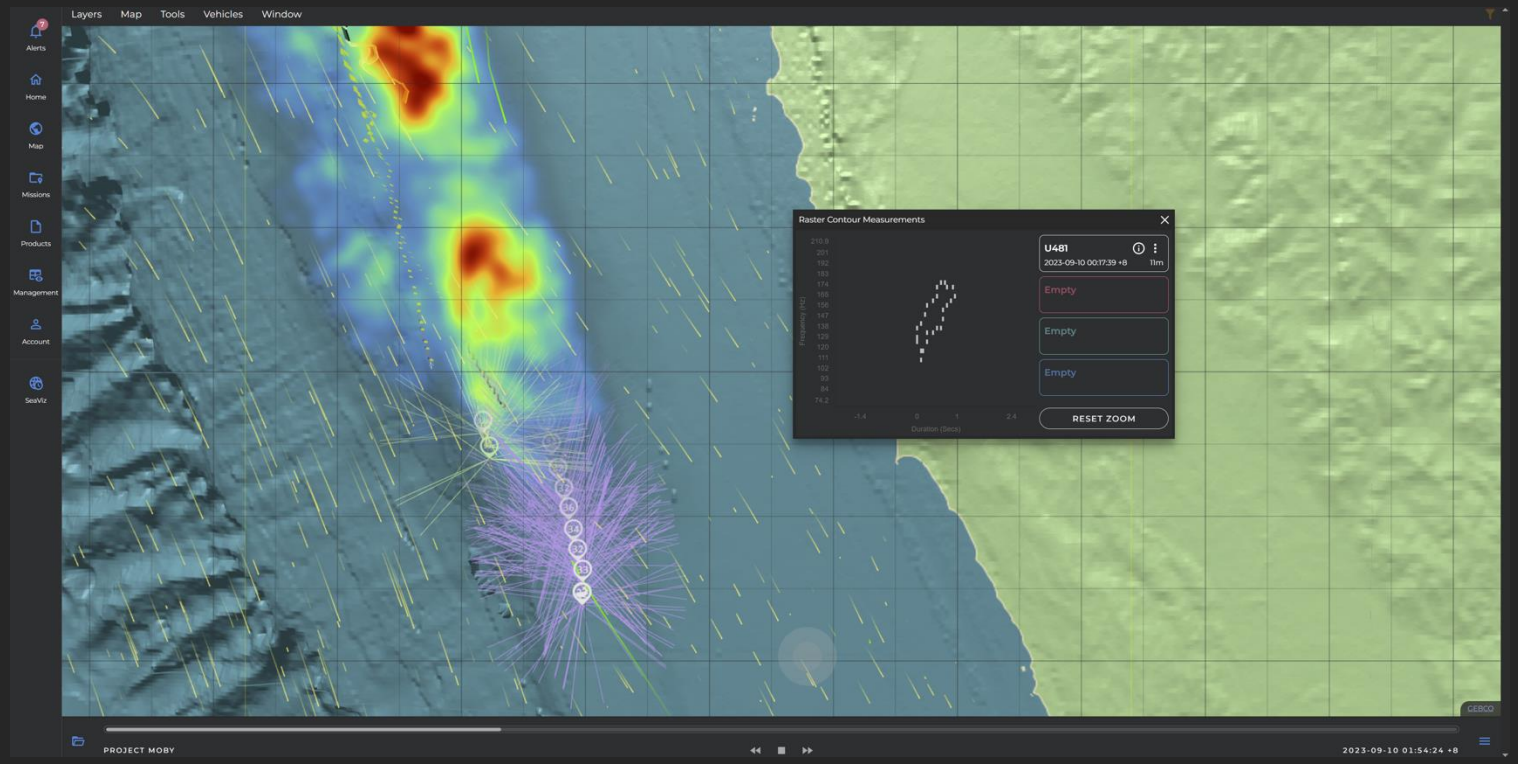
Case Study: Project Northwest Shelf DSTG.



Case Study: Project Moby.

- Collaborative Humpback whale detection project
  - Jasco
  - Ocius
  - Blue Ocean
- Real time acoustic detection & classification - JASCO Ocean Observer and 4-hydrophone array
- Acoustic ‘contour’ transmitted to shore for verification
- NRT visualization & detections to SeaSuite





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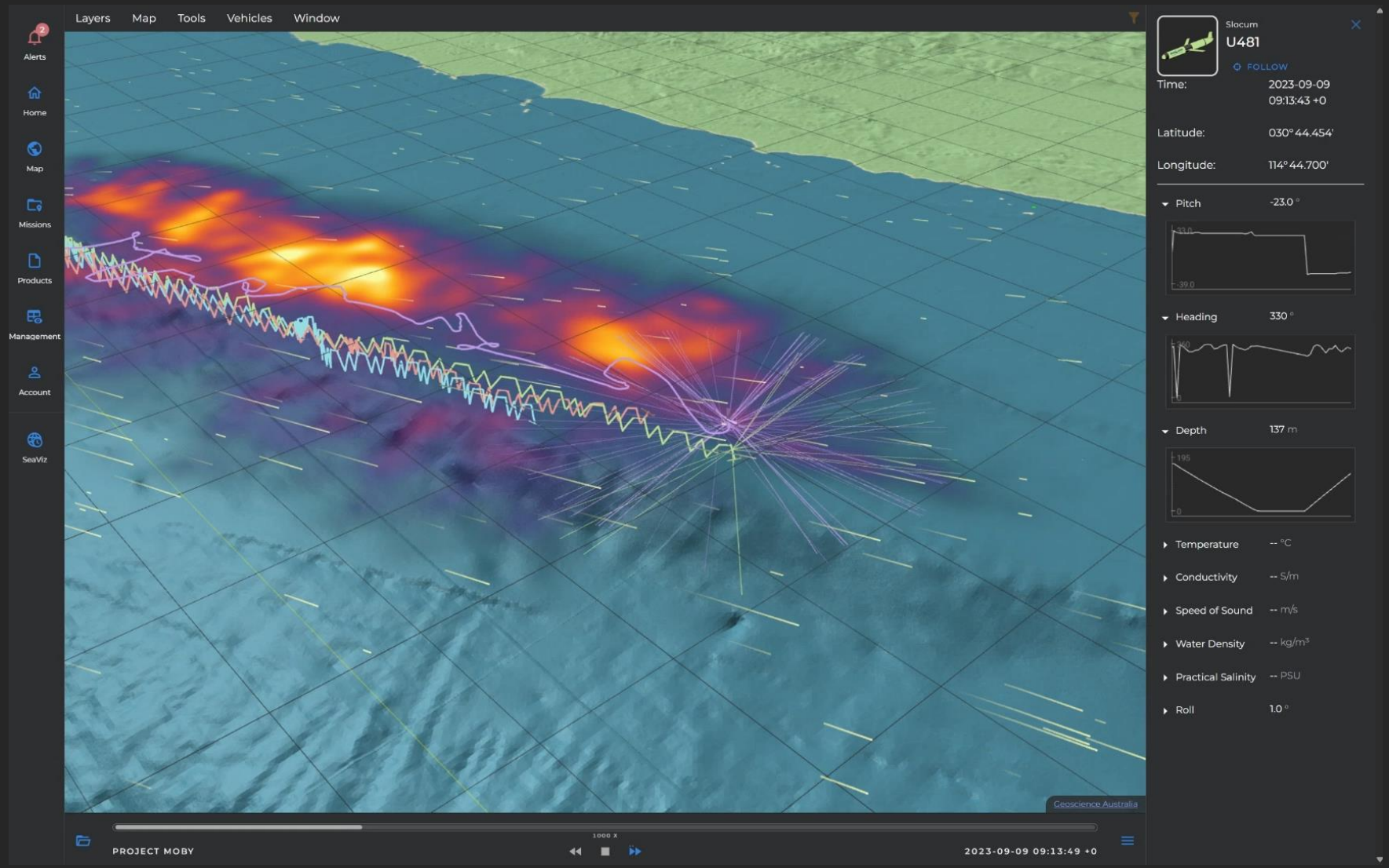

Australian Industry needs to back itself with a Sovereign UUV platform and OEM!

- It has for USVs - and with great success!
- Requests for Information (RfIs) to industry - not only from ADF programs but across all Australian Government organisations utilising UUVs – this is essential.
- BOMTS aims to become an Australian Original Equipment Manufacturer (OEM), providing, servicing, and supporting sovereign UUV capability that will deliver significant benefits to Australian Government agencies.
- The technology is advancing rapidly, and Australia cannot afford to be left behind.

BOMTS can deliver:

- **Greater value for money** in platform acquisition & operation *(~6:1 advantage)*
- **More data through scaled fleets**, with larger numbers of platforms continually "harvesting" ocean intelligence

Why do we need support from academics or other industry partners.

- Sensors
  - Calibration e.g. CSIRO Oceanographic Calibration (Glider CTD Cals)
  - Domestic OEMs e.g. In-situ Marine Optics - Rhodamine sensor
- Collaboration
  - Further Opportunities for Industry to be contracted for government research and environmental monitoring (without stepping on existing programs toes)
- Tech Refresh
  - UWA, CSIRO, AAD – to review platform fleets considering domestics OEMs
  - Government incentives for domestic acquisition and support
  - Australian Industry is at the forefront of technological development!

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