

The diversity and vast scale of the oceans pose a huge challenge for effective monitoring schemes. Remote sensing from satellites, aircraft and other autonomous vehicles provides opportunities to observe physical and biological processes across a range of spatio-temporal scales that go far beyond traditional boat or shore-based sampling.

For example, researchers across the MASTS community are involved in both exploitation of **remote sensing data** to help understand complex interactions between physical and biogeochemical processes and in the **development of new sensors and algorithms** to improve the quality of such data.

Autonomous Underwater Vehicles (AUV) are battery-powered instruments capable of travelling independently through the ocean along pre-programmed routes, from the surface down to several hundreds of meters. Buoyancy-driven AUVs, or „gliders“, can operate continuously for up to 6 months and travel hundreds of kilometres, making them ideal platforms for long-term monitoring.

Today, **animal-borne instruments** provide valuable data to address important questions on wildlife ecology, conservation, oceanography and even weather and climate.

Remotely piloted aircraft (RPA) can fly under low cloud for aerial surveys from measuring ice extent and ocean colour to small scale turbulence at the ocean-atmosphere interface.

The MASTS TPS forum supports the integration of new sensor technology with innovative platforms and deployment to expand our ability to monitor and understand marine ecosystem functions and their role in shaping the Earth's climate.

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Marine Alliance for Science and Technology for Scotland

a marine partnership for Scotland

THE TECHNOLOGY, PLATFORMS AND SENSORS FORUM

BRINGING TOGETHER MARINE SCIENCE,
TECHNOLOGIES AND INDUSTRIES IN SCOTLAND.



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Marine science is largely underpinned by technology which is driven and sculpted by mutual interactions between scientists and engineers. Scotland currently has a wealth of experience in a diverse array of world class marine technology from deep-sea cameras and biologging tags to power generators and autonomous vehicles. The Technology, Platforms and Sensors (TPS) forum brings together the expertise and innovation of internationally renowned groups in Scotland, which in turn will ensure a healthy and pro-active future for MASTS and Scottish marine science.

The MASTS TPS forum aims are

- To actively engage Scottish engineers and technologists to forge a multi-institute coherence with a regular transfer of knowledge exchange.
- To evaluate current expertise and capabilities, and identify further opportunities to grow as a community.
- To facilitate networking and information exchange with marine scientists and end users.
- To engage in both the support and enhancement of marine science in Scotland, as well as collaborative technology-based pursuits.

The overarching philosophy of MASTS is to ensure a healthy and pro-active engagement between scientists and technologists through the further development of marine technologies.

- 1 RPA for extended surveys | © P. Anderson
- 2 Seaglider deployment | © SAMS
- 3 Optical rig to validate ocean colour remote sensing | © D. McKee
- 4 Multibeam imaging from AUV | © SAMS
- 5 RPA measuring sea ice | © P. Anderson
- 6 Remus AUV | © SAMS
- 7 Drone for aerial surveys | © P. Pomeroy
- 8 GPS/GSM seal tag | © B. McConnell
- 9 Southern Ocean database collected by animal borne instruments | © C. Blight
- 10 CTD-tag on Southern elephant seal | © L. Boehme

RESOURCE MAP FOR SENSORS AND TECHNOLOGY IN SCOTLAND

- **University of St Andrews**
 - animal-borne instruments
 - DTAGs
 - PAMguard
 - Sound recorders

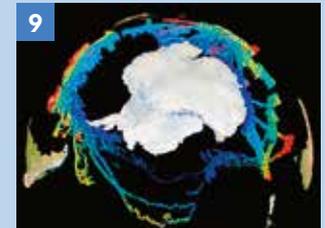
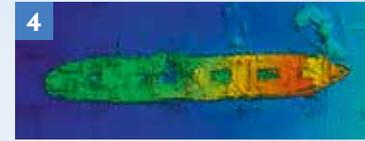
- **University of Aberdeen**
 - Deep sea landers
 - Observatories
 - RPAs

- **SAMS**
 - RPAs
 - AUVs
 - Gliders
 - Moorings
 - ROV

- **University of Strathclyde**
 - Ocean colour remote sensing

- **MSS**
 - Fishing gear
 - Towed imaging systems

- ⊕ **MASTS Members**



Help us complete the picture: Let us know what **YOU** are doing in sensors and technology.

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