

AGENDA

Registration	08:30–09:00
08:30–09:00	Registration and NOC access
Morning session [technical program]	09:00–12:00
09:00–09:15	Open Ocean Software: Introduction
09:15–10:30	Technical Session 1: Lightning talk track
10:30–11:00	Coffee Break
11:00–12:00	Technical Session 2: Standard talk track
Lunch	12:00–13:30
12:00–13:30	Lunch on your own (reserved area available at the NOC cafeteria)
Afternoon session [community discussion]	13:30–16:10
13:30–14:30	Keynote 1 and Town Hall discussion: Open Ocean Software Technical Services
14:30–15:00	Coffee Break
15:00–16:00	Keynote 2 and Town Hall discussion: Open Ocean Software Member Project Standards
16:00–16:10	Wrap-up

TECHNICAL SESSION 1: LIGHTNING TALKS 09:15–10:30

- 09:15 BRAIN - Backseat Real-time Artificial Intelligence Node** Hannah Baldwin · *National Oceanography Centre* · github.com/NOC-OI/brain
A standalone NVIDIA Jetson compute node for Autosub 5, running YOLOv11n benthic organism detection in under 100 ms at 20 W, and what went wrong taking it to sea.
- 09:21 10 years of Goby3** Toby Schneider · *GobySoft, LLC* · github.com/GobySoft/goby3
The Goby Underwater Autonomy Project aims to create a unified framework for autonomous marine vehicle collaboration, seamlessly incorporating efficient intervehicle (e.g., acoustic), flexible interprocess, and intuitive interthread communications.
- 09:27 Working towards community standards for low-bandwidth encryption** Owain Daniel Jones · *National Oceanography Centre* · gitlab.com/nocacuk/mars-oss/libraries/flatfish
Communication security for mixed glider, AUV and USV fleets has been left to each manufacturer and project. Introduces flatfish, a newly open-sourced protocol, as a call for community standards on low-bandwidth acoustic and satellite links.
- 09:33 whoi_ros: Operating software for high-availability deep-sea scientific AUVs.** Isaac Vandor · *Woods Hole Oceanographic Institution* · git.whoi.edu/whoi-ros
whoi_ros replaces years of brittle legacy code on National Deep Submergence Facility (NDSF) vehicles with a ROS2-based system that is used across multiple labs and vehicles.
- 09:39 aconaut: an Open-Source ROS Implementation of an Ad Hoc Acoustic Network for Underwater Vehicles** Paolo Marinelli · *University of Pisa* · github.com/Robotics-Research-Lab/aconaut
An open-source ROS package that manages an ad hoc acoustic network as a whole rather than device by device, providing both communication and localisation with no operator in the loop. Validated at sea with up to seven surface and underwater nodes.
- 09:45 MOOS-IvP: Multi-objective behavior-based autonomy at sea** Michael Benjamin · *Massachusetts Institute of Technology* · github.com/moos-ivp/moos-ivp
MOOS-IvP is a set of open source C++ modules for providing autonomy on robotic platforms, in particular autonomous marine vehicles.
- 09:51 SURA: Surface and Underwater Robot Architecture** Salvador López Barajas · *Universitat Jaume I* · github.com/slopezba/sura_ws_meta
An open-source ROS 2 and ros2_control framework for surface and underwater vehicles, with a hardware abstraction layer and native support for vehicle-manipulator intervention tasks.
- 09:57 ros_acomms: transparent message transport over acoustic links** Eric Gallimore · *Woods Hole Oceanographic Institution* · git.whoi.edu/acomms/ros_acomms
ros_acomms provides easy-to-use, configurable message compression and transport over underwater acoustic links and other bandwidth-constrained links, supporting ROS1, ROS2, and other middleware frameworks.
- 10:03 Bridging too many experience levels** Özer Özkahraman · *KTH Royal Institute of Technology* · github.com/smarc-project
A decade of the SMaRC project across PhD students, engineers and professors: which abstractions and tooling choices held up, which were quietly ignored, and what a new group can skip.
- 10:09 DCCLv5** Toby Schneider · *GobySoft, LLC* · github.com/GobySoft/dccl
The Dynamic Compact Control Language (DCCL) is a language for marshalling (or roughly analogously: source encoding or compressing) object-based messages for extremely low throughput network links.
- 10:15 Umi-Reco: Connecting ocean data processing research projects for a local, yet comprehensive understanding of the ocean environment** Yuki Sekimori · *Umi-Reco* · github.com/officialumireco
Umi-Reco is a code-free, open-source modular platform for ocean data recording, analysis, and visualization, letting users build custom pipelines while the community contributes reusable modules. Prototypes for coral photogrammetry and machine-learning fish monitoring showed the design serves both scientific and commercial needs.
- 10:21 Open Mic**
Open to the room to share an experience, challenge, or accomplishment in open source software. Thoughts on the role and impact of LLM-based coding agents in OSS are also of interest.

TECHNICAL SESSION 2: STANDARD TALKS 11:00–12:00

- 11:00 (Invited) Lessons learned from teaching Robotics at Southampton University** Blair Thornton · *University of Southampton*
Southampton has taught maritime robotics since 2014, with a flagship Intelligent Mobile Robotics module taking cohorts of more than 60 students, a new MSc launched in 2026 and an undergraduate programme to follow in 2027. A recurring lesson is that teaching software has different priorities from research and industrial code: transparency ahead of scalability and performance, heavier use of visualisation, implementations that track the underlying mathematics, and minimal examples that expose the key concepts rather than bury them in abstraction, while staying flexible enough for students to change parameters and see what happens. Reflects on how open-source robotics can lower the barrier to entry without giving up technical rigour.
- 11:12 A ROS2-Based Unmanned System for Deep-Sea Exploration** Hitoshi Kakami · *JAMSTEC*
JAMSTEC, the organization to which the author belongs, is currently developing an unmanned exploration system capable of autonomous sampling at great depths. This system combines a seafloor-based lander with a small vehicle; the two units are deployed into the water while docked, and upon reaching the seafloor, the small vehicle detaches from the lander to autonomously search for targets and perform sampling. This system implements ROS2-based software modules. This presentation will outline the system's software configuration.
- 11:24 An Open-Source Integration Roadmap for Active Co-Simulation of Communication-Aware Maritime Autonomy** Saeed Nourizadehazar · *OBSS Technology* · github.com/Saeed-Nourizadeh/maritime-active-cosim-roadmap
Reliable evaluation of AUV missions needs simulation coupling vehicle dynamics, control, communications and real ocean data. Builds on an existing MATLAB/Simulink-TrueTime and Gazebo/UUV-ROS environment for hybrid acoustic/RF networked control, and sets out a roadmap to couple it with a dedicated underwater network simulator, ns-3/Aqua-Sim-NG first, with DESERT Underwater as a verification path. The central challenge is synchronising fixed-step physics with event-driven networking without causality errors. Presents the architecture, interface design and reproducibility plan for community feedback.
- 11:36 Using open software to deploy AUVs: the experience of the National Oceanography Centre** Francesco Fanelli · *National Oceanography Centre*
The MARS group at NOC operates commercial gliders alongside the in-house Autosub AUV family, deployed in canyons and polar regions. Under the Oceanids Programme it replaced several ageing platform-specific architectures with one vehicle-agnostic Onboard Control System, a modular ROS 1 design covering mission execution, guidance, navigation and control, communications, power management and logging, alongside a web-based Command and Control platform in continuous operational use for over five years. Key components of both are now being prepared for open-source release.
- 11:48 Simulation in the Development Workflow of Autonomous Systems** Adan Lopez Santander · *Geared Ltd*
Stakeholders want different things from simulation at different stages: early work needs low-level engineering metrics, later work needs system, mission and operational ones. The result is a fragmented landscape of specialised packages sharing little in data structures, interfaces or models, with each team handing outputs to the next across different platforms and assumptions. Argues that no industry-ready framework with formal governance and long-term support spans the full lifecycle, and that proprietary tools built on open source rarely contribute back.

KEYNOTES & TOWN HALL DISCUSSIONS 13:30–16:00

13:30 Keynote 1 and Town Hall discussion: Open Ocean Software Technical Services

Toby Schneider · *GobySoft, LLC*

Open Ocean Software is prototyping and proposing an array of technical services that provide address shared problems: 1) DevSecOps (Reusability, Accessibility, Trust), 2) Software Directory (Findability, Accessibility), 3) Middleware Bridges (Interoperability), and 4) Data QA/QC (Scientific Quality). These are all in the conception stage so we are actively seeking feedback on these ideas, and suggestions for additional high-demand technical services we could provide.

15:00 Keynote 2 and Town Hall discussion: Open Ocean Software Member Project Standards

Eric Gallimore · *Woods Hole Oceanographic Institution*

Open Ocean Software aims to support a wide array of member projects through their journey from conception to maturity. We have developed a grading scheme that intends to balance the real utility of research-based projects with the need for some infrastructure-related projects to grow in the areas of security, reliability, and documentation. We will present our initial standards grading scheme from incubation through to fully mature projects. The Town Hall following the keynote will seek participant input as we want to support the community, not hinder it.

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