Observations Coordination Group (OCG)

16th meeting, Brest, France, 2025

USV Global Network

- A new frontier for observing at the air-sea interface -

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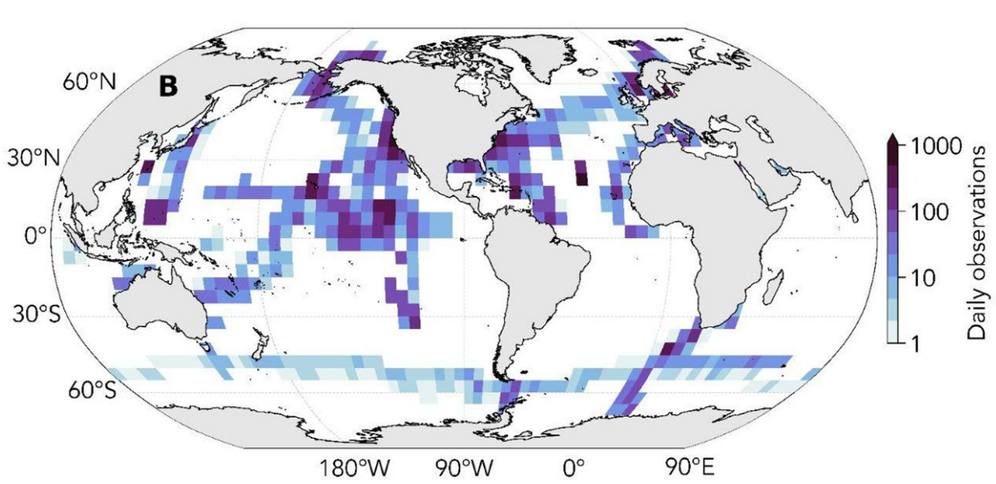
Advancement of the USV Global Network: Patterson et al (2025) defines our network objectives, opportunities and priorities, and evaluates our progress agains the OCG attributes. This paper represents global leaders in USV scientific data collection, with 52 co-authors from 9 different countries, 9 ECOPs, 5 PhD students, 40 affiliations, 5 businesses and 200 USV datasets.



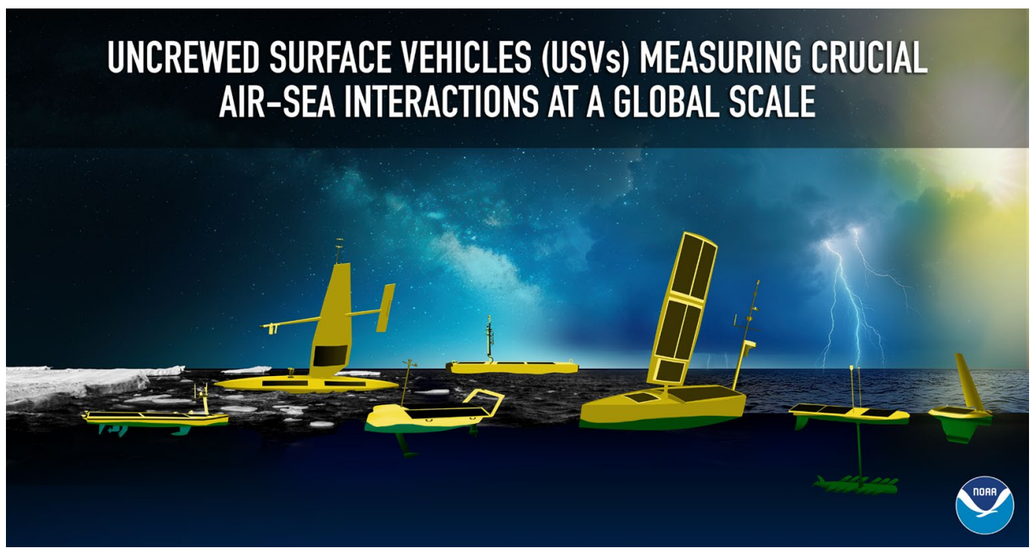
USV global ocean coverage maps from 2011 to 2024 as density of daily observations per 5 degree grid cell

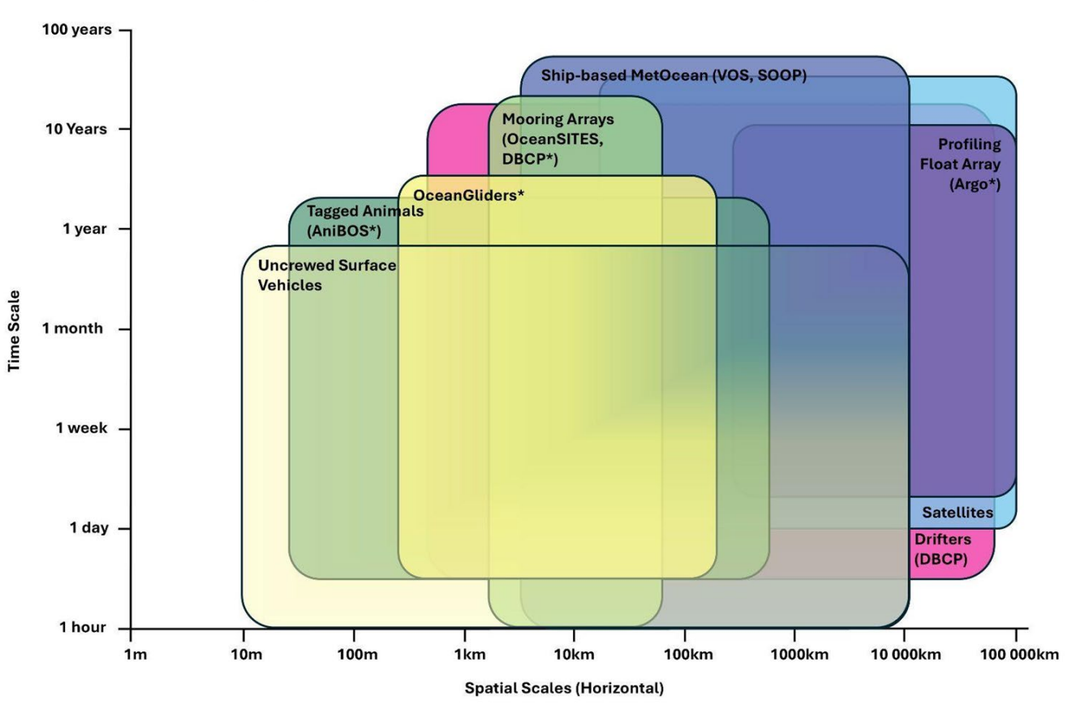
Purpose The USV Global Network will complement existing OCG networks by improving ocean and atmosphere surface monitoring at small spatiotemporal scales whilst monitoring broadly scales of up to tens of thousands of kilometers, and improving spatial coverage of multidisciplinary co-located observations around the world.

Future Plans and Opportunities: *Submitted funding proposals*: US CLIVAR (USV global network meeting), NOAA/OAR/CPO/COM (USV GDAC development and network secretariat), Lloyd's Register Foundation, ONR (Wave spectra intercomparisons), etc.. *Funding proposals in-prep:* POGO (USV global network meeting), OASIS office (UCAR) industry funding proposal, Fullbright Fellowship (develop standards and best practices), NSF FAIROS (FAIR air-sea fluxes data)

USV Global Network Draft Terms of Reference

- Promote coordination and partnerships with other ocean observing networks. Develop and implement a global network for air-sea interaction observations, sampling the following core EOVs/ECVs: air temperature, air pressure, humidity, skin temperature, sea surface temperature and salinity, current profiles, wind speed and direction, wind stress, radiation (long-wave/short-wave), atmospheric pressure, seawater and air pCO_2, dissolved oxygen, and chlorophyll. Focus on stand-alone USV missions in the network, and the integration of USVs within other OCG networks such as GO-USVs, USV VOS/SOOP, USV-OceanGlider pairings, and USVs in SOCONET.
- Develop an implementation plan for the coordinated collection of biological and ecological data using USVs.
- Collaborate with the USV manufacturing industry in a two-way dialogue to develop appropriate practices for sampling and data QC.
- Develop and implement interoperability experiments with the broader scientific community
- Develop and systematically review data collection recommended practices, working with the OBPS and tools to reduce duplication of effort by learning from other networks.
- Coordinate delivery of Near Realtime (NRT) data to operational data centres and metadata to OceanOPS
- Coordinate and exchange information with GOOS OCG on scientific and technical issues and to optimise the overall capability of GOOS.
- Ensure FAIR, TRUST, CARE data practices, and JEDI principles across network governance structure.





USV complementary role in GOOS, adapted from https://goosocean.org/document/17466. Asterisked networks represent those which sample the interior ocean

Immediate priorities:

- Hold first USV Global Network in-person meeting to appoint a steering committee of science and industry members, and agree on ToRs and organisational/entity structure.
- Continue with network meetings at a higher frequency.
- Continue OASIS USV Global Network webinars.
- Encourage industry and scientific intercomparisons
- Start to develop strategy for standards and best practices

Questions: USVs are appropriate for Regional Alliances (RA) given their ability to traverse multiple RAs. Can OCG help the USV Global Network to connect with IMOS, PI-GOOS, and help connect with IO-GOOS and tie in TPOS work, currently managed through NOAA.

References: Patterson RG, Cronin MF, Swart S et al. 2025. Uncrewed Surface Vehicles in the Global Ocean Observing System: A new frontier for observing and monitoring at the air-sea interface, *Frontiers in Marine Science*, 12(2025) https://doi.org/10.3389/fmars.2025.1523585