

B7: "Augmenting ship-based hydrography and fixed-point observations with biological and biogeochemical parameters."

B7: "Augmenting ship-based hydrography and fixed-point observations with biological and biogeochemical parameters."

**The main challenges and gaps for this action are the following:** (Katrin Schroeder, December 2024)

- **The lack of sustained funding and coordination** for the ship-based hydrography, which is costly and labor-intensive, and requires international collaboration and standardization.
- The **limited spatial and temporal resolution of the ship-based hydrography**, which is insufficient to capture the variability and trends of the ocean biogeochemistry and biology, especially in the Southern Ocean, the Arctic.
- The **need for more sensors and instruments** that can measure biological and biogeochemical variables accurately, reliably, and autonomously, and that can be deployed on various platforms, such as moorings, floats, gliders, and buoys.
- The **need for more data management, quality control, and synthesis activities** that can ensure the availability, accessibility, interoperability and usability of the biological and biogeochemical data and products for various users and applications.
- The **lack of standardisation and harmonisation** of biological and biogeochemical sensors and measurements across different platforms and regions

B7: "Augmenting ship-based hydrography and fixed-point observations with biological and biogeochemical parameters."



- Underway flow-through systems (surface ocean)
- Continuous Plankton Recorder (CPR) network is loosely associated under SOOP

### Challenges:

- Flow-through systems mostly deployed on research vessels, but with more possibilities on commercial vessels lately
- Processing of data takes time, but teams need to be further socialised on the role of providing metadata through platforms such as Ocean-Ops
- SOOP meetings have gone very quiet...

B7: "Augmenting ship-based hydrography and fixed-point observations with biological and biogeochemical parameters."



- Underway flow-through systems (surface ocean)
- Continuous Plankton Recorder (CPR) network is loosely associated under SOOP

### Solutions:

- Sensor development - flow through eDNA systems <https://www.minderoo.org/>
- Ferrybox system - mostly deployed to the north <https://eurogoos.eu/ferrybox-task-team/>
- Low-cost carbon systems for ships, moorings and autonomous vehicles being developed in South Africa (only as an example), but likely world wide.

B7: "Augmenting ship-based hydrography and fixed-point observations with biological and biogeochemical parameters."



- Underway flow-through systems (surface ocean)
- CTD cast data

New working groups:

- BioGO-Ship Study group
  - propose eDNA sampling as a level 2 parameter
  - 2 x BioGO-Ship sections in 2024 (Section A13.5 to eastern South Atlantic Ocean from Cape Verde to South Africa; Section I08S to the South Indian Ocean and IO sector of the Southern Ocean).

B7: "Augmenting ship-based hydrography and fixed-point observations with biological and biogeochemical parameters."



- Underway flow-through systems (surface ocean)
- CTD cast data

New working groups:

- GO-Ship proposing a DIC working group (related to DIC best practices)
- Continued organisation with BGC-Argo

B7: "Augmenting ship-based hydrography and fixed-point observations with biological and biogeochemical parameters."



- Long-term deepwater reference station moorings

2022 FMARS paper "Recommendations for Plankton Measurements on OceanSITES Moorings With Relevance to Other Observing Sites"

<https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2022.929436/full>

Uncrewed surface vehicles - emerging network of GOOS

Coastal monitoring of fisheries

SUNFLEET

Glider program

Argo (and BGC Argo in particular)

Recommendations for reporting:

Where is the data and how do biology and BGC access these?

OBIS / ODIS?

Human resources to manage this data management system.

IOCCP / SOCONET (for carbon, nitrous oxide) to “mine” data

Ocean-Ops to “mine” data