The Global Ocean Observing System

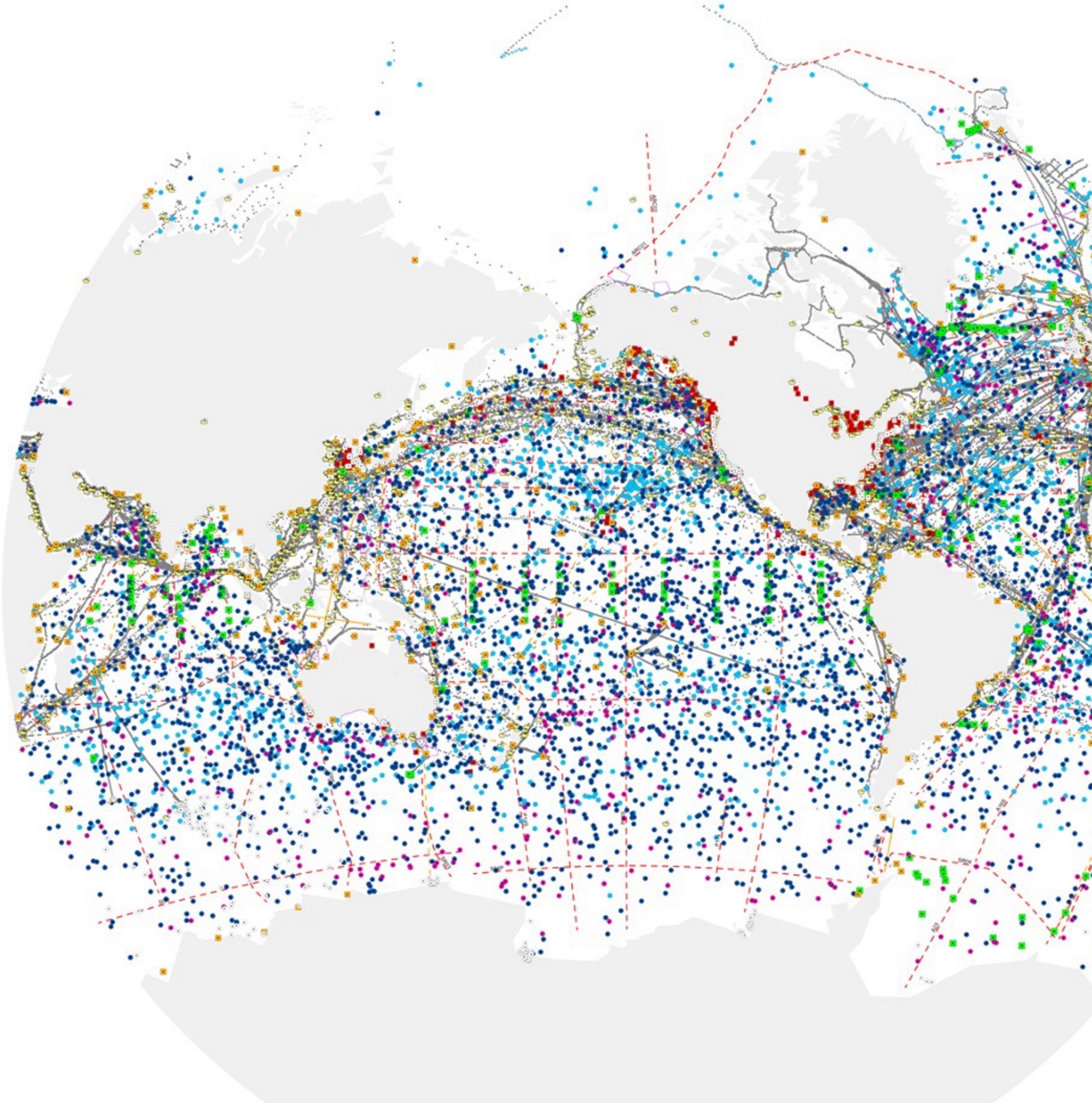
OceanOPS

Monitoring a growing international program, the challenges raised by OceanGliders

OceanGliders

Outline

- GOOS and OceanGliders
- Status of the program
- The challenges faced by the program
- Recommendations



Ocean observations: fundamental to society

OceanGliders

No one country can observe the ocean effectively on its own.

Leading the ocean observing community

OceanGliders

Ecosystem of providers
Observation infrastructure

Ocean observing community & partners

Global Ocean Observing System

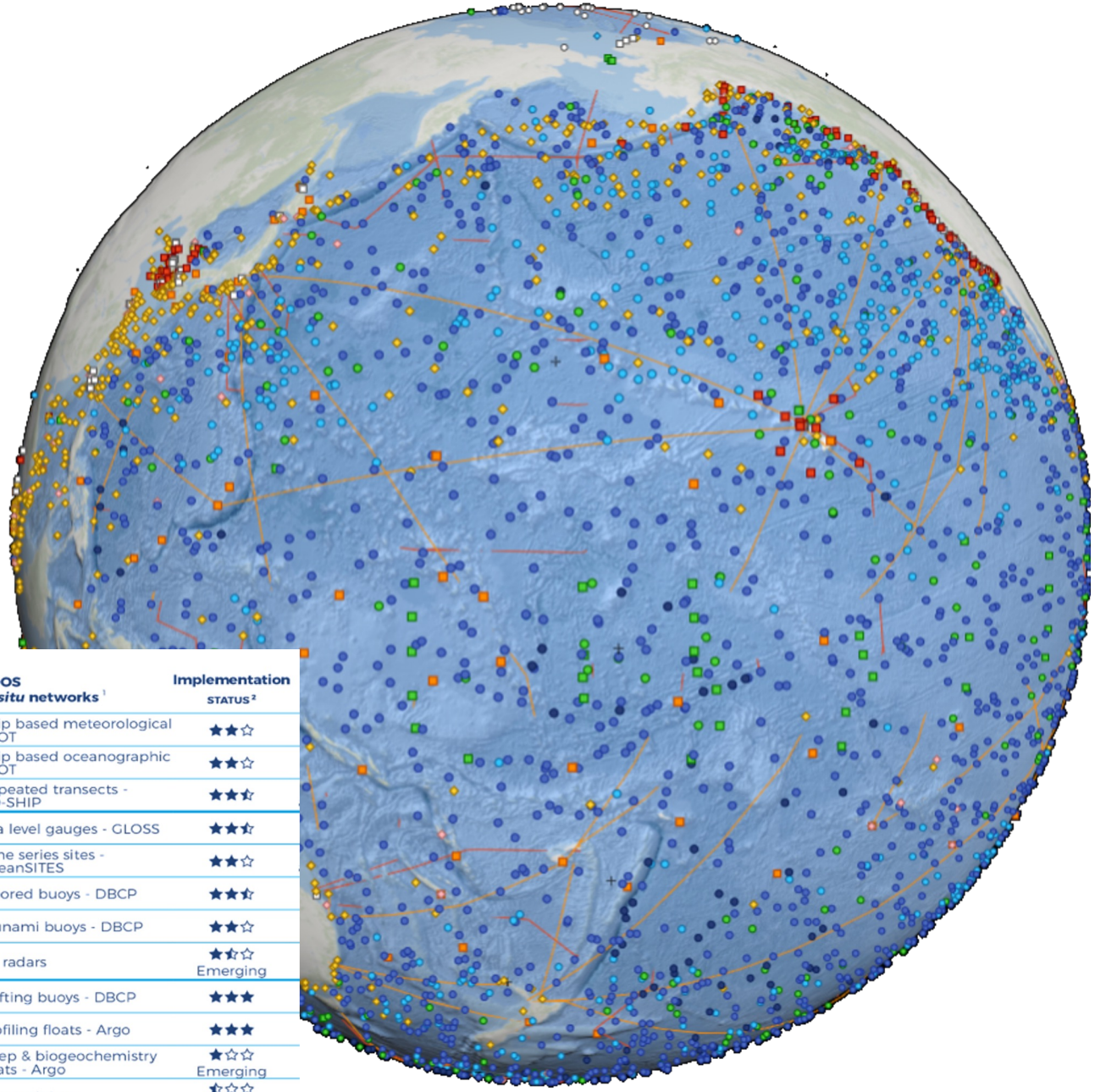
The Global Ocean Observing System

GOOS management and system

Beneficiaries of ocean information

WORLD METEOROLOGICAL ORGANIZATION
UNEP
SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015-2030
Convention on Biological Diversity
United Nations Climate Change

Research, Policy, Users, Investors



GOOS *in situ* networks [1]	Implementation status [2]
Ship based meteorological - SOT	★★☆
Ship based oceanographic - SOT	★★☆
Repeated transects - GO-SHIP	★★½
Sea level gauges - GLOSS	★★½
Time series sites - OceanSITES	★★☆
Moored buoys - DBCP	★★½
Tsunami buoys - DBCP	★★☆
HF radars	★½☆ Emerging
Drifting buoys - DBCP	★★★
Profiling floats - Argo	★★★
Deep & biogeochemistry floats - Argo	★☆☆ Emerging
OceanGliders	☆☆☆ Emerging
Animal borne sensors - AniBOS	☆☆☆ Emerging

GOOS Today

OceanGliders

- 84 countries,
- 8,400+ observing platforms
- More than 120,000 observations per day - operational systems
- 14 global networks and 12 BioEco EOV communities

www.ocean-ops.org/reportcard2023

OceanGliders: In brief.

Bringing together marine scientists deploying gliders to observe ocean processes and phenomena that are relevant for societal applications.

Objectives of the program are :

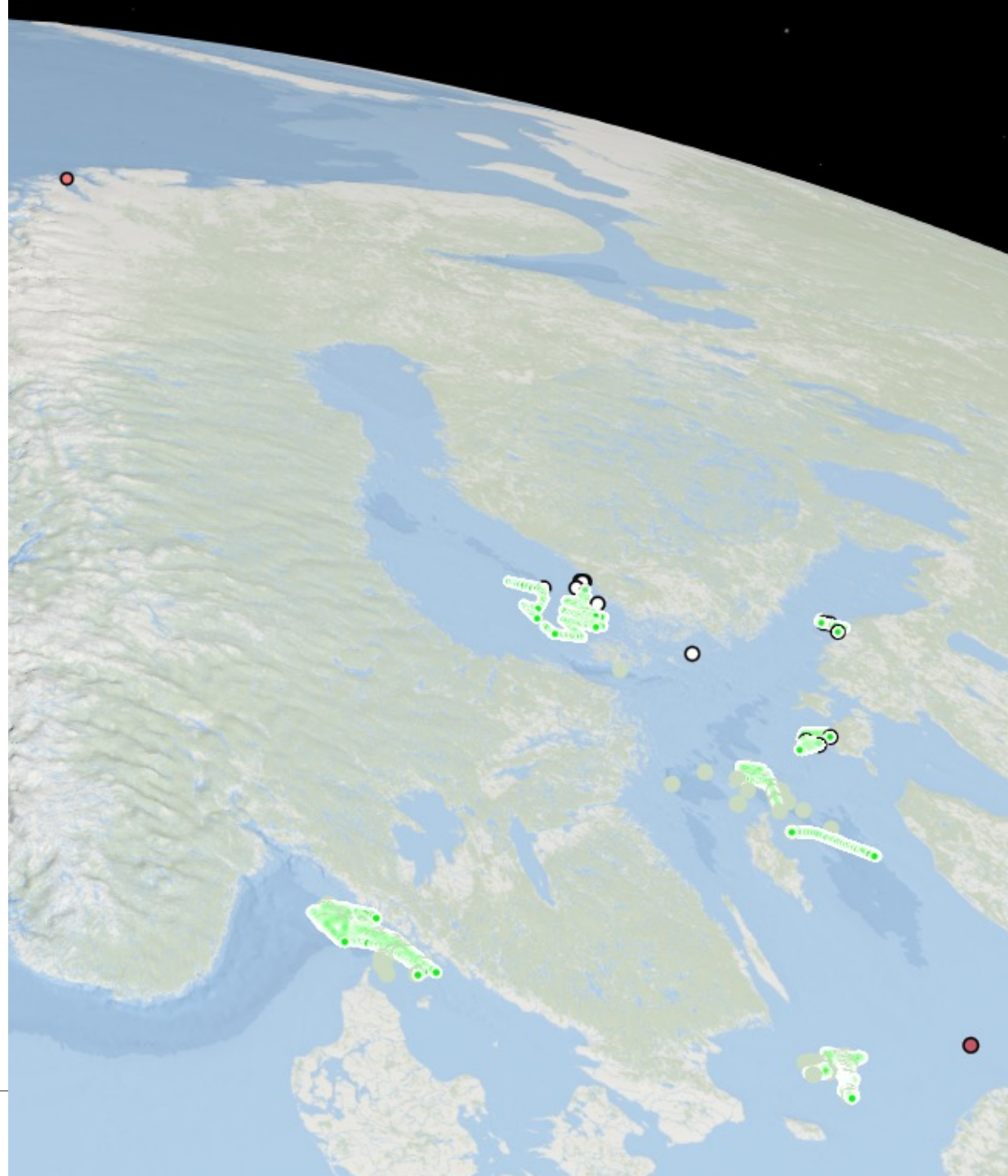
- share requirements, observing efforts and scientific knowledge,
- support the dissemination of glider data,
- monitor the global glider activity

Target : 100 sustained gliders sites in 2030

2017 - Creation of the program as a “pilote” program of the GOOS.

2019 – Part time technical coordination position created at OceanOPS to support the implementation of the program and build monitoring capacity

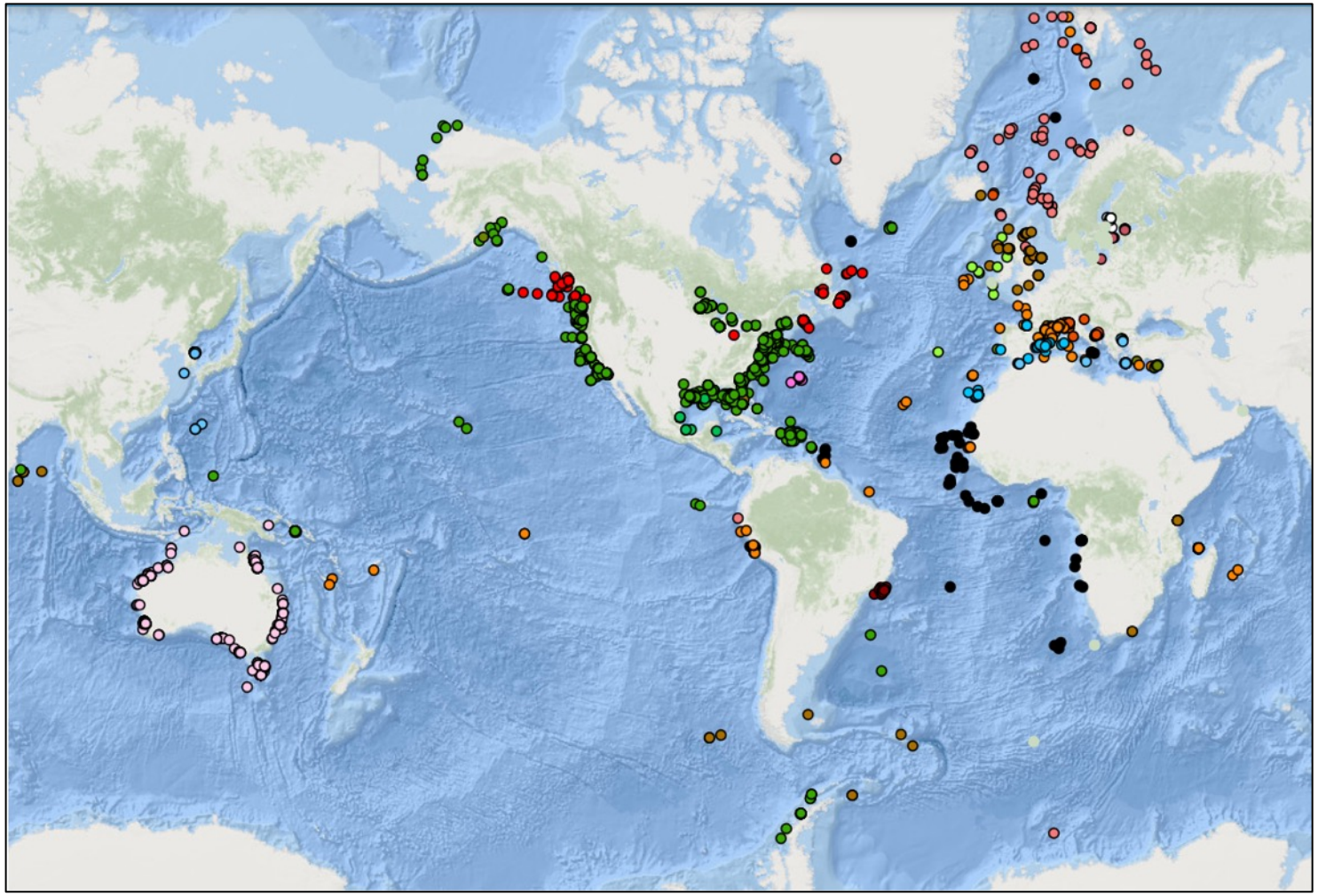
2022 – OceanGliders endorsed by GOOS as emerging networks



Status of the program

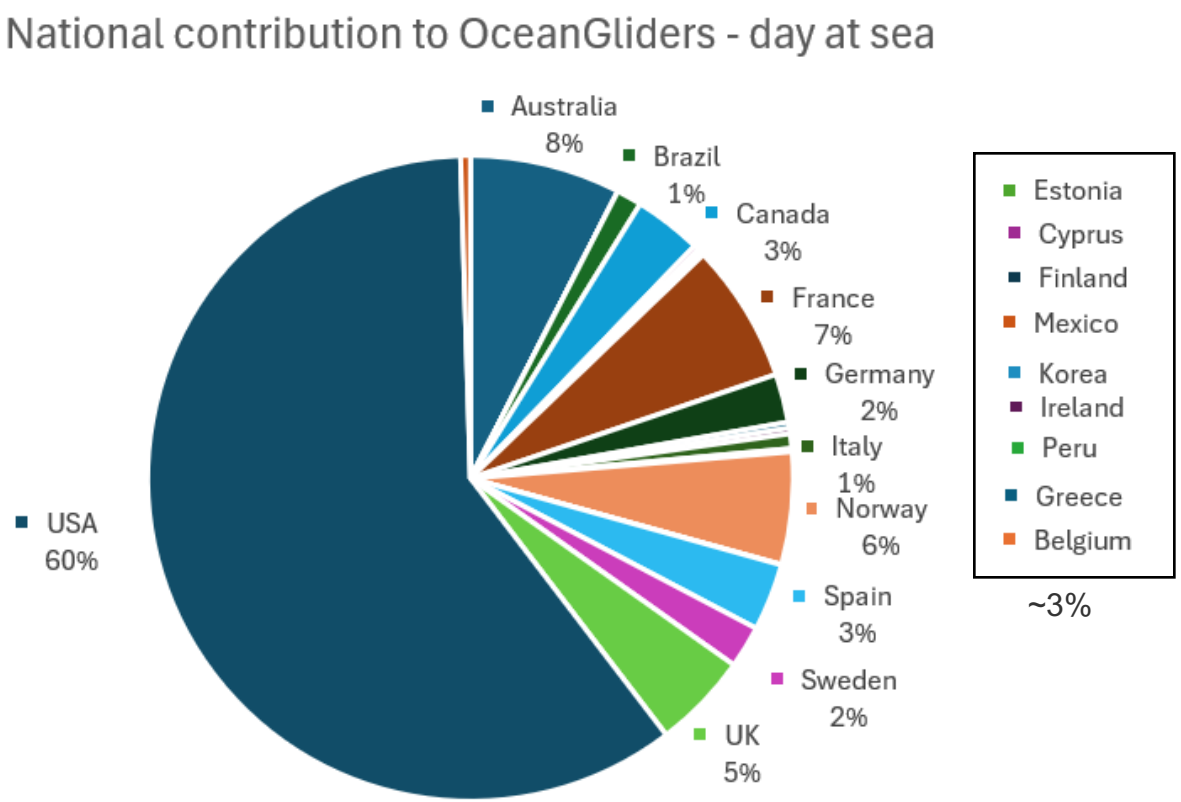
OceanGliders today

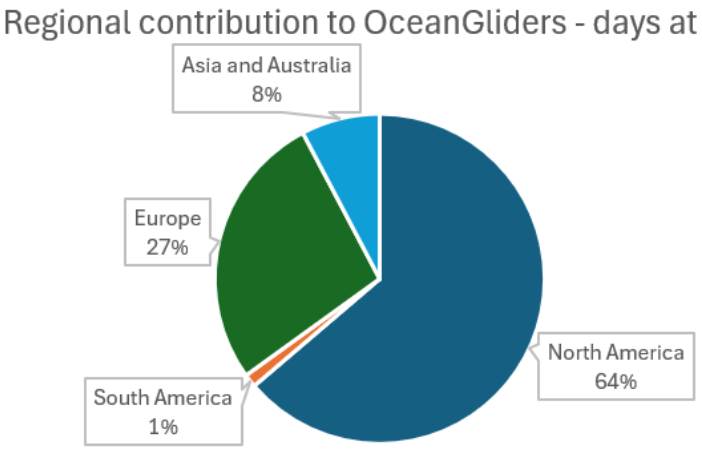
- 21 countries over 4 continents
- >70 glider groups
- 7 data assembly centers
- Converging to a unique format
- 520 gliders (+22 in 2024)
- 4 manufacturers* (+2)
- ~2600 glider missions
  - >1500 from 2019 to 2023
- ~123000 days at sea
- ~25 ocean variables
- >1.5 millions of profiles

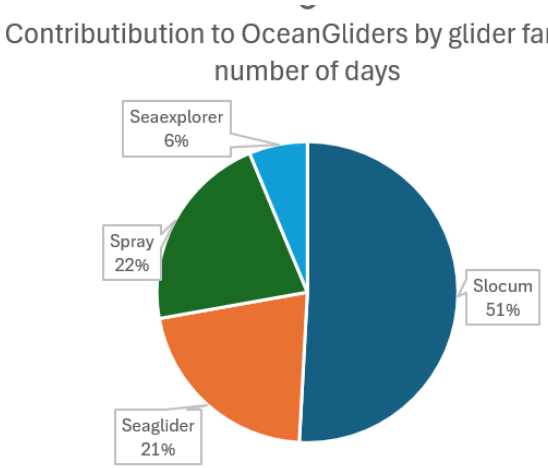


OceanGliders status

Overall Summary

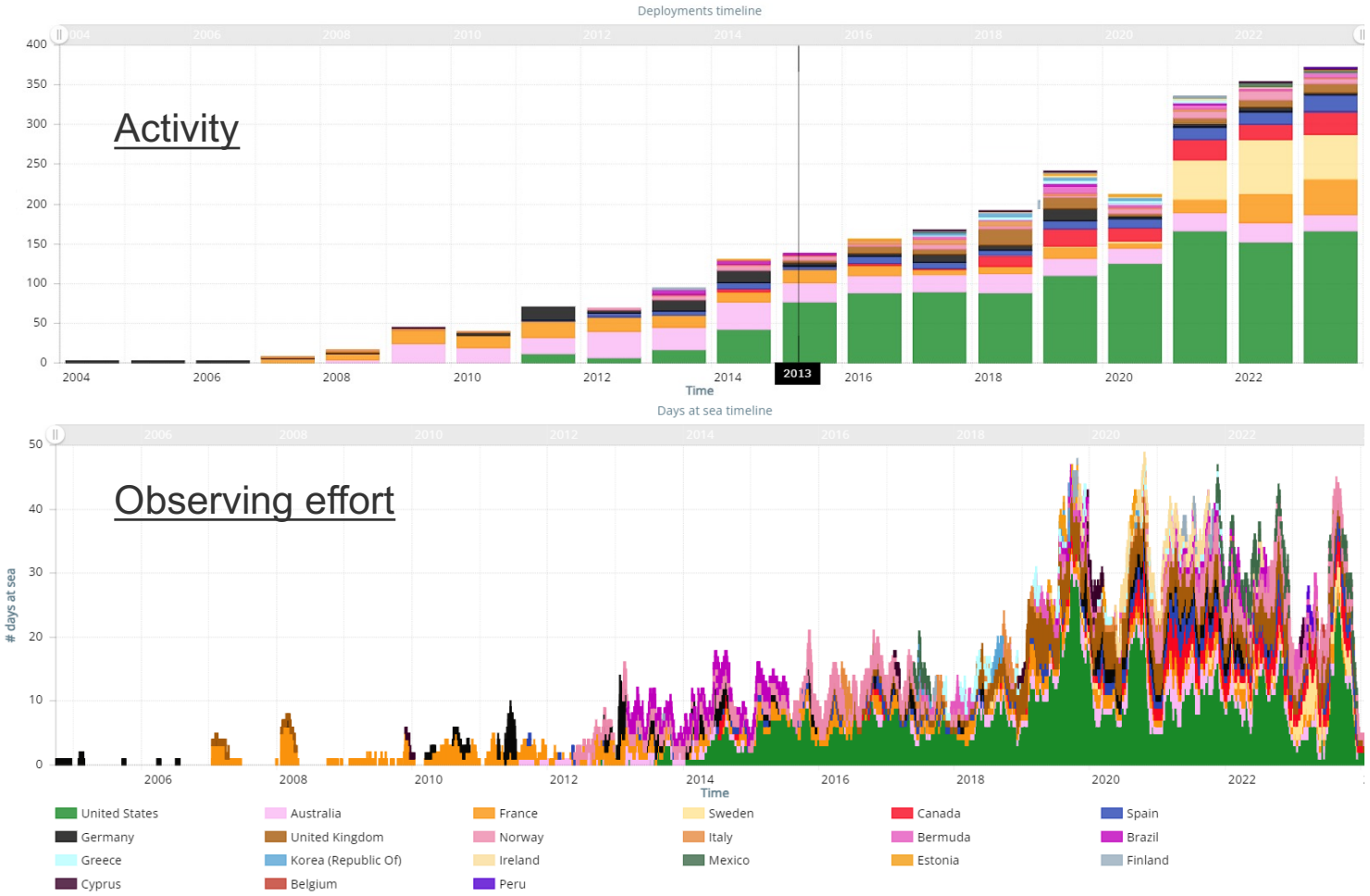


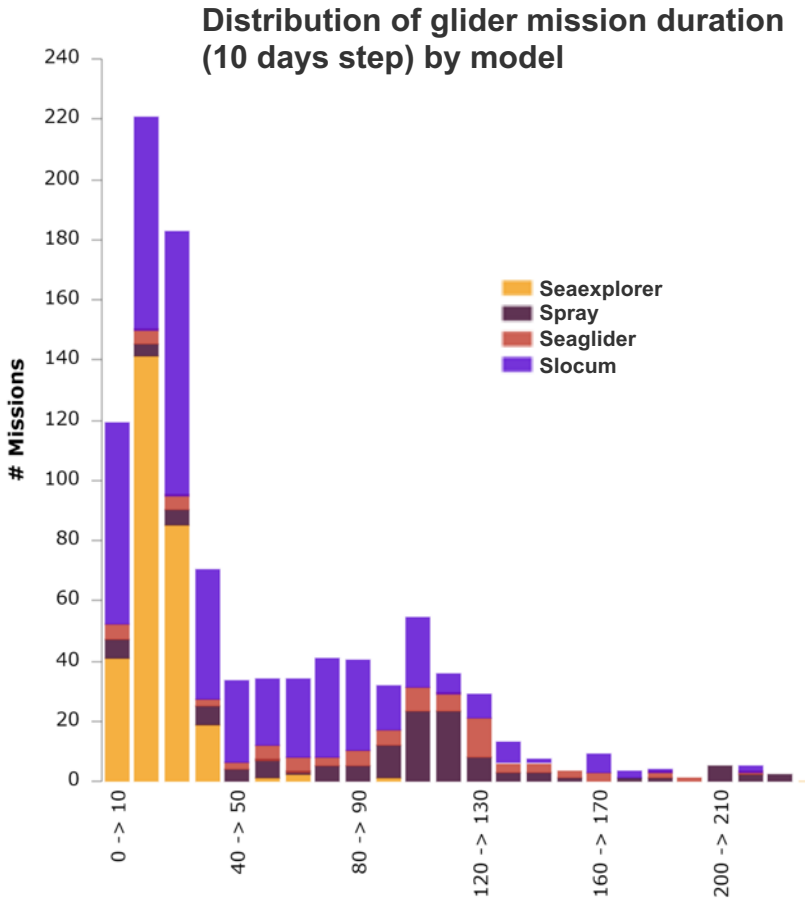




OceanGliders status

Trends





OceanGliders status

OceanGliders Site monitoring

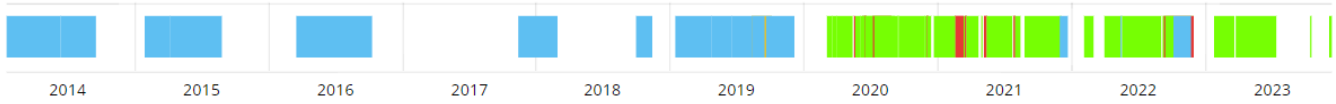
Name	CUGN Line 90
Category	Spray, Slocum
Networks	Boundary Ocean Observing Network, California Underwater Glider Network
Family	OceanGliders Line
Sustainablity	Currently Sustained
Unique GTS-IDs	16
Targeted occupation	365 days

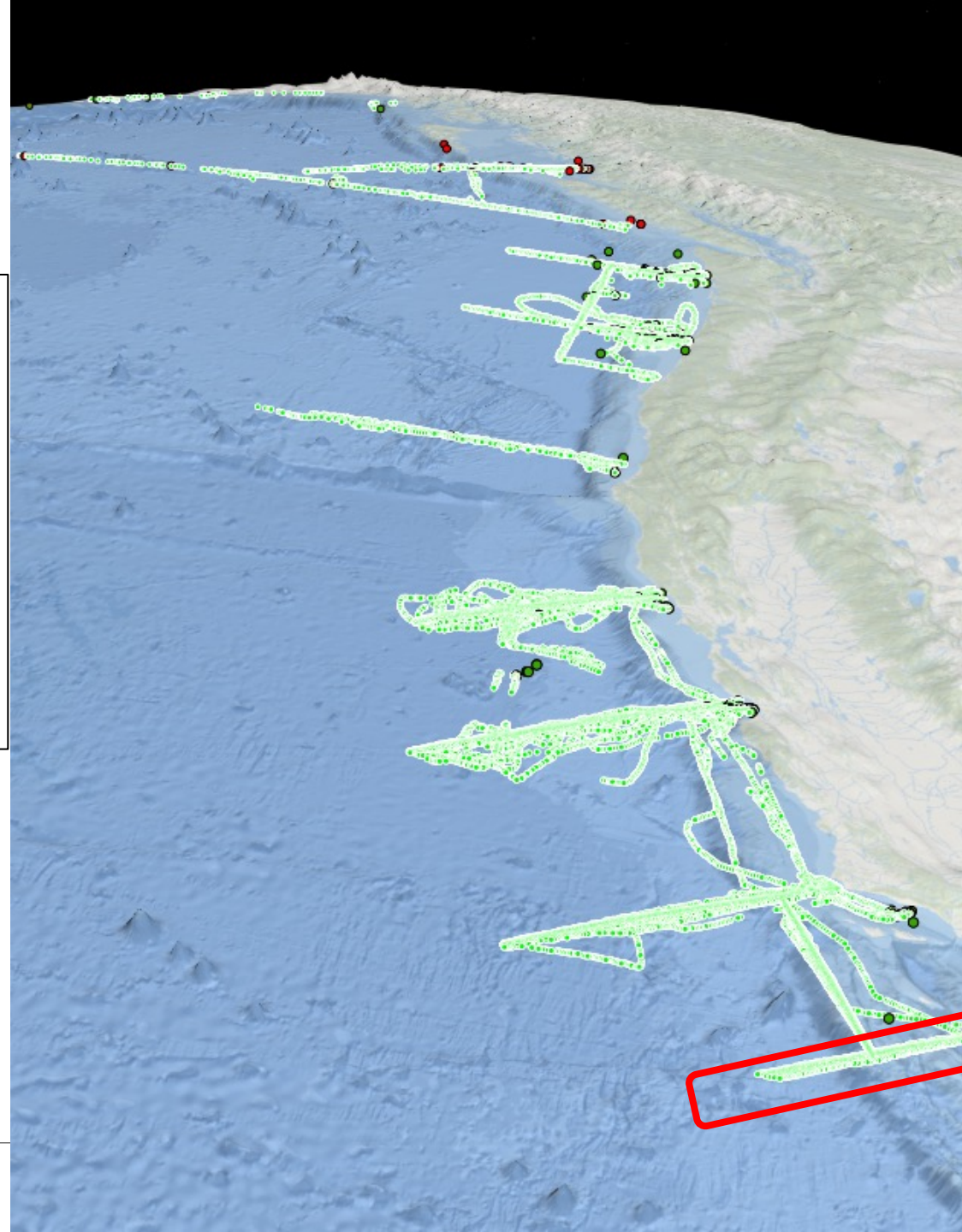
Dan Rudnick

Reference Agency

SCRIPPS (Scripps Institution of Oceanography)

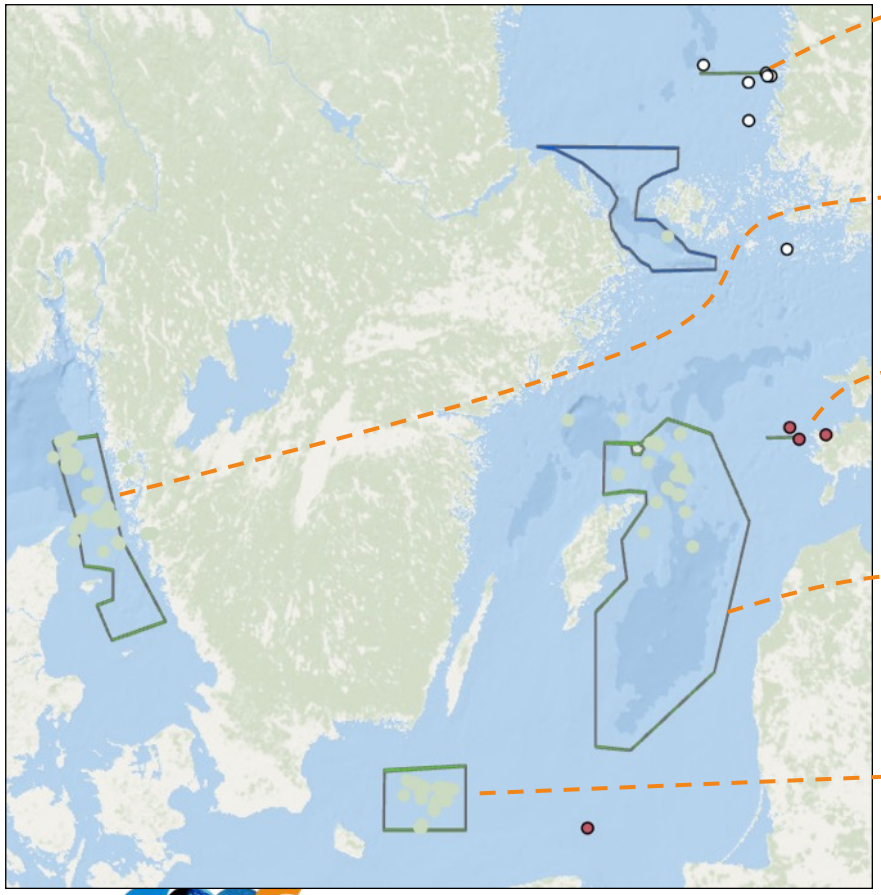
Activity timeline

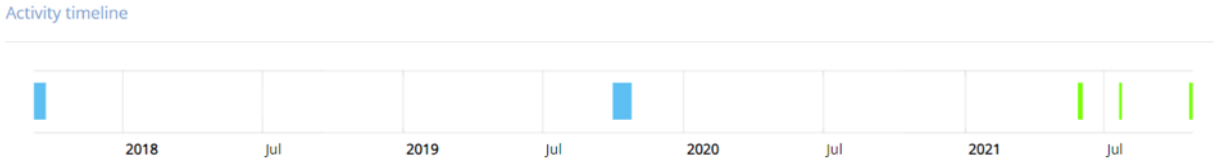


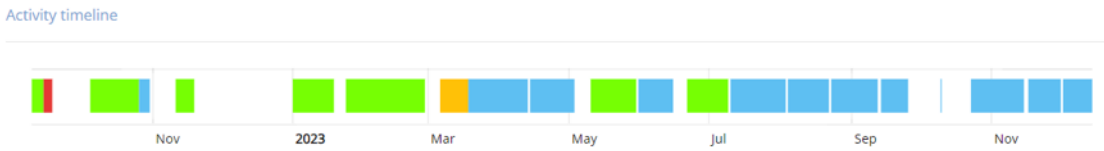


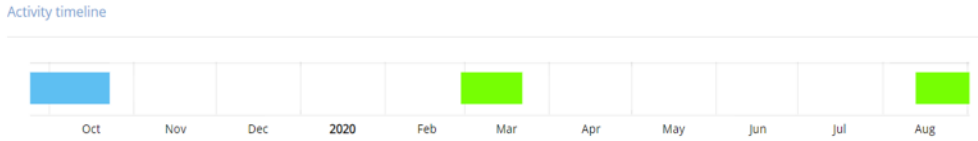
OceanGliders status

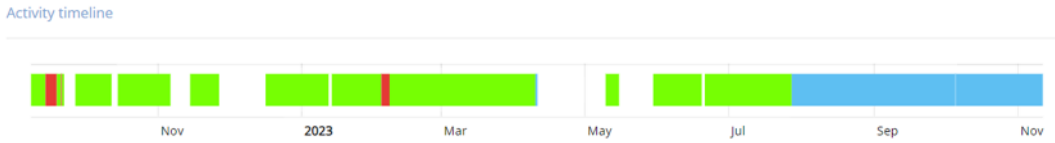
OceanGliders Site monitoring – Case of the Baltic

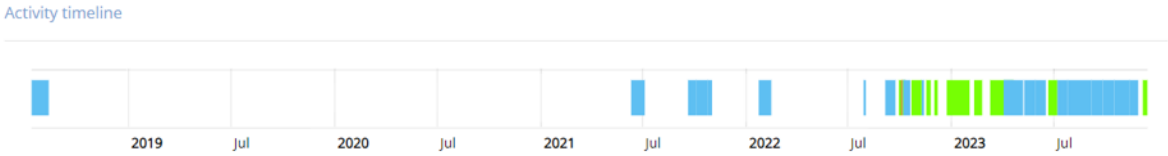






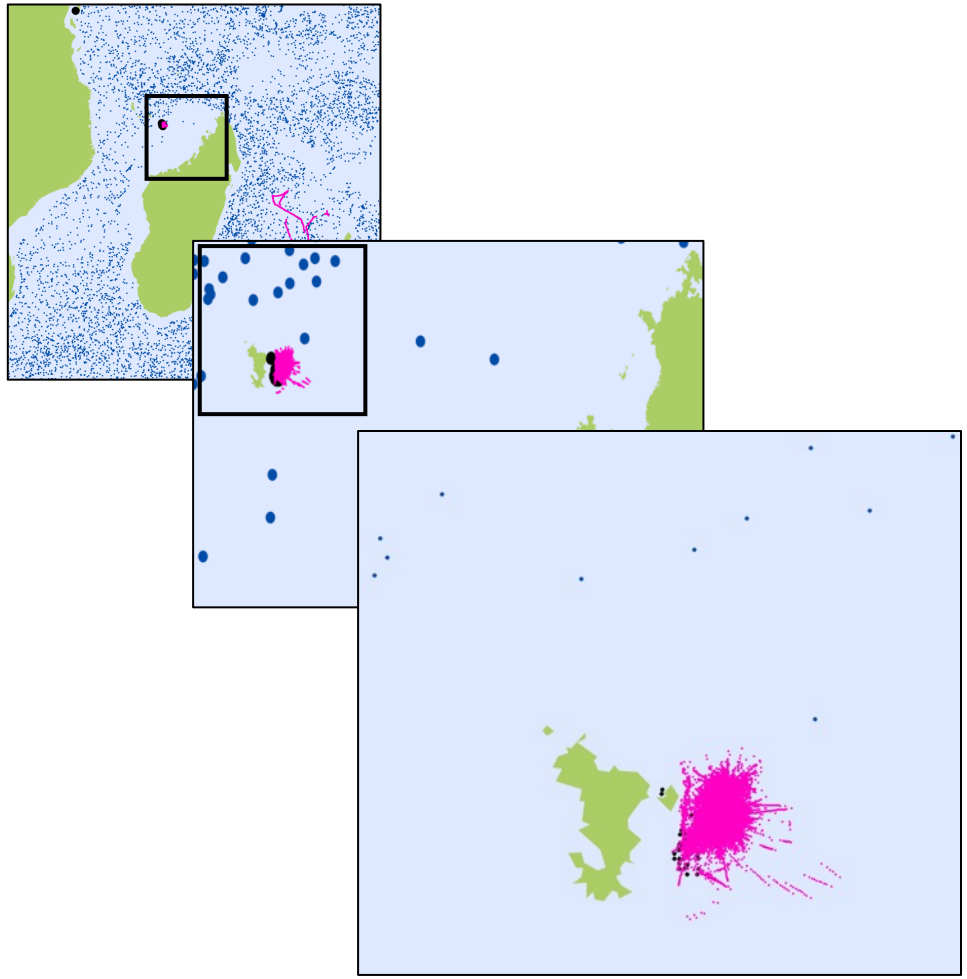






OceanGliders status

OceanGliders Site monitoring – Fani Maore



Main details

Name	Fani Maore
Category	Seaexplorer
Networks	OceanGliders
Family	OceanGliders Area
Sustainablity	Currently Sustained
Unique GTS-IDs	5
Coordinates	

Principal investigator

Felix Margirier

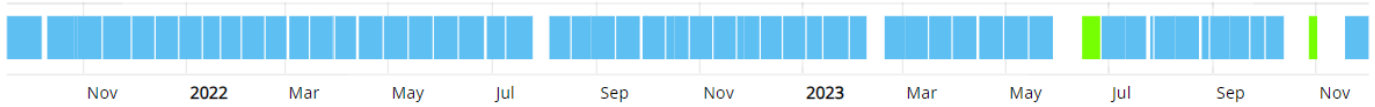
Reference Agency

ALSEAMAR (IMEV - ALSEAMAR)

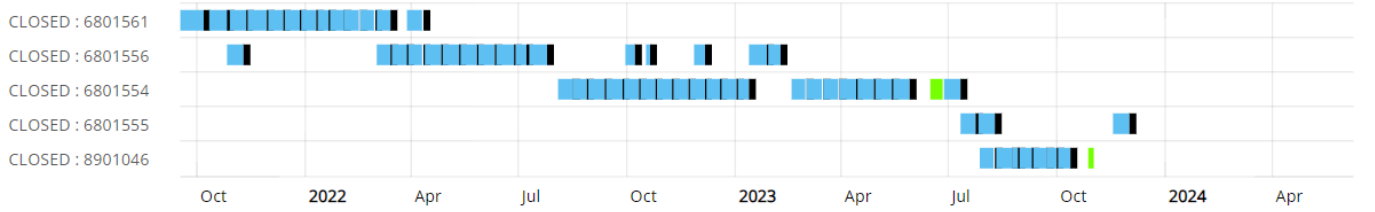
Description

Monitoring of the underwater volcano close to Mayotte Island. This site is operated by Alseamar for IFREMER.

Activity timeline

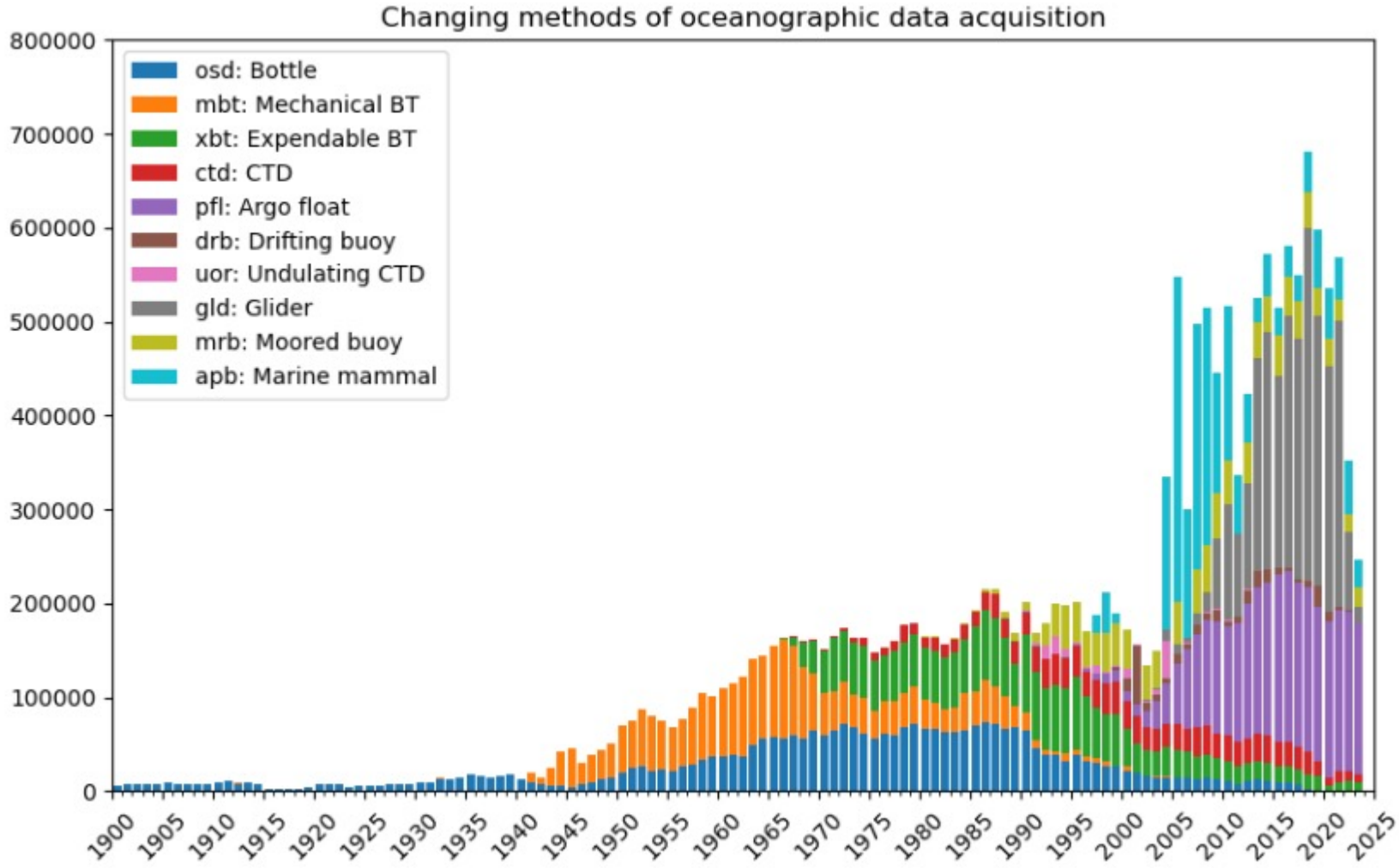


Activity timeline by GTS-ID



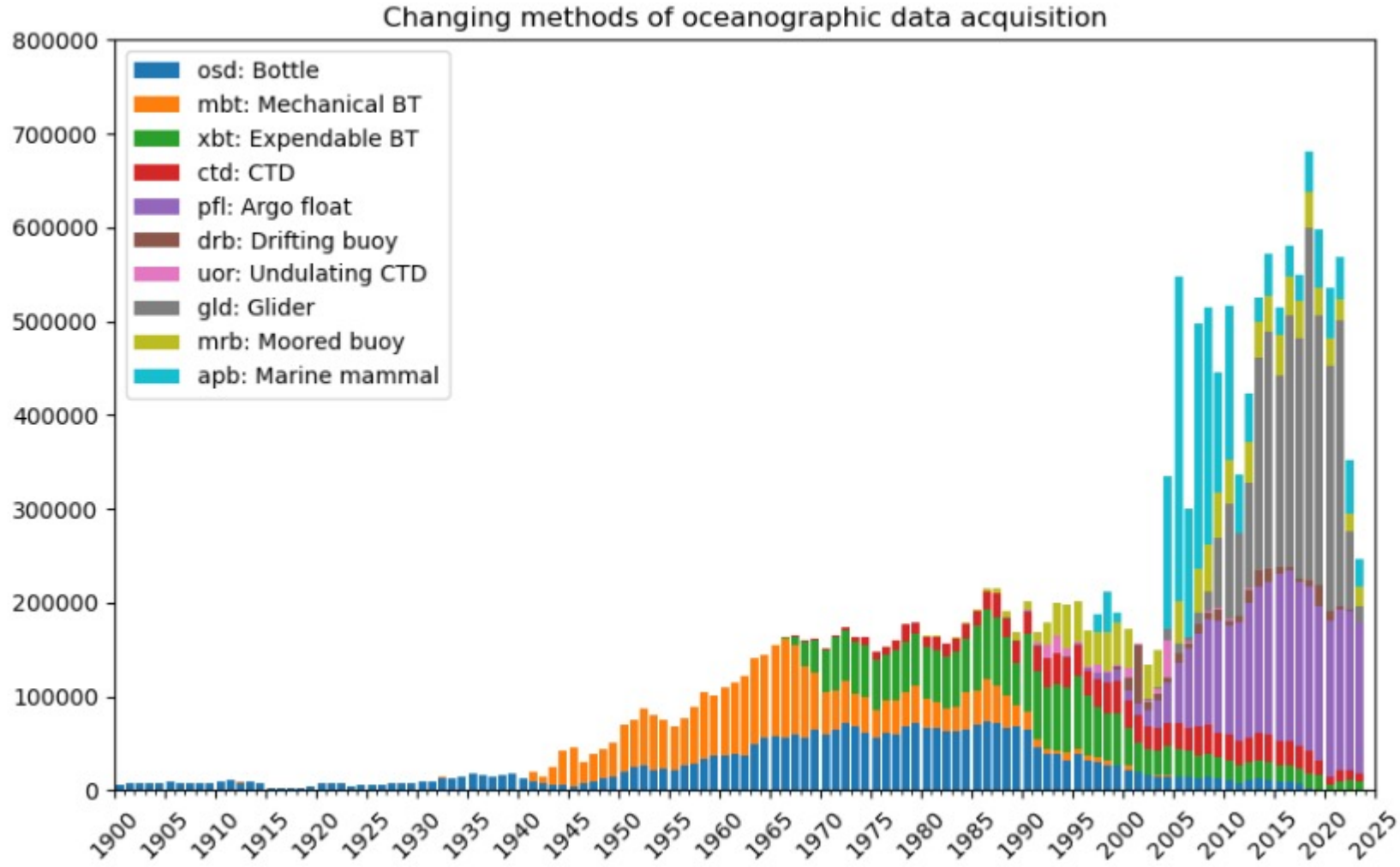
Challenges faced a growing program

Monitoring the data flow



2023 release of World Ocean Database and World Ocean Atlas Alexey Mishonov, Tim Boyer, Ricardo Locarnini, Hernan Garcia, Dan Seidov, James Reagan, Christopher Paver, Olga Baranova, Scott Cross, Courtney Bouchard, Ebenez Nyadro, Alexandra Grodsky and Dmitry Dukhovsko https://imdis.seadatanet.org/content/download/171431/file/IMDIS2024_programme_V4.pdf

Monitoring the data flow



A lot to unpack from this image :

Volume
- *Variables*
- *Depth*
- *Sampling frequency*

Data availability/completness

Quality

Timeliness

Lots of uncertainties remain around gliders data

Monitoring the international glider activity

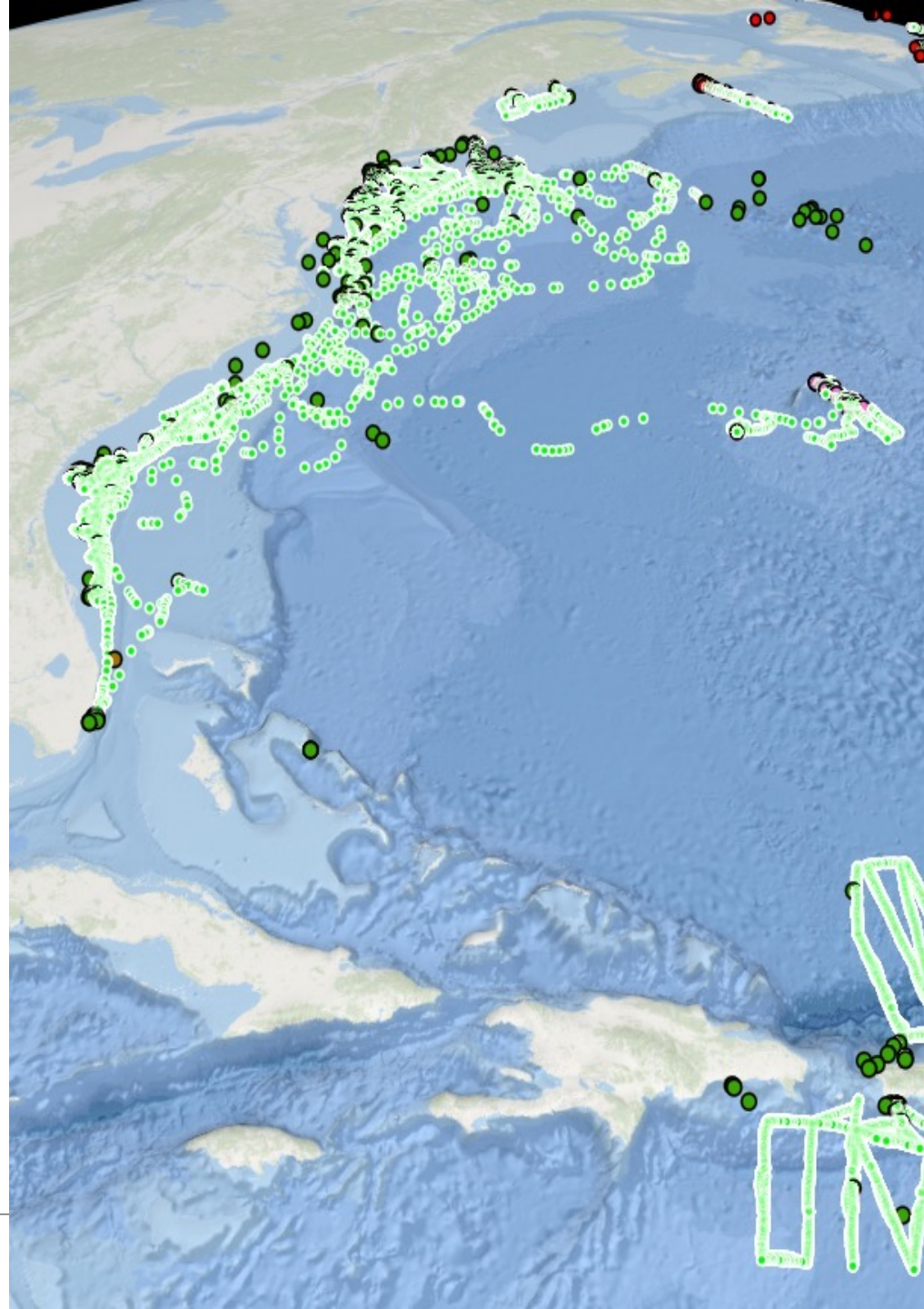
Number of instruments and number of gliders groups and countries willing to engage in OceanGliders are increasing fast.

Number of annual glider missions contributing to OceanGliders continues to grow too.

The diversity of practices is also expending.

The current model to support the monitoring of the program is reaching a limit. It is not robust and not sustained.

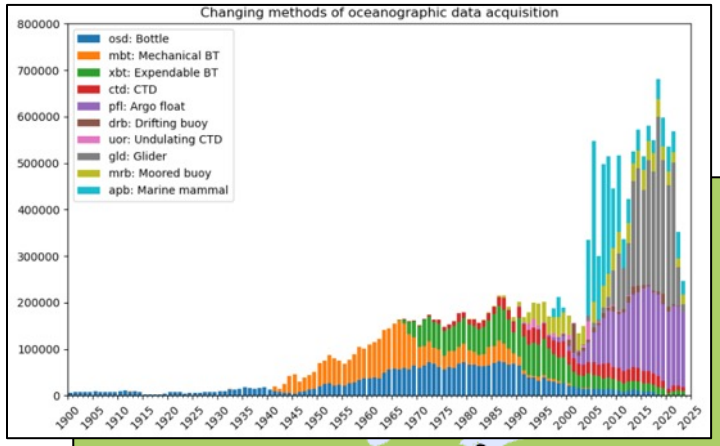
It limits our capacity to accurately monitor the activity, the implementation and the performances of the program and reduce our support to decision making.



Recommendation

Recommandation

- Make the case of the importance of OceanGliders in the GOOS of tommorrow
- Engage collectively in the program information center
- Reinforce the OceanGliders data structure
- Increase support to the program coordination through
  - program office support,
  - technical coordination,
  - meeting,
  - participation to TT (institution endorsment),
  - in-kind support



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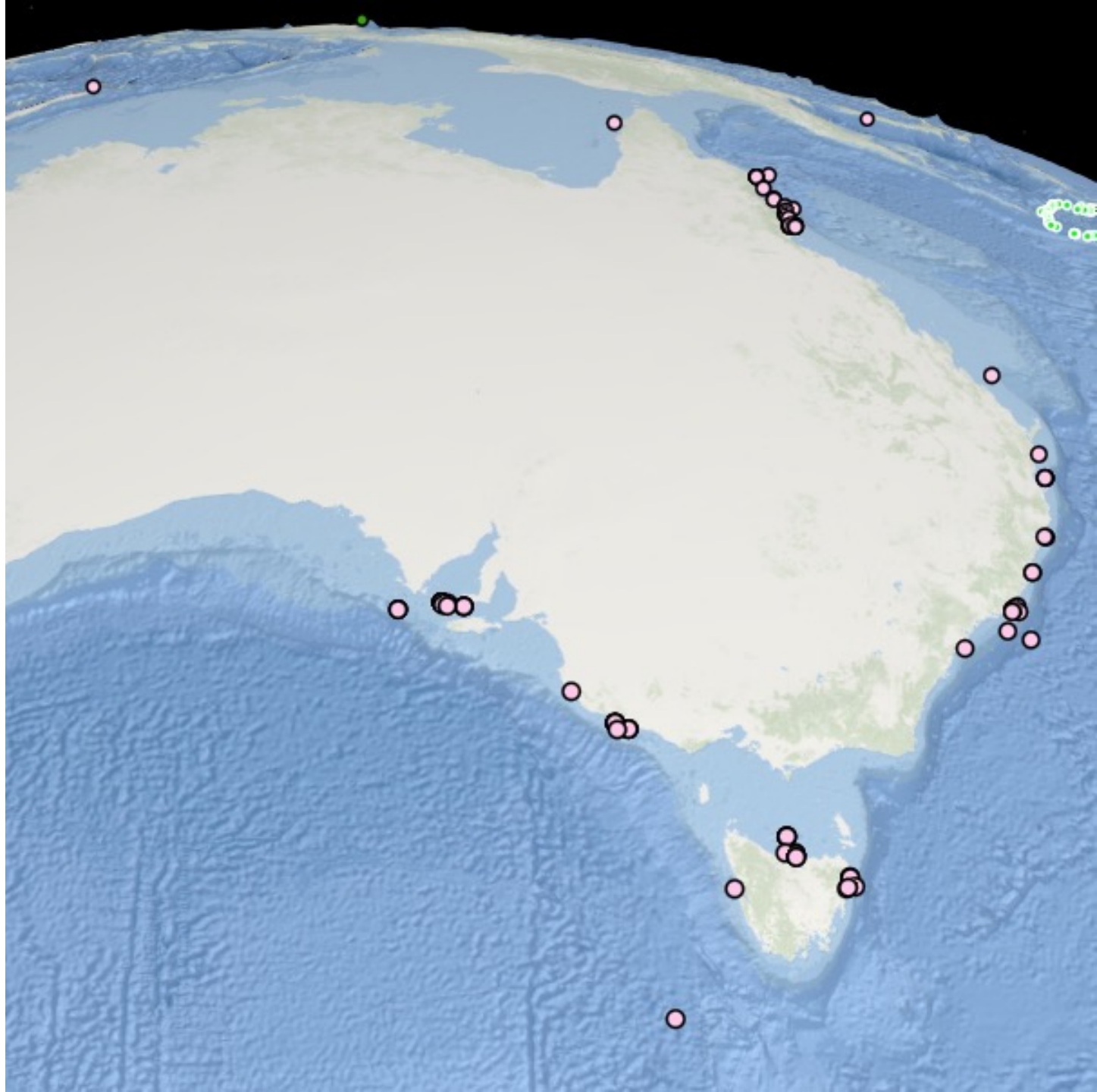
OceanGliders

Thank you

OceanOPS



Data management workshop

OceanGliders

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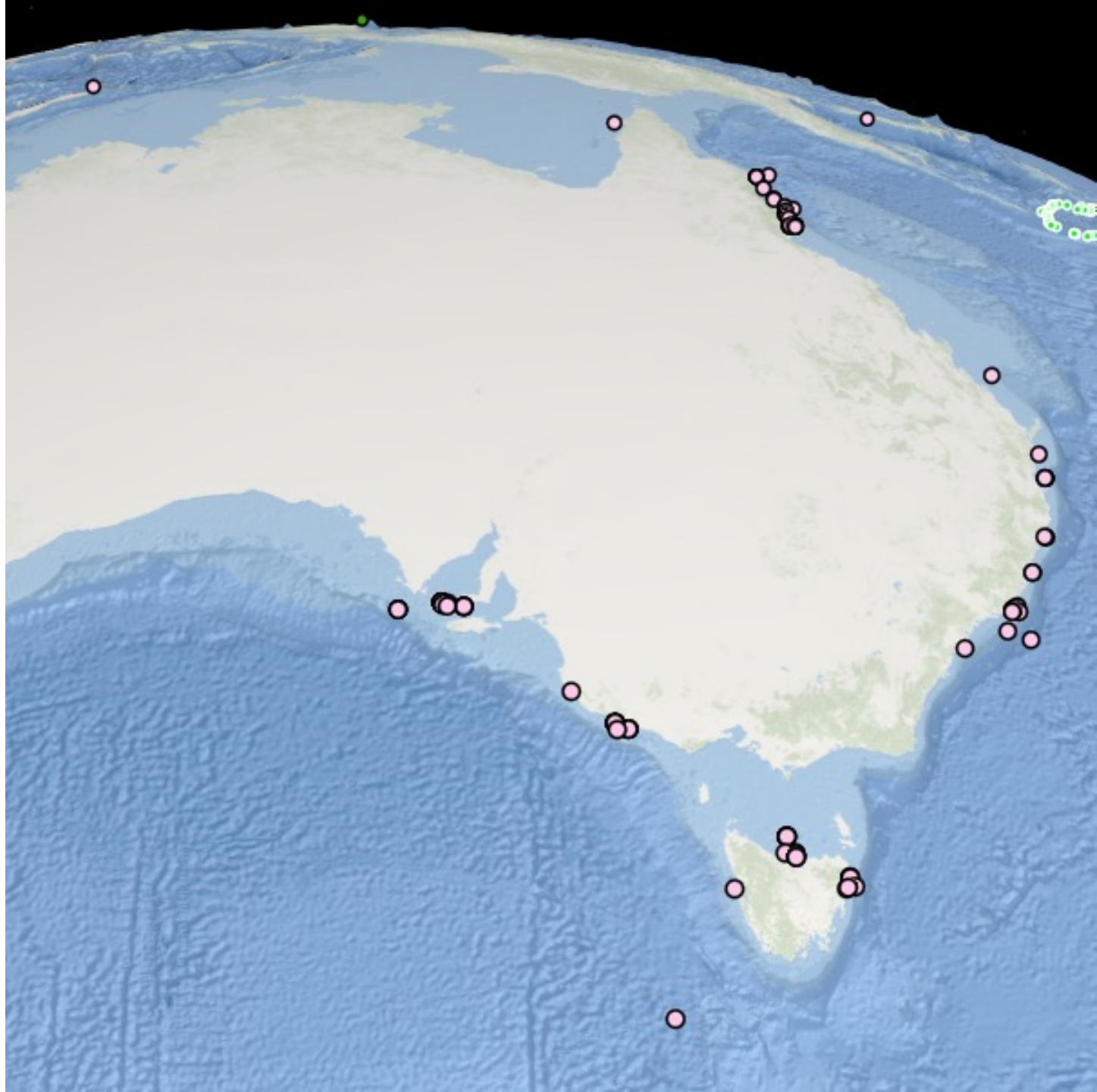
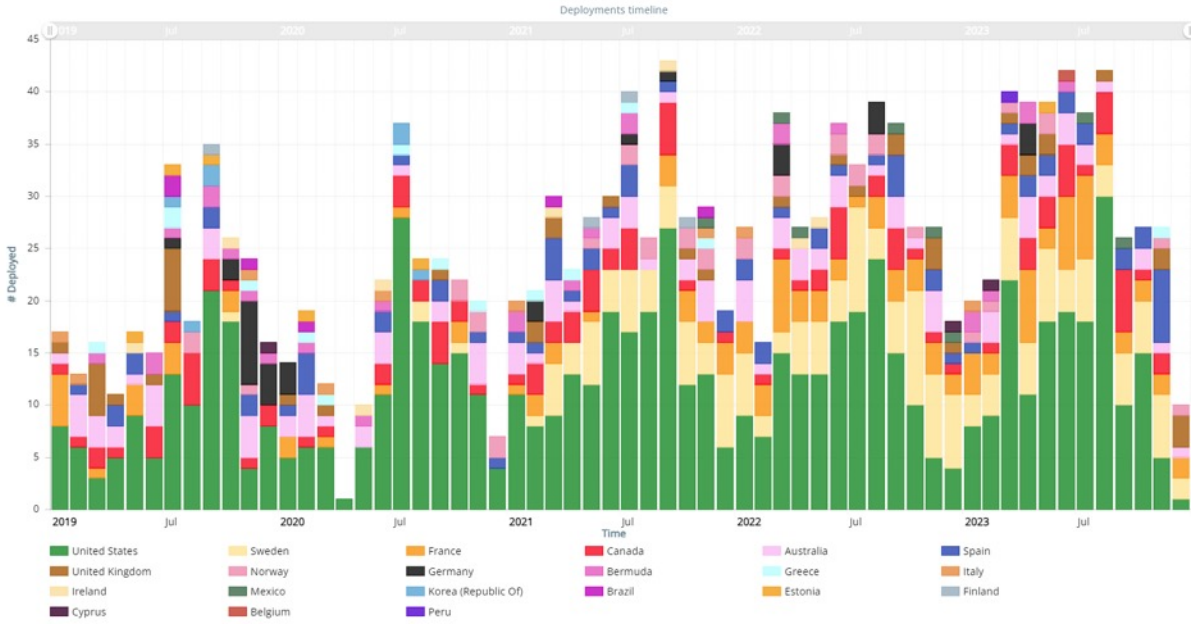
Thank you

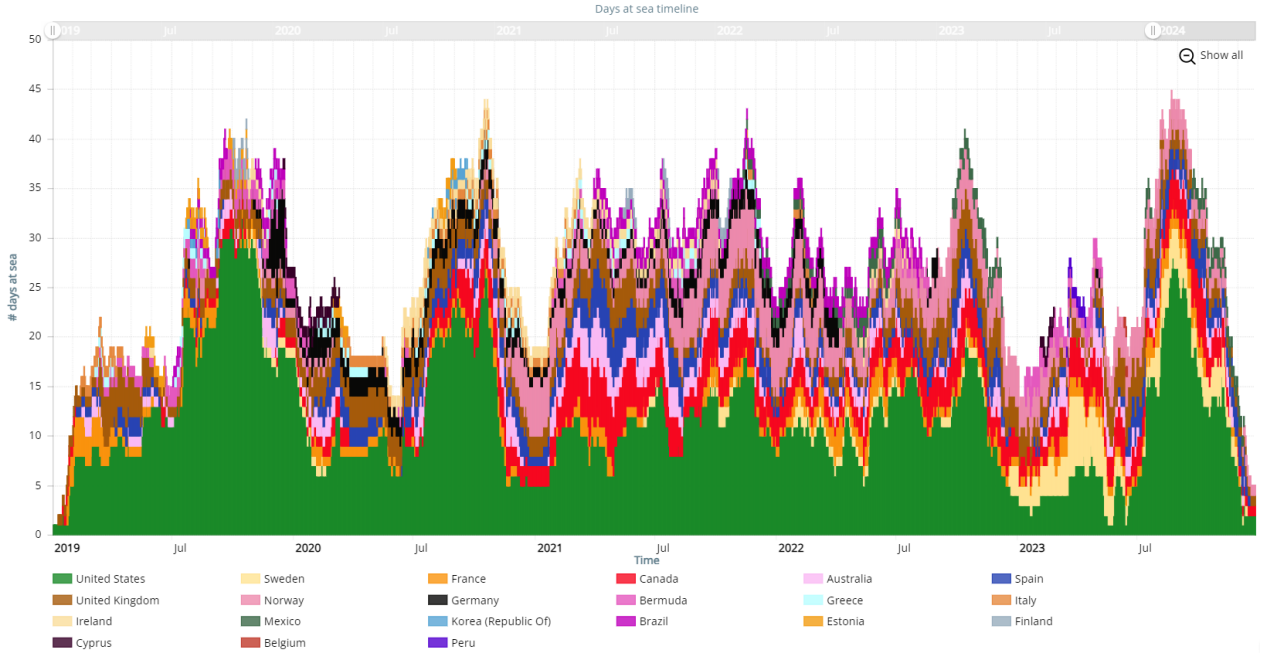
OceanOPS



OceanGliders status

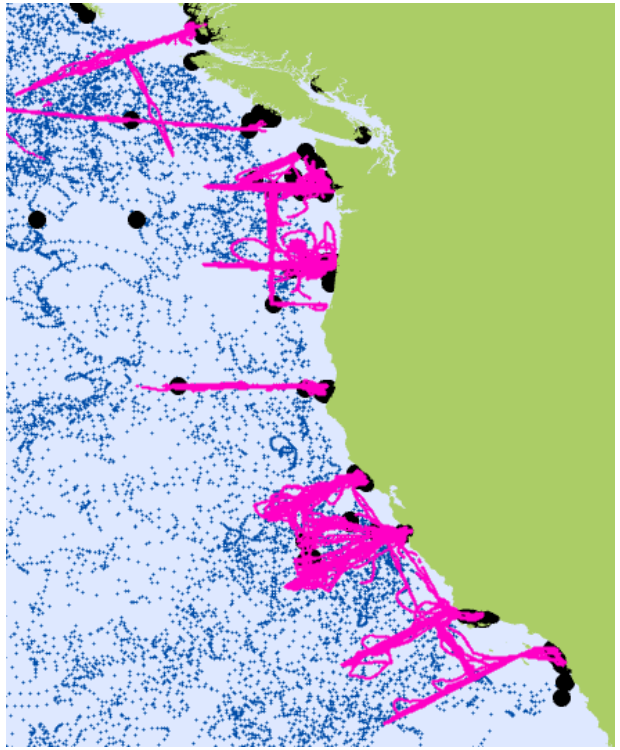
Trends – Focus 2019 - 2023

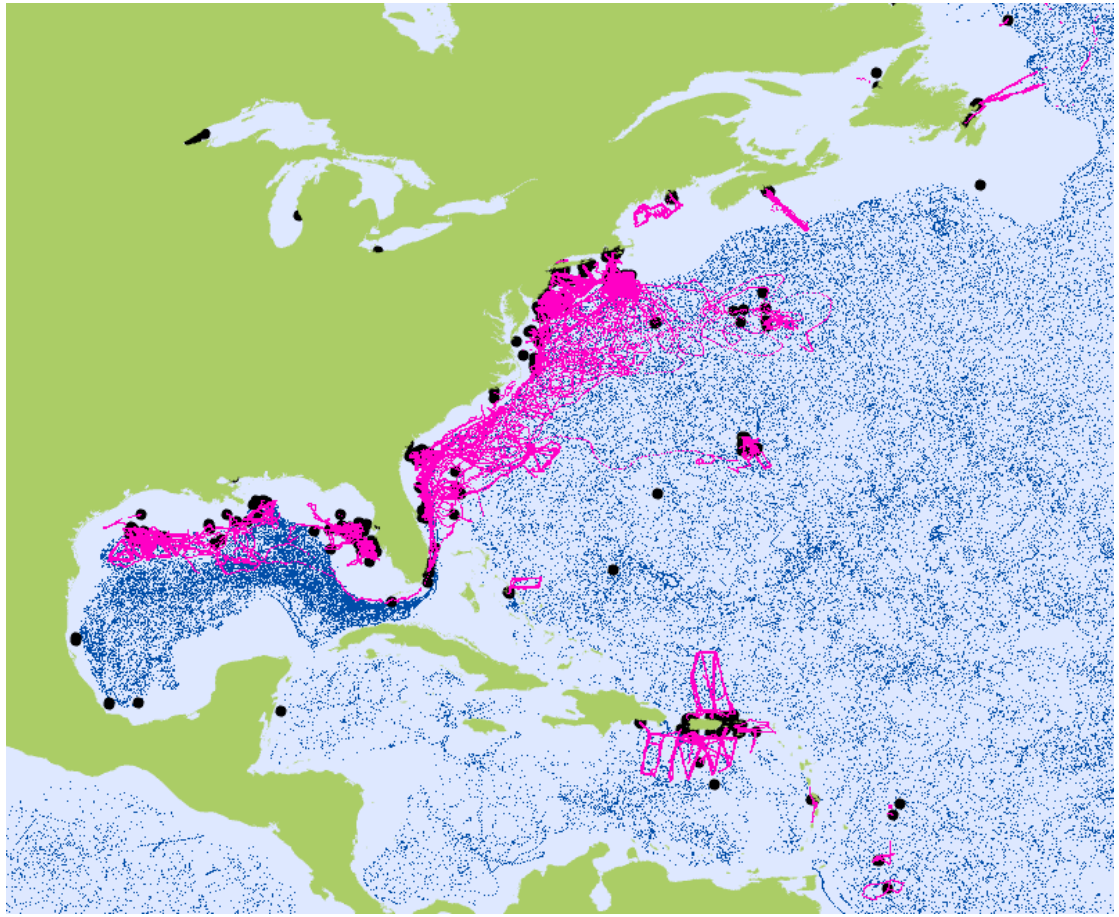




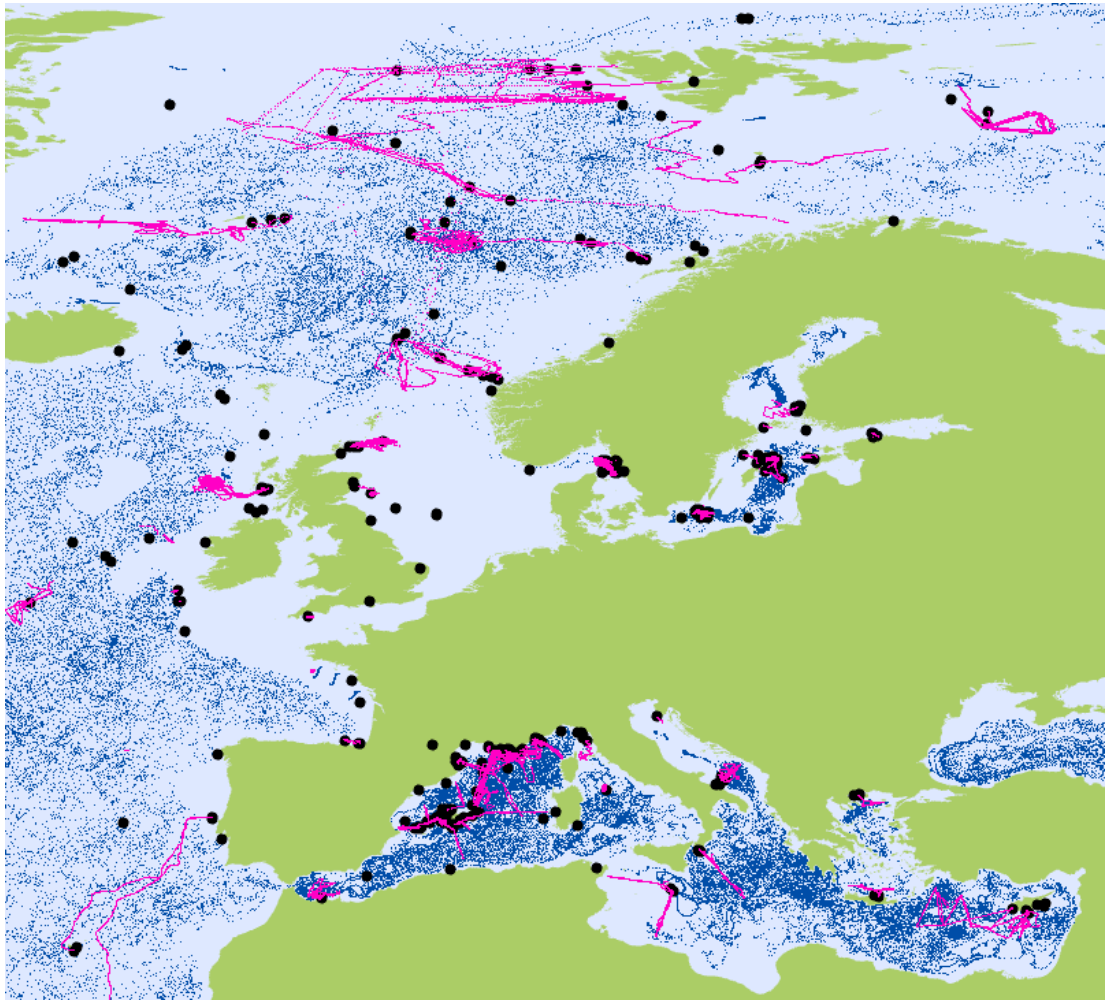
Monitoring the data flow

OceanGliders





Monitoring the data flow



Monitoring OceanGliders

How do we monitor a program ?

OceanGliders

Collect information along the data flow

From raw data to data product

- Metadata associated with the data set
- Information evolving along the life and use of the data set

Collect information along the life of the platform

From planning to end of mission

- Information associated with the status of the platform
- Information evolving along the life of the glider mission

Program information center

- **Report and communicate**
- **Support program management**
- **Support implementation**
- **Monitor data flow**
- **Assess instrumentation performances**