International Research Ship Operators

34TH ANNUAL INTERNATIONAL RESEARCH SHIP OPERATORS MEETING

OceanOPS: Monitoring, Coordination and Implementation Support for The Global Ocean Observing System

WMO

OceanOPS

unesco
Intergovernmental Oceanographic Commission

Martin Kramp

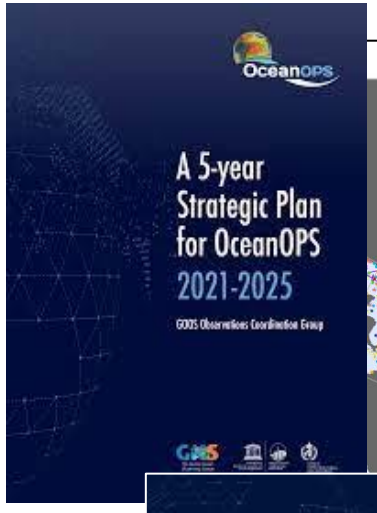
Ship Coordinator

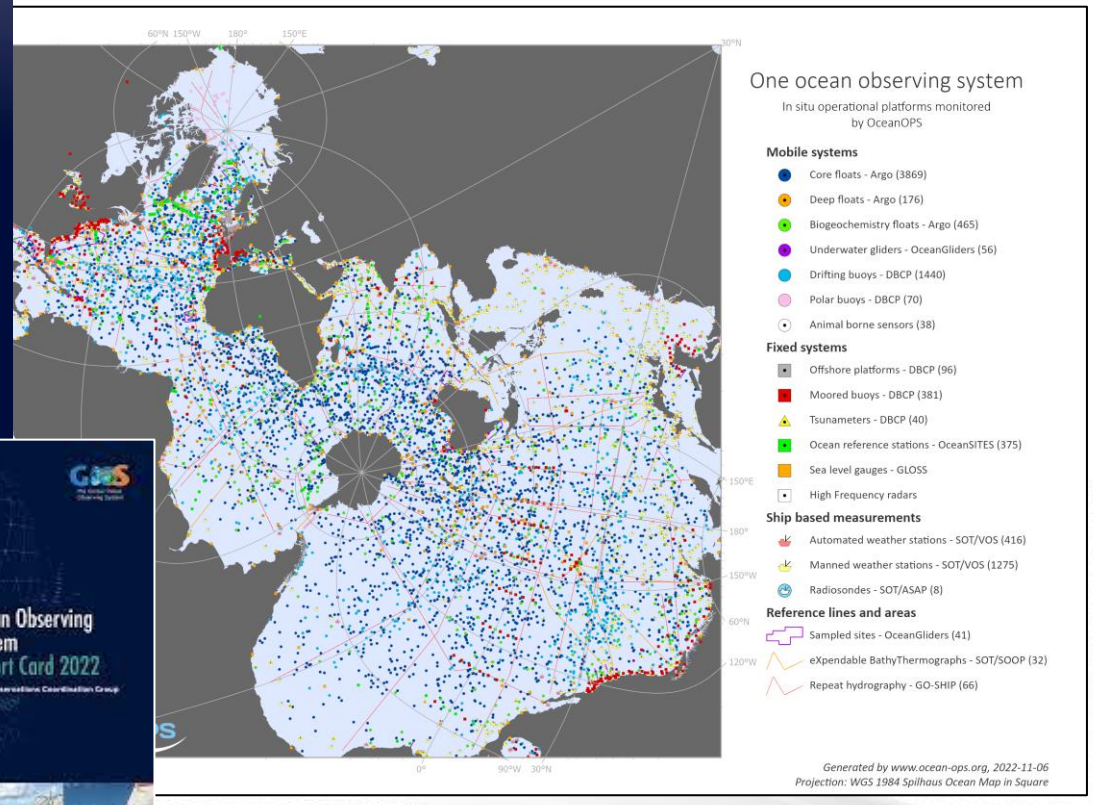
mkramp@ocean-ops.org

WWW.OCEAN-OPS.ORG

INTEGRATED INFORMATION, MAPS AND TOOLS TO HELP COORDINATE AND MONITOR GLOBAL OCEAN OBSERVATION EFFORTS.

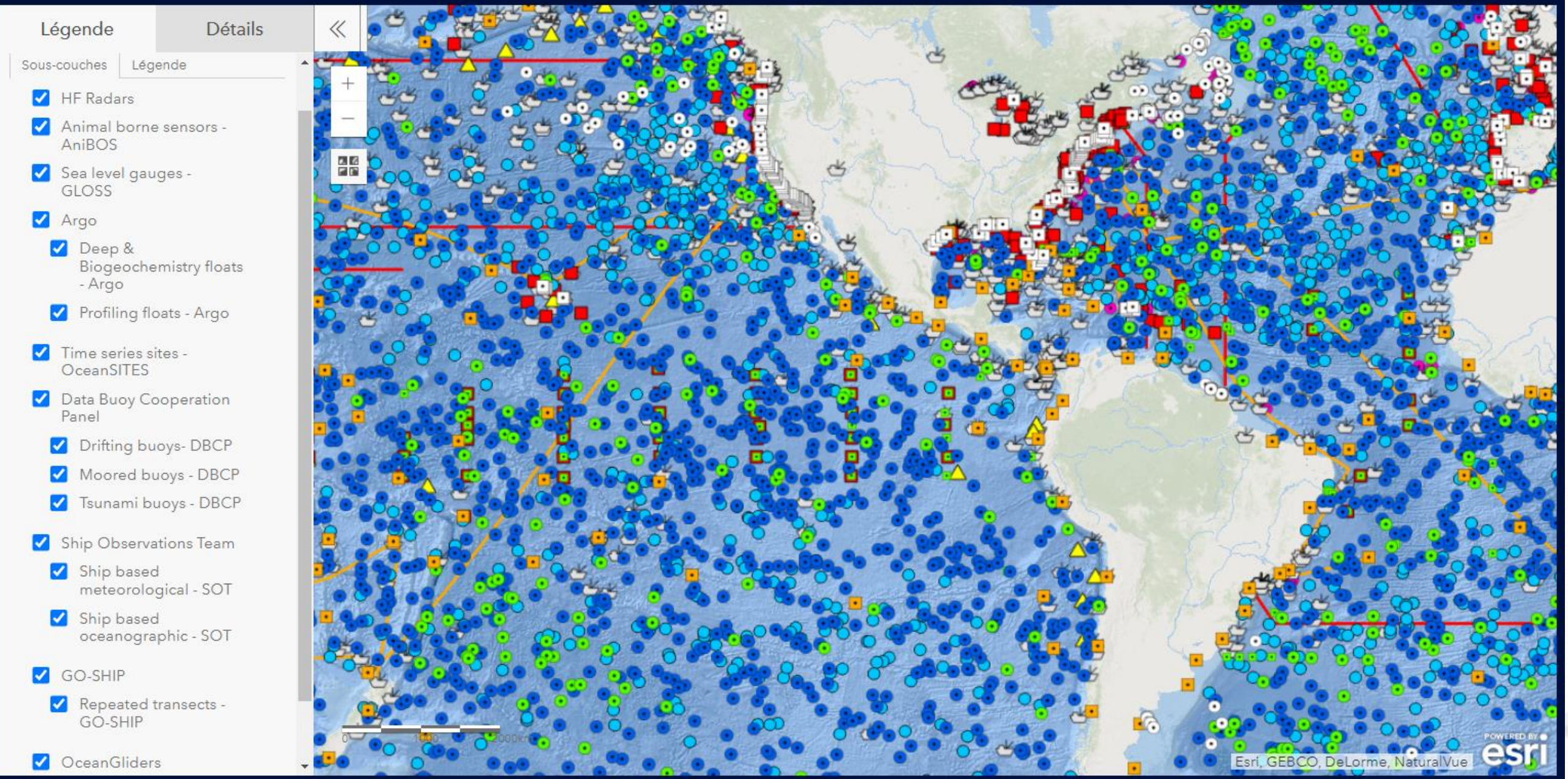
- Jointly run by WMO & IOC
- ~8000 GOOS platforms
- Coordination & Integration
- Metadata Management
- ID Allocation for GOOS
- Implementation Support
- Monitoring & Notification
- Performance Measurement
- Report Card & Communication





www.ocean-ops.org/reportcard2022

This is an interactive map. Click on Details tab in the map menu to discover all functionalities

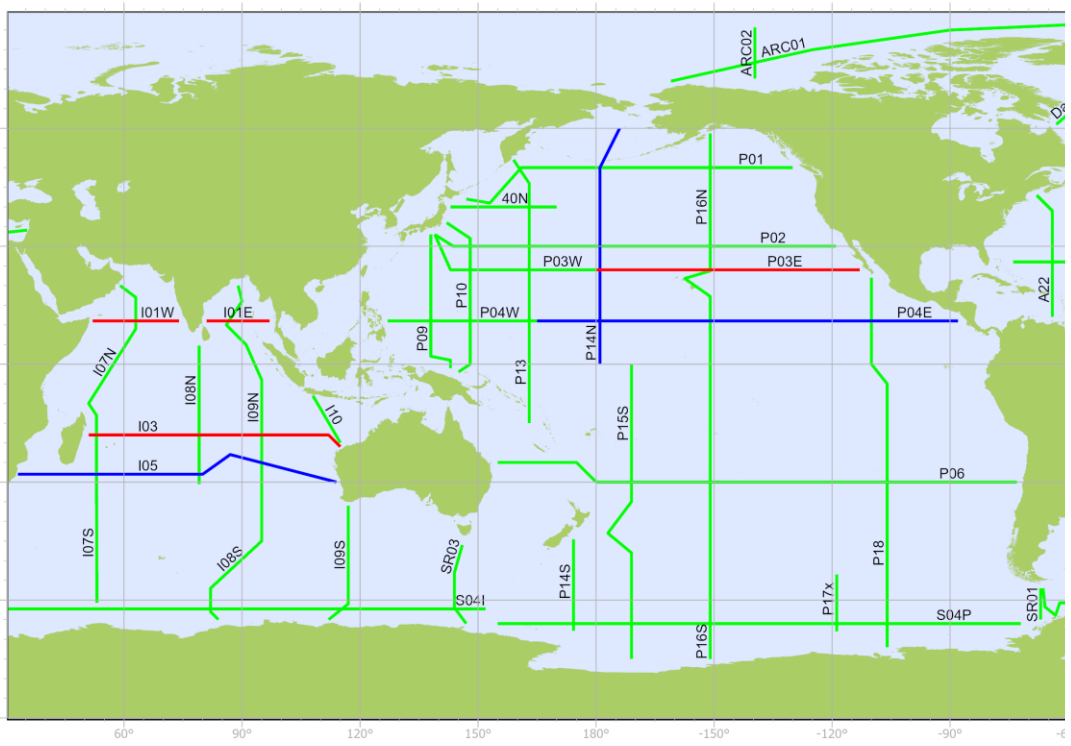


www.ocean-ops.org/reportcard2022

GOOS *in situ* networks [1]	Implementation	Data & metadata			Best practices [6]	GOOS delivery areas [7]		
	Status [2]	Real time [3]	Archived high quality [4]	Metadata [5]		Operational services	Climate	Ocean Health
Ship based meteorological – SOT	★★☆	★★☆	★★☆	★★☆	★★☆	✓	✓	
Ship based oceanographic – SOT	★★☆	★★½	★★★	★½☆	★★☆	✓	✓	
Repeated transects - GO-SHIP	★★½	Not applicable	★★★	½☆☆	★★★		✓	✓
Sea level gauges - GLOSS	★★½	★★☆	★★★	★☆☆	★★☆	✓	✓	
Time series sites - OceanSITES	★★☆	Not applicable	★★½	★★☆	★★☆		✓	✓
Moored buoys – DBCP	★★½	★★★	★★★	★★☆	★★½	✓	✓	✓
Tsunami buoys - DBCP	★★☆	★★★	★★★	½☆☆	★★★	✓		
HF radars	★½☆ Emerging	★½☆	½☆☆	★☆☆	★★★	✓	✓	
Drifting buoys - DBCP	★★★	★★½	★★½	★½☆	★★★	✓	✓	
Profiling floats - Argo	★★★	★★★	★★★	★★★	★★☆	✓	✓	
Deep & biogeochemistry floats - Argo	★☆☆ Emerging	★★½	★★½	★★★	★★☆	✓	✓	✓
OceanGliders	½☆☆ Emerging	★★☆	★☆☆	★½☆	★★☆	✓	✓	✓
Animal borne sensors - AniBOS	½☆☆ Emerging	★☆☆	★★☆	½☆☆	★★☆	✓	✓	✓

Click on network names for links to each network. Click on implementation stars to view related KPIs. More information on networks status & indicators definitions HERE

SAMPLE STATIC MAPS



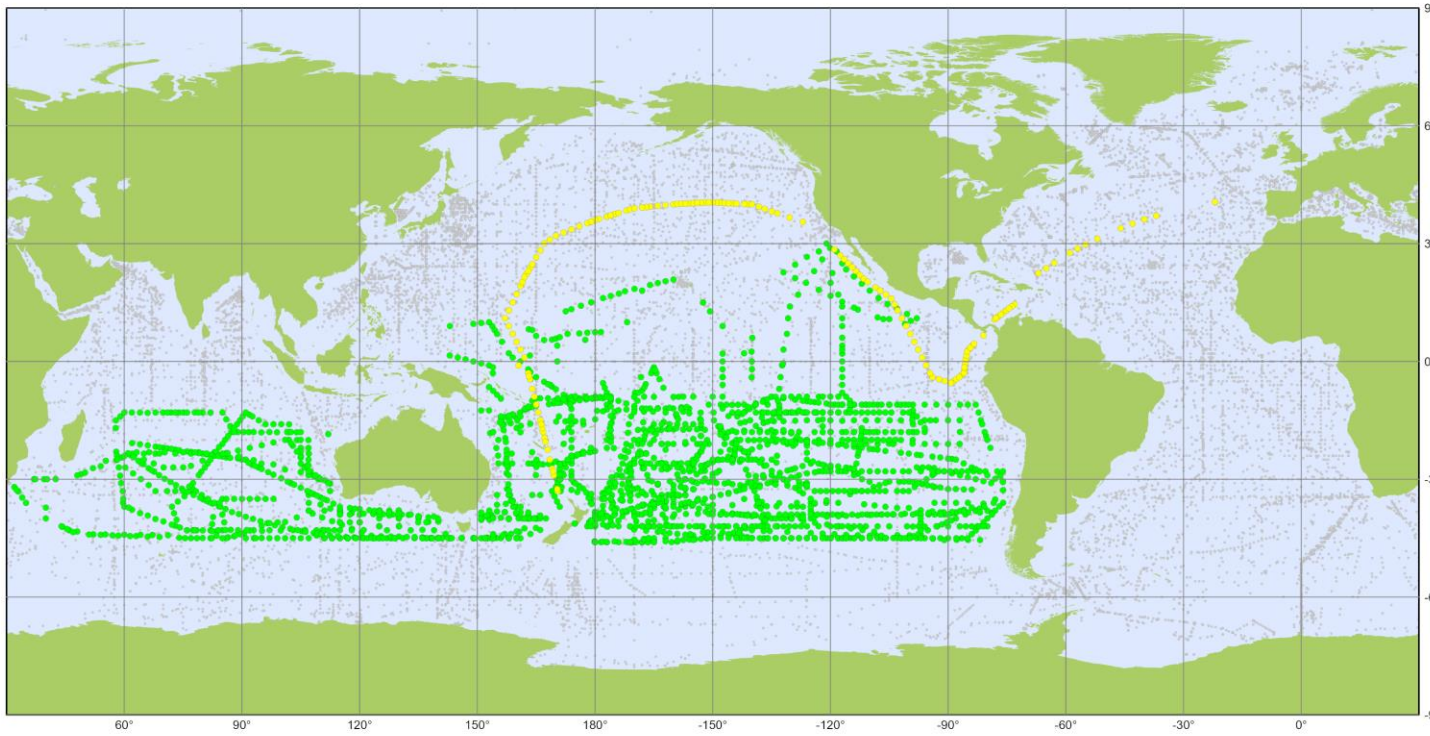
GO-SHIP

Status of 2012-2023 Survey (55 Core Lines)

- completed: 47 (86% of all core lines)
- planned or funded: 4 (7% of all core lines)
- not planned yet: 4 (7% of all core lines)

Lines completed or planned: 94% (51 core lines)
Countries providing ship-time: 10
Elapsed survey time: 95% (floating 11 years)

Generated by ocean-ops.org, 2023-05-03
Projection: Plate Carree



Argo

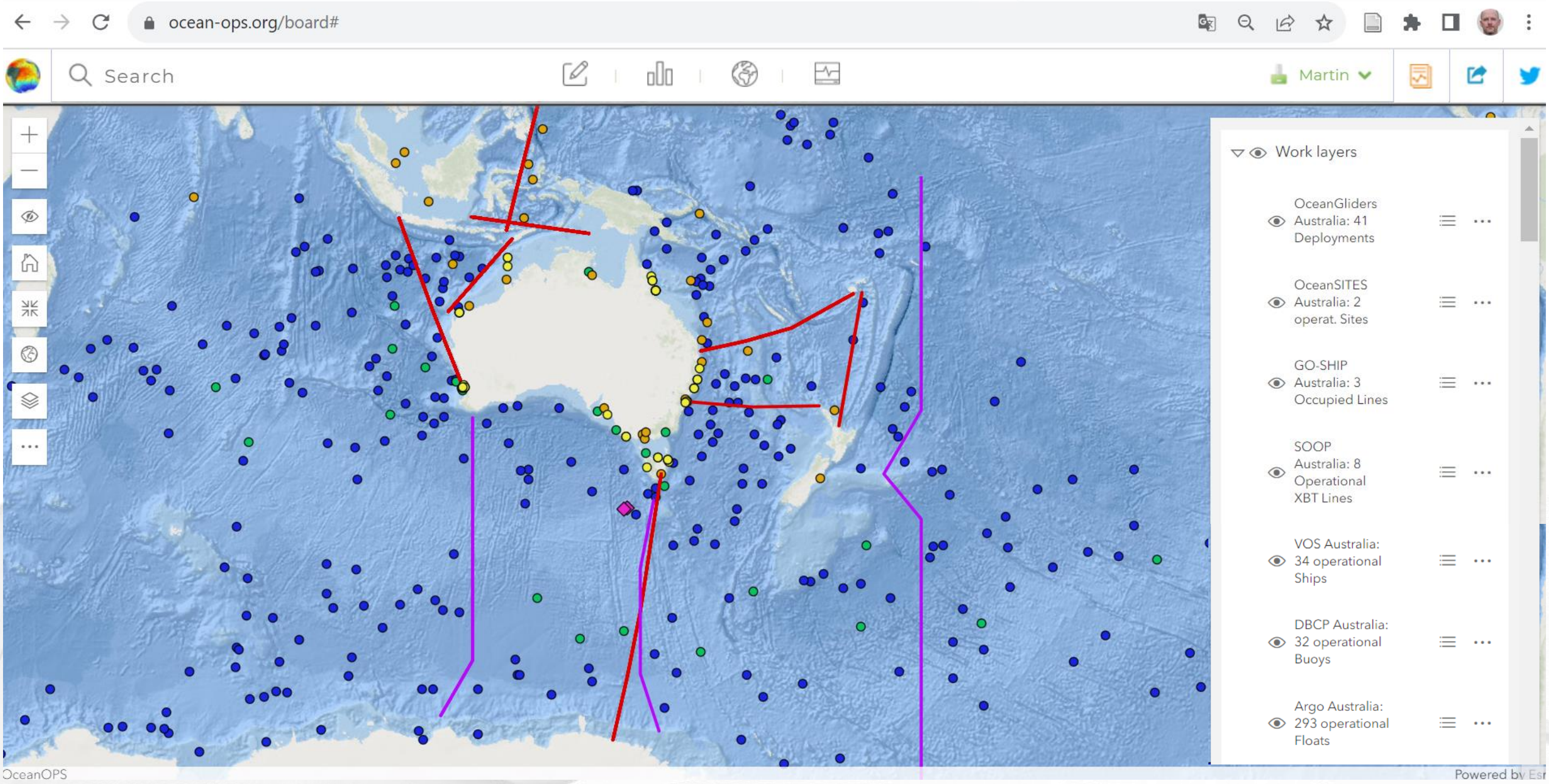
Kaharoa's Deployments

September 2023

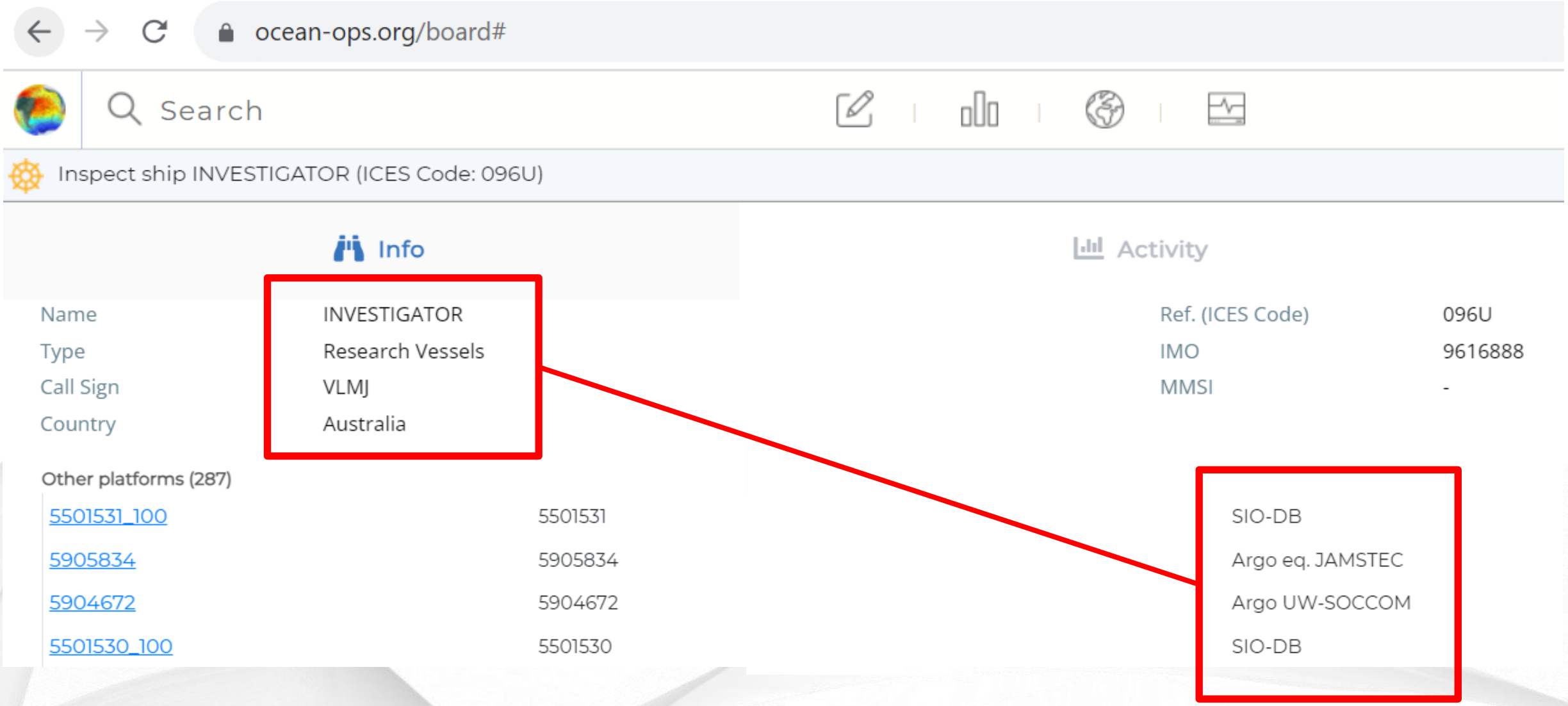
- Planning (152)
- Kaharoa deployments (2171)
- Kaharoa II deployments (0)
- Other deployments (17085)

Generated by ocean-ops.org, 2023-10-01
Projection: Plate Carree (-150,0000)

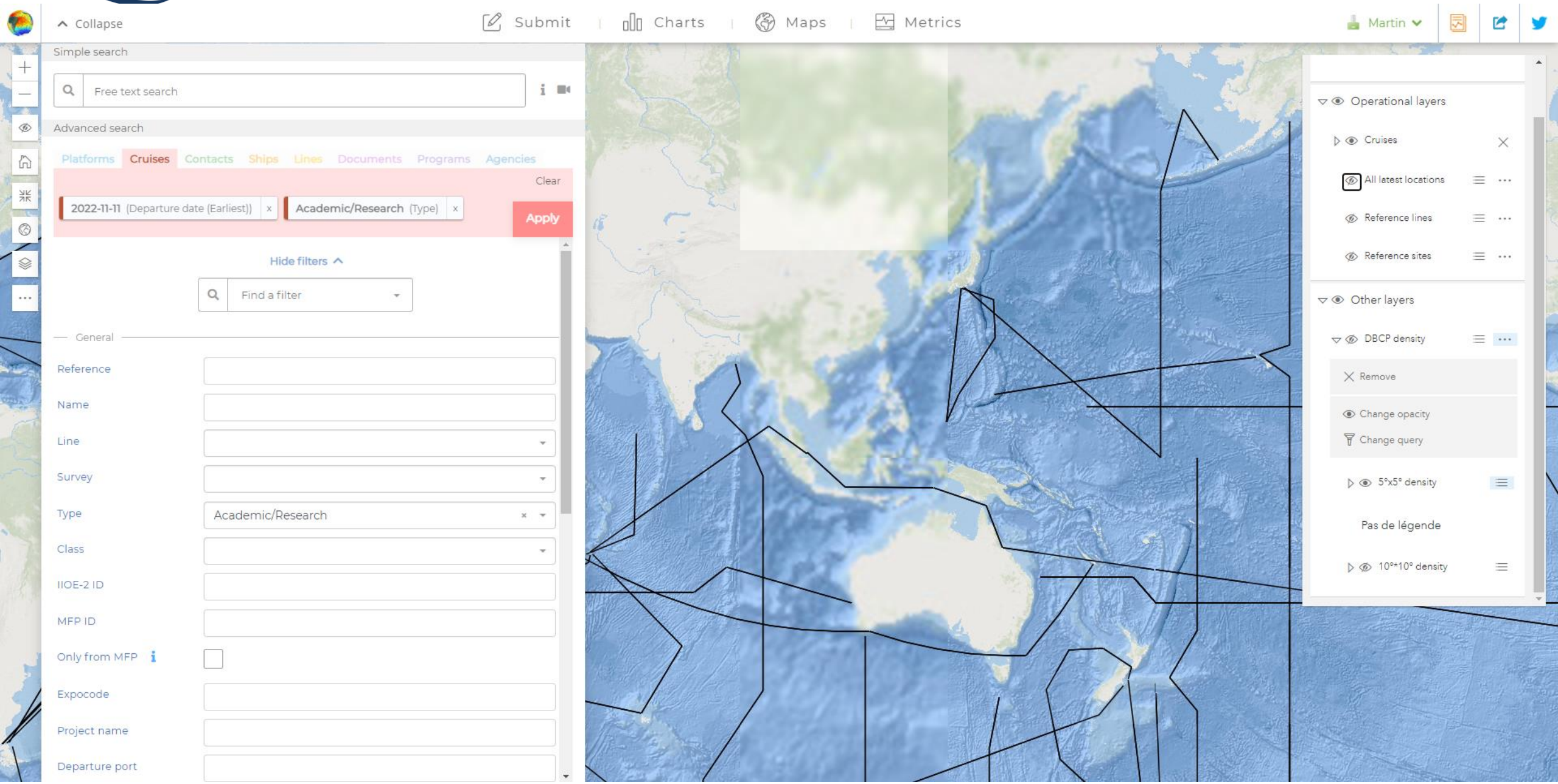
Monitoring national Contributions to GOOS with OceanOPS: Showcase Australia



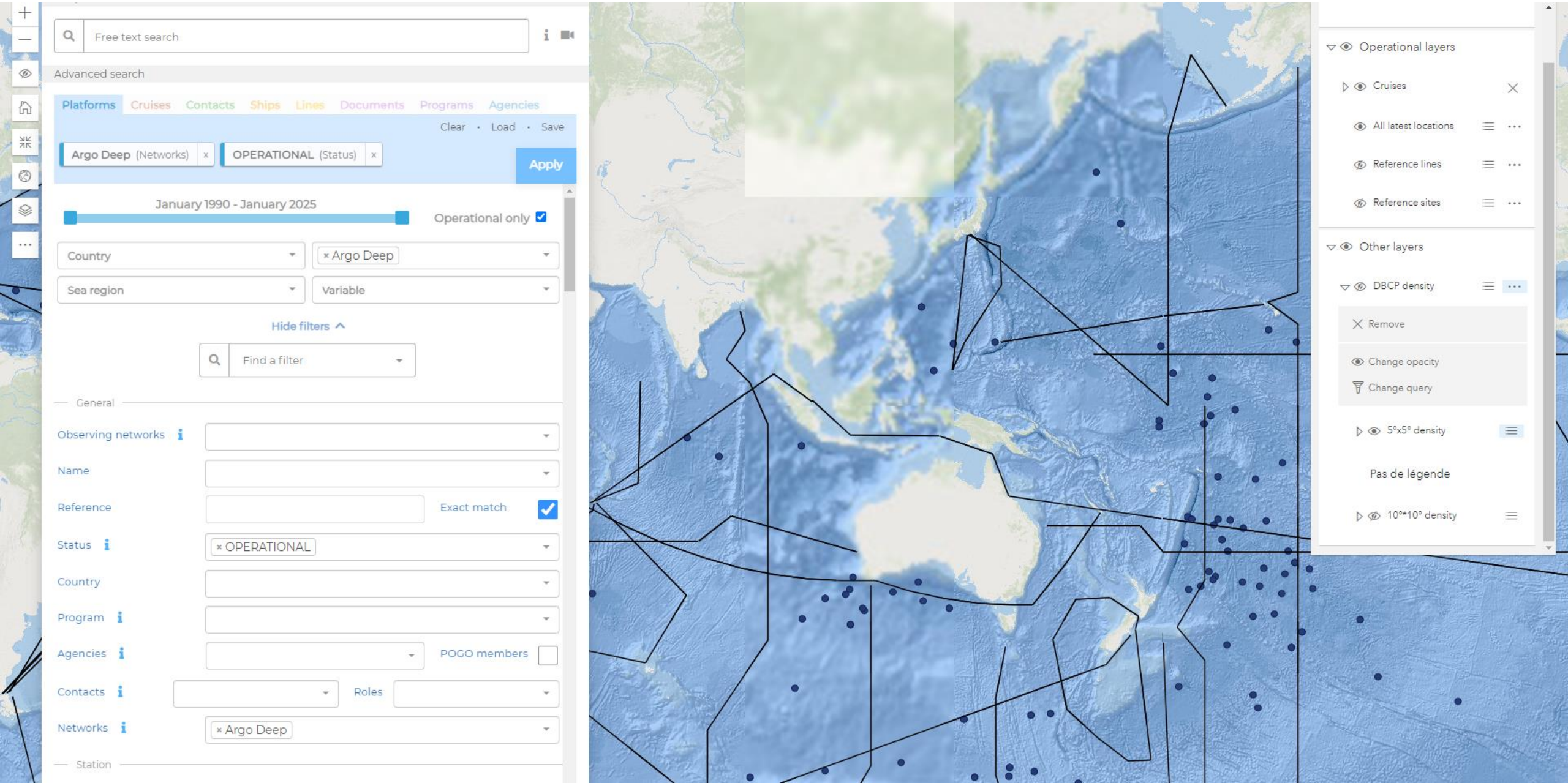
Monitoring piggy-back Operations with OceanOPS: Float/Drifter Deployments

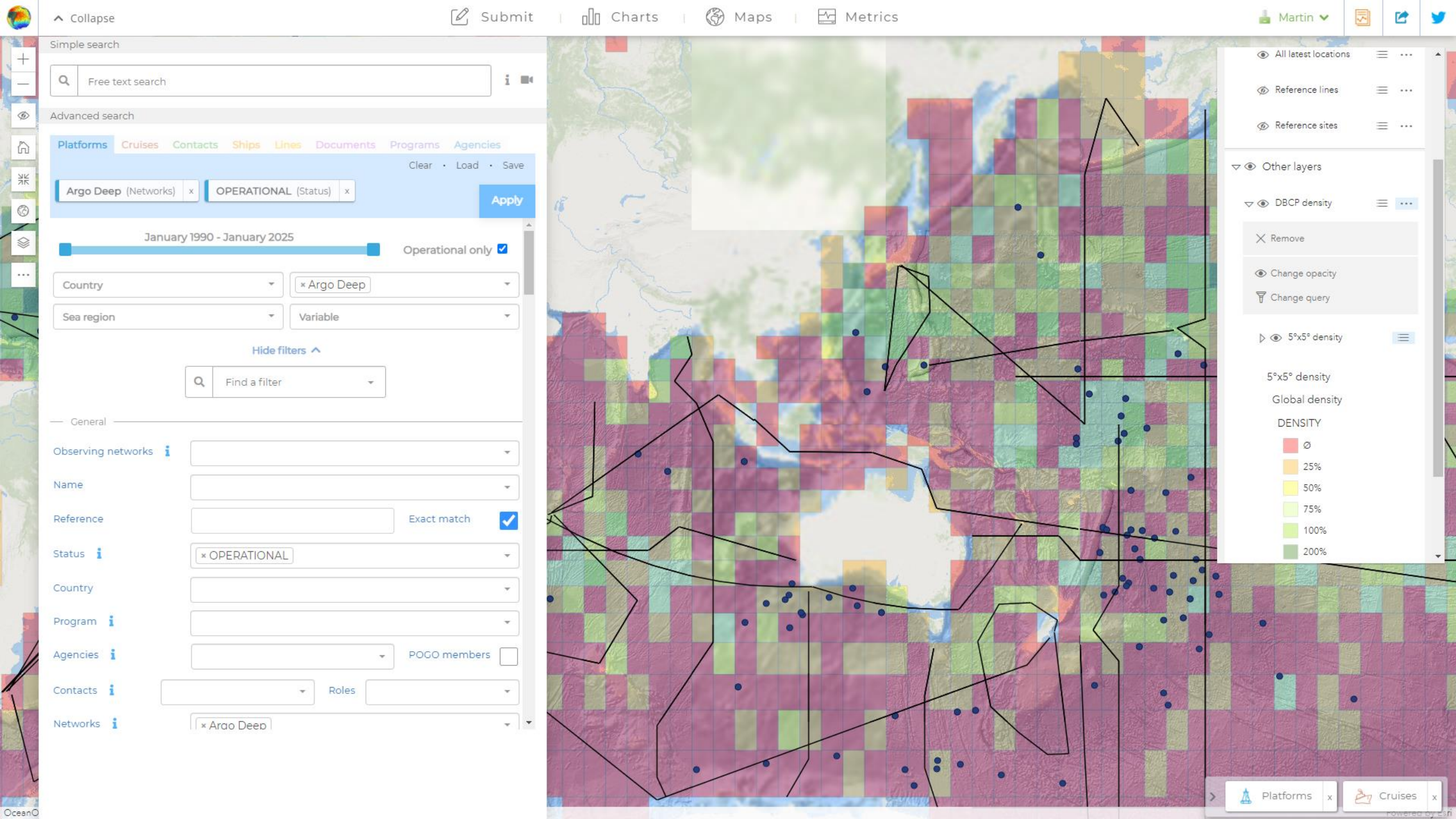


Collecting and Updating of Cruise Plans manually: No efficient Solution

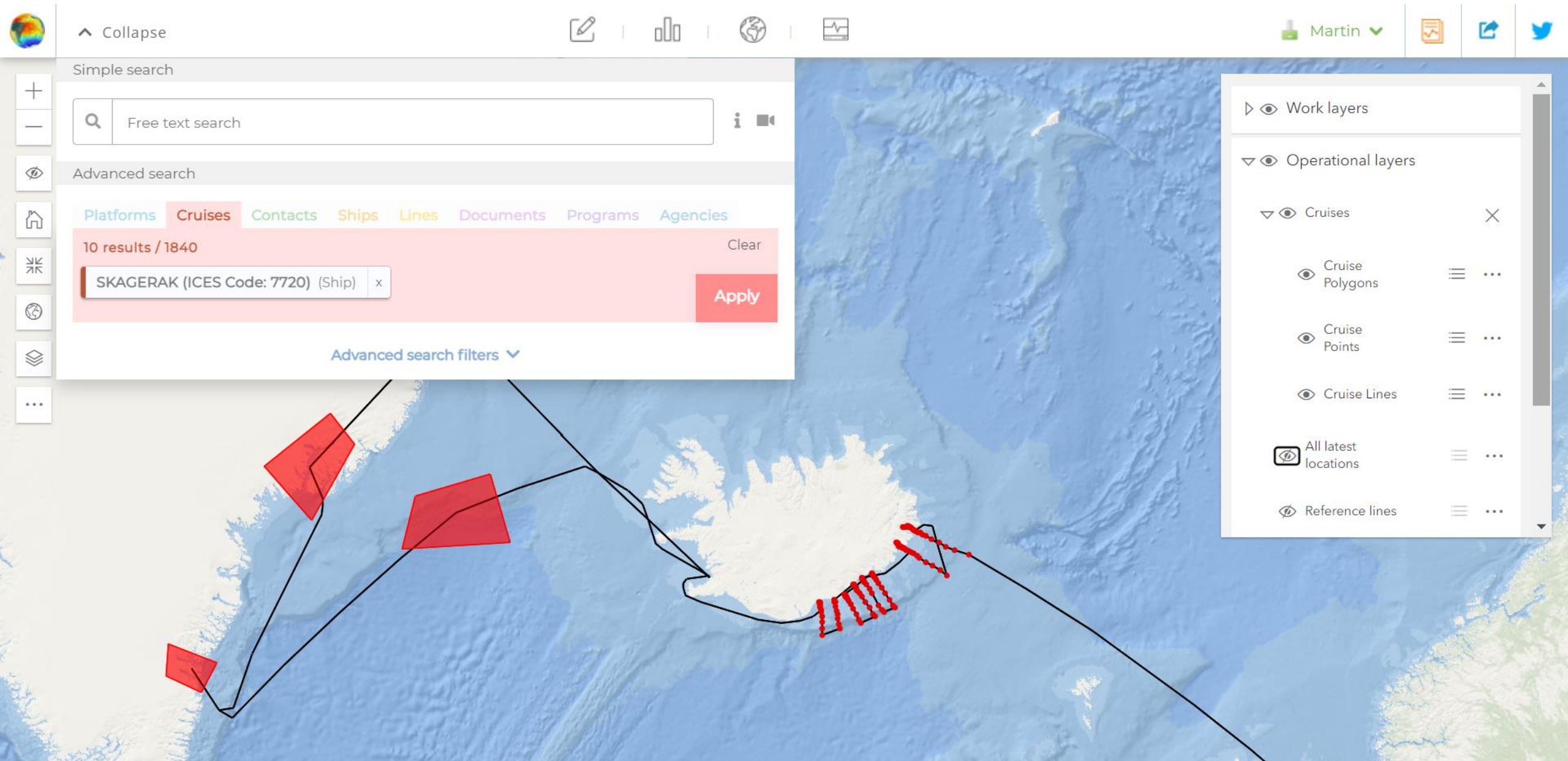


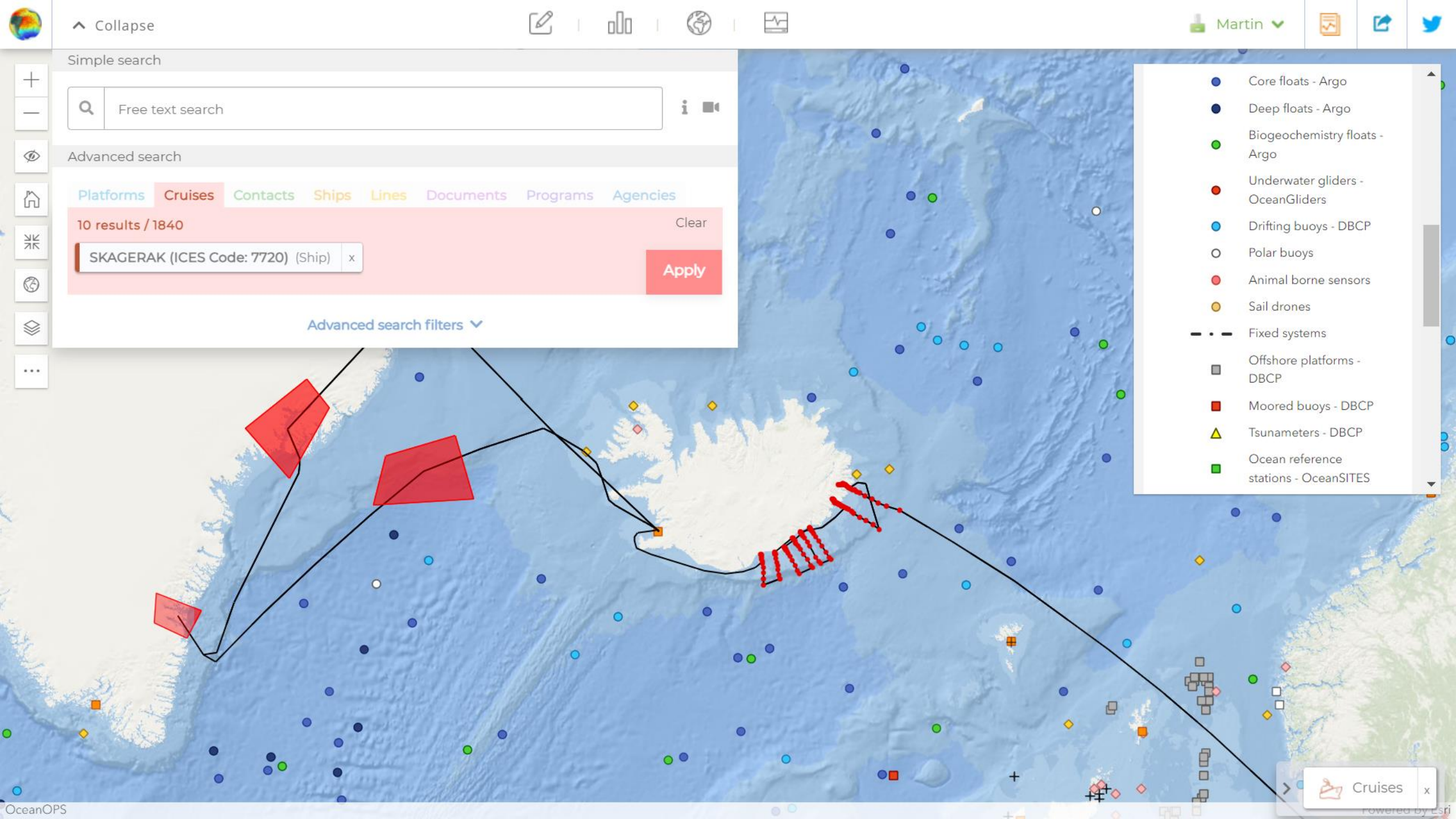
Overlaying Cruise Plans with GOOS Networks: Showcase Deep Argo

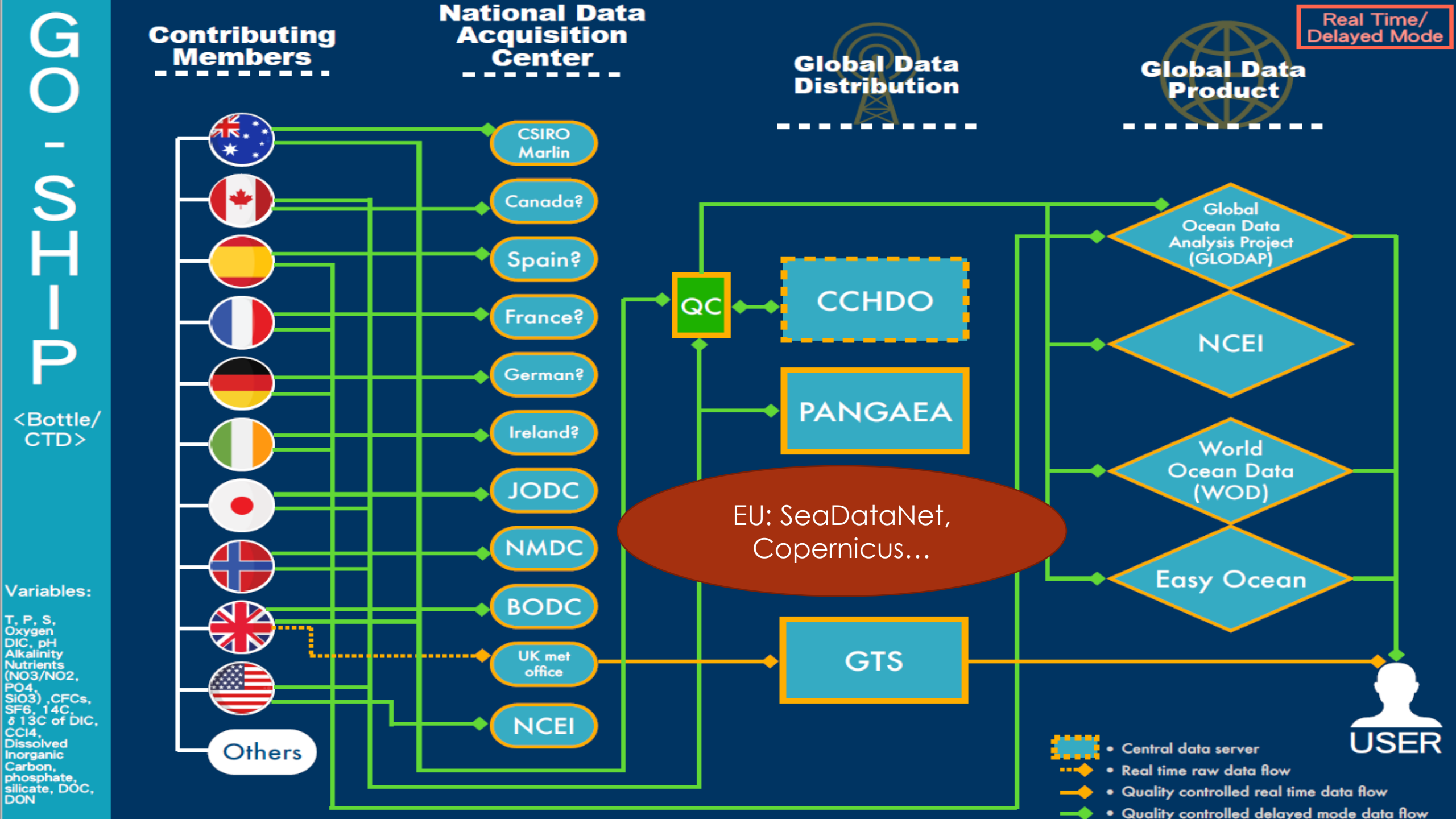



Collapse
Submit
Charts
Maps
Metrics
Martin
Simple search
Free text search
Advanced search
Platforms
Cruises
Contacts
Ships
Lines
Documents
Programs
Agencies
Clear · Load · Save
Argo Deep (Networks)
OPERATIONAL (Status)
Apply
January 1990 - January 2025
Operational only
Country
Argo Deep
Sea region
Variable
Hide filters
Find a filter
General
Observing networks
Name
Reference
Exact match
Status
OPERATIONAL
Country
Program
Agencies
POGO members
Contacts
Roles
Networks
Argo Deep
All latest locations
Reference lines
Reference sites
Other layers
DBCP density
Remove
Change opacity
Change query
5°x5° density
5°x5° density
Global density
DENSITY
Ø
25%
50%
75%
100%
200%
Platforms
Cruises
OceanO

Collecting and Updating of Cruise Plans m2m: Showcase MFP - GU




Collapse
Martin
Simple search
Free text search
Advanced search
Platforms
Cruises
Contacts
Ships
Lines
Documents
Programs
Agencies
10 results / 1840
Clear
SKAGERAK (ICES Code: 7720) (Ship)
Apply
Advanced search filters
Core floats - Argo
Deep floats - Argo
Biogeochemistry floats - Argo
Underwater gliders - OceanGliders
Drifting buoys - DBCP
Polar buoys
Animal borne sensors
Sail drones
Fixed systems
Offshore platforms - DBCP
Moored buoys - DBCP
Tsunameters - DBCP
Ocean reference stations - OceanSITES
Cruises
OceanOPS


GO-SHIP
<Bottle/ CTD>
Variables:
T, P, S, Oxygen DIC, pH Alkalinity Nutrients (NO3/NO2, PO4, SiO3) ,CFCs, SF6, 14C, δ 13C of DIC, CCl4, Dissolved Inorganic Carbon, phosphate, silicate, DOC, DON
Contributing Members
National Data Acquisition Center
Global Data Distribution
Global Data Product
Real Time/ Delayed Mode
CSIRO Marlin
Canada?
Spain?
France?
German?
Ireland?
JODC
NMDC
BODC
UK met office
NCEI
Others
QC
CCHDO
PANGAEA
EU: SeaDataNet, Copernicus…
GTS
Global Ocean Data Analysis Project (GLODAP)
NCEI
World Ocean Data (WOD)
Easy Ocean
USER
Central data server
Real time raw data flow
Quality controlled real time data flow
Quality controlled delayed mode data flow

TRACKING A CRUISE AND EMERGING DATA / METADATA OVER THE FULL LIFECYCLE

- Suggested: Idea to apply for shiptime at later stage
- Planned: Application process is underway
- Confirmed: Application was successful
- At sea: Cruise is underway
- Completed: Cruise finished
- Submitted: Data flow to DAC and GDAC successfully
- Uptake: Data being used in products/publications

A FULL LIFETIME UNIQUE CRUISE ID

- Allocated by OceanOPS, based on approved Argo/Drifter/SOT system
- 10 characters not including any further semantik
- Reminder: Expocode not available before departure; DOI overkill given that many cruises are only suggested but never confirmed
- PIs could continue with internal codes – Data managers match incoming data with the different IDs
- CSR and other IDs could be based on the OceanOPS ID
- Concept approved by key data producers (GO-SHIP) and users (GLODAP)

ALLOCATION OF THE CRUISE ID

- Use the OceanOPS dashboard / GUI for online edits
- Use a csv file and upload cruise metadata
- Use the OceanOPS API
- Use the MFP synchronization protocol

It can start with a very simple metadata set many years in advance;

« GO-SHIP A 25 France 2027 »

Metadata then become richer as time goes by: Ship, CS, variables...

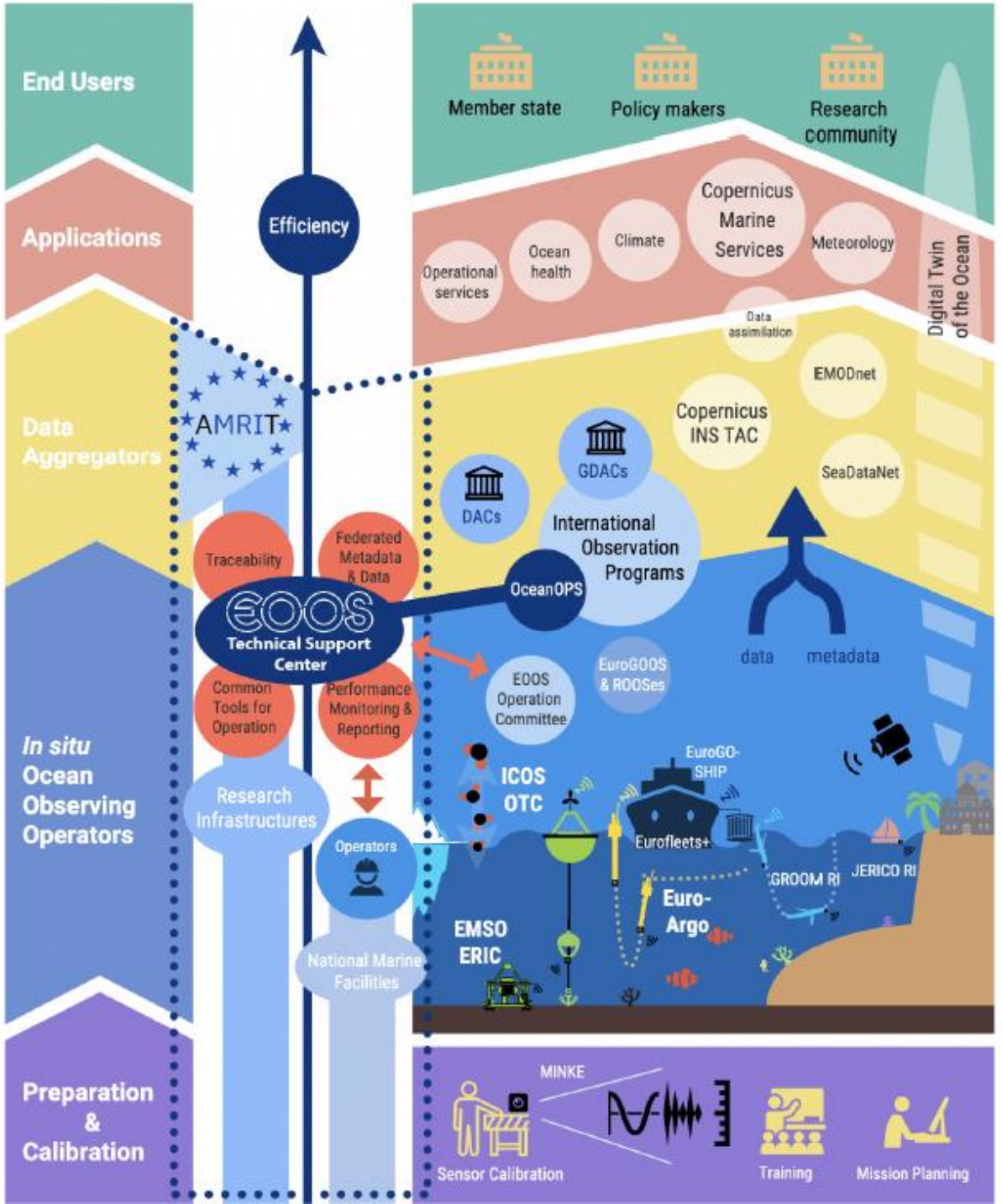
EU HORIZON PROJECT **AMRIT:** ADVANCE MARINE RESEARCH INFRASTRUCTURES TOGETHER

26 Partners, including ERICs (Euro-Argo, ICOS, EMSO) and MRIs like JERICO, Eurofleets+, GROOM, and later EUMR2, MINKE and EuroGO-SHIP; WMO/OceanOPS

1. better support research with an improved flux of ocean data;

2. function as truly integrated components of EOOS and, ultimately, GOOS;

3. better support the Copernicus Marine Service.



AMRIT TASK 8.3: CONNECT R/V NATIONAL FLEET SCHEDULES, AND MANAGEMENT METADATA TO THE CENTRAL SYSTEM

Lead: WMO; Partners: CNR, CSIC, Ifremer, KDM, MI, NIOZ, NOC

"*The national R/V information nodes will develop and implement APIs, following the overarching API design recommendations, to connect to the federated metadata system or adapt their current management system (e.g., Marine Facility Planning, MFP) as needed. Particular attention will be given to the geographical information of the planned cruise tracks through Open Geospatial Consortium (OGC) standards and introduction of PIDs for cruises*."

DISCUSSION

- Pros and Cons Cruise ID
- Visibility of RVs in GOOS/OCG, with IRSO as « network »?
- Sharing Cruise Plans with OceanOPS; role of IRSO ?

Goal beyond « FAIR » Data:

Show full scope/performance of a cruise (incl. piggybacks), exploit maximum of synergies, share costs (incl. environmental footprint)

THANKS!

MKRAMP@OCEAN-OPS.ORG