Ocean Sciences using Ocean Observing Platforms

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Presentation layout

- Ocean observing instruments
- Linking the coast to offshore regions
- How can you get involved?

Ocean Observing Instruments

{Ian Walsh}

1 Float deployment

2 Descent to drifting depth

3 Drifting 10 days

4 Descent to profiling depth (2000 - 6000m)

5 Ascent: measuring Essential Ocean Variables

6 Data transmission

7 Starting next cycle

Argo data

0m

Drifting depth 1000m

Profiling depth 2000m

e.g measure 1

e.g measure 2

0

500

1000

1500

2000

Depth (in m)

Temperature (in °C)

Salinity (in psu)

© Thomas Haessig

But what other ocean observing instruments are there?

?

OCEAN OBSERVING INSTRUMENTS

Surface and / or Met-Ocean - linked to **Ships Observation Team (SOT)**

OCEAN OBSERVING INSTRUMENTS

Surface - linked to **Global Sea Level Observing System (GLOSS)**

Sea level data are vital for

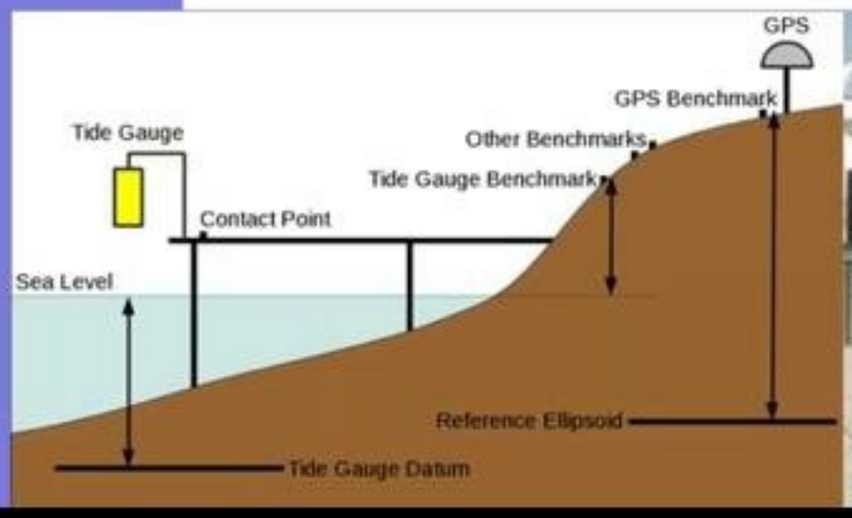
Research into sea level change and ocean circulation

Coastal protection during events such as storm surges

Providing flood warning and monitoring tsunamis

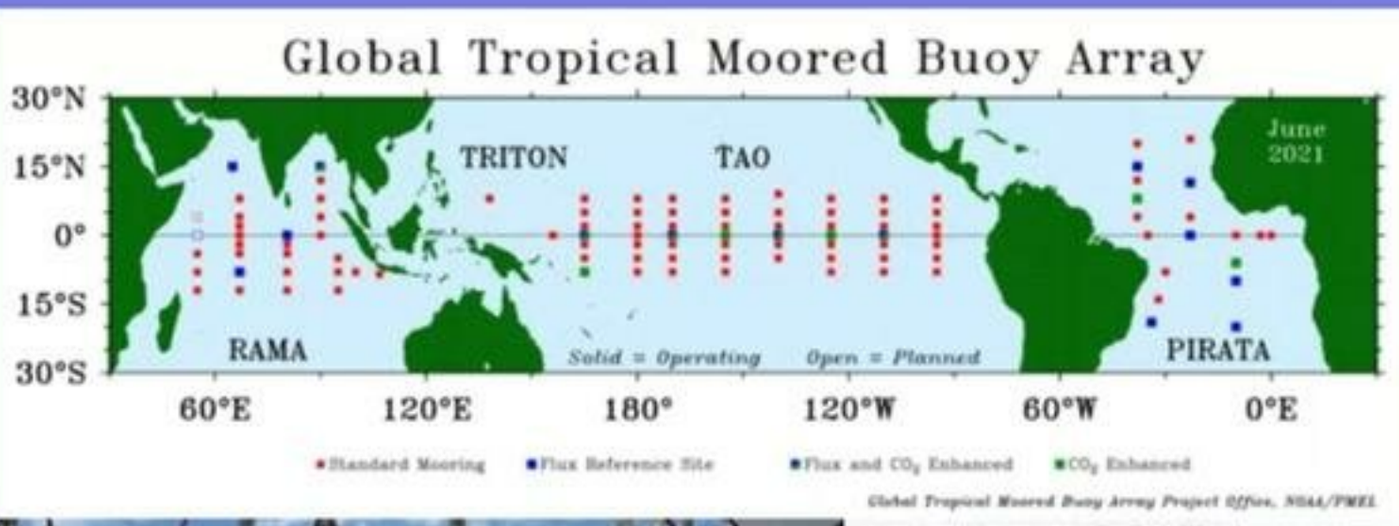
Tide tables for port operations, fishermen, and recreation

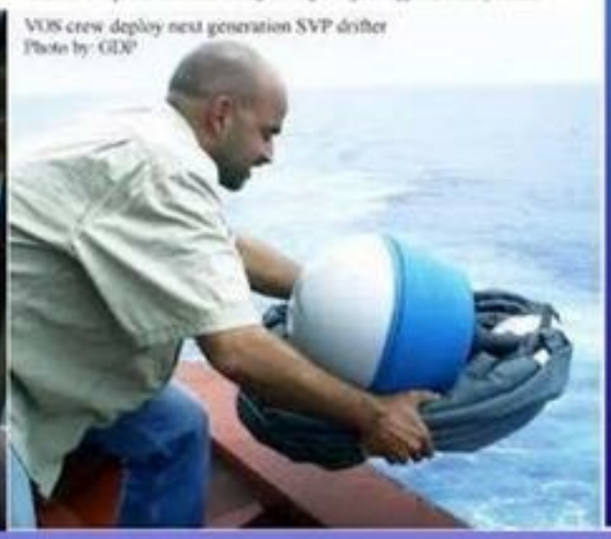
Defining datums for national or state boundaries

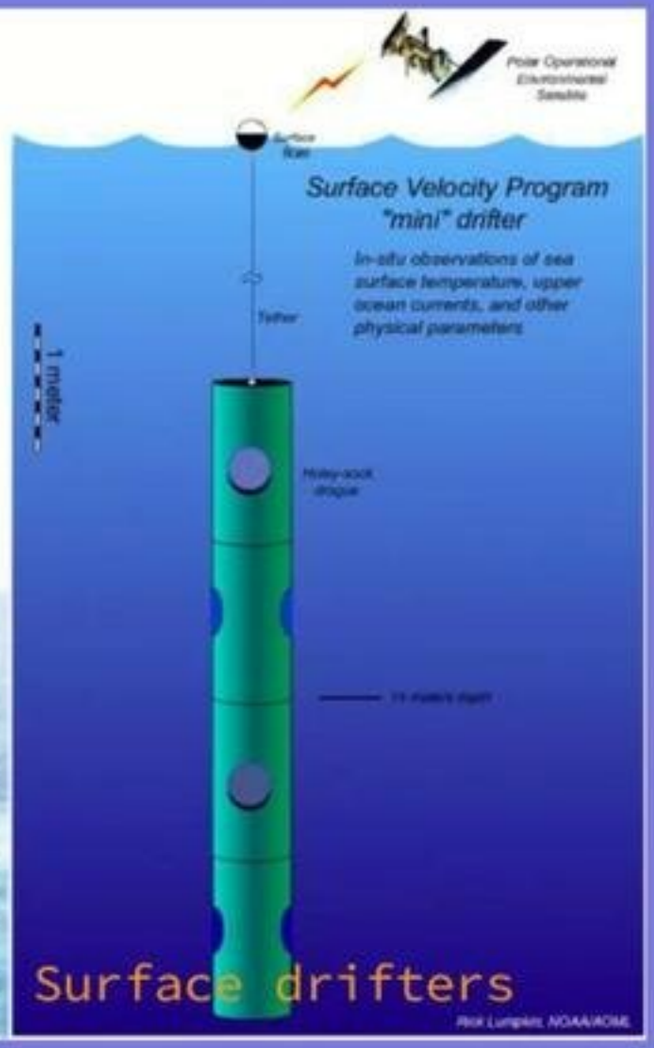


OCEAN OBSERVING INSTRUMENTS

Surface and / or Met-Ocean - linked to **Data Buoy Cooperation Panel (DBCP)**

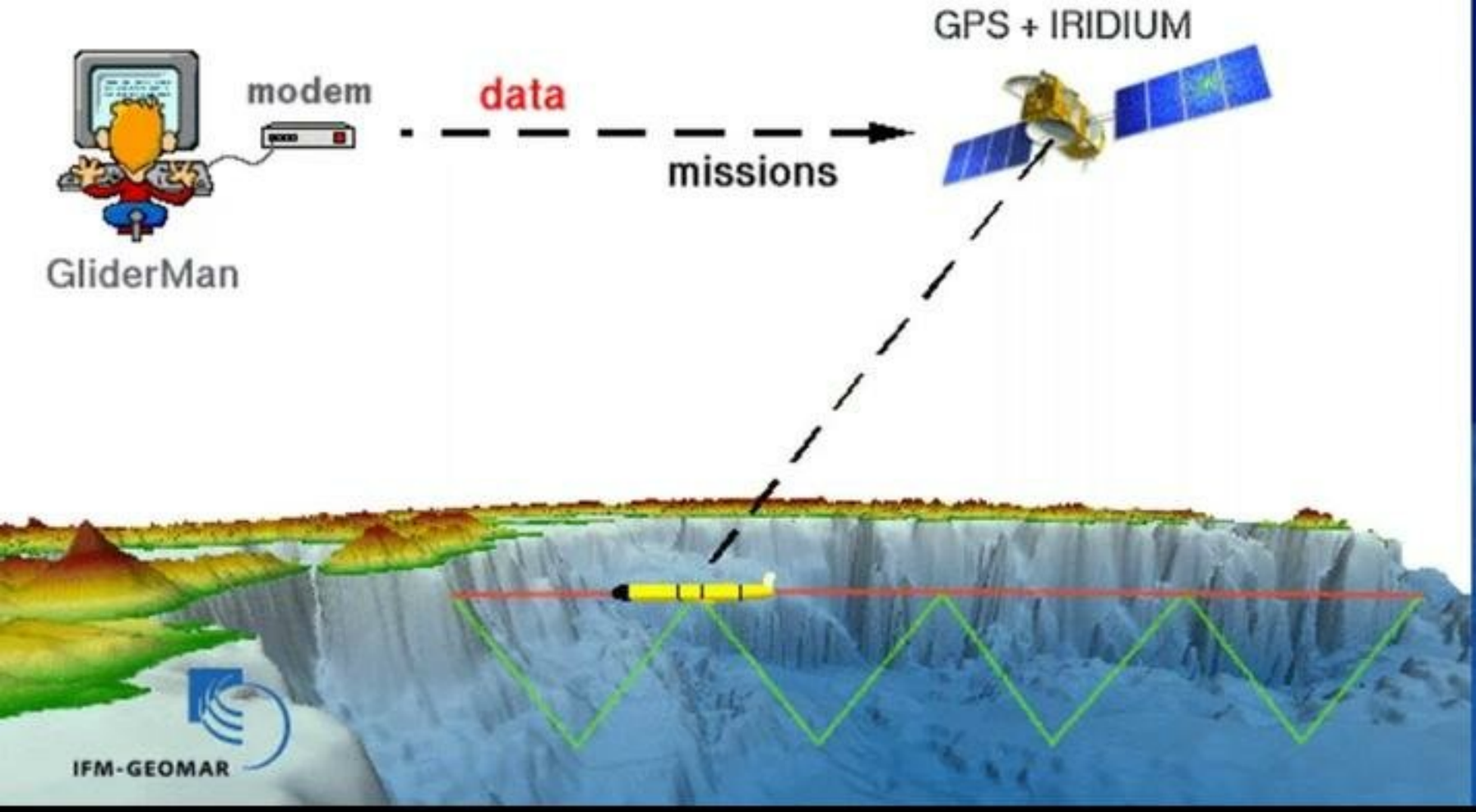






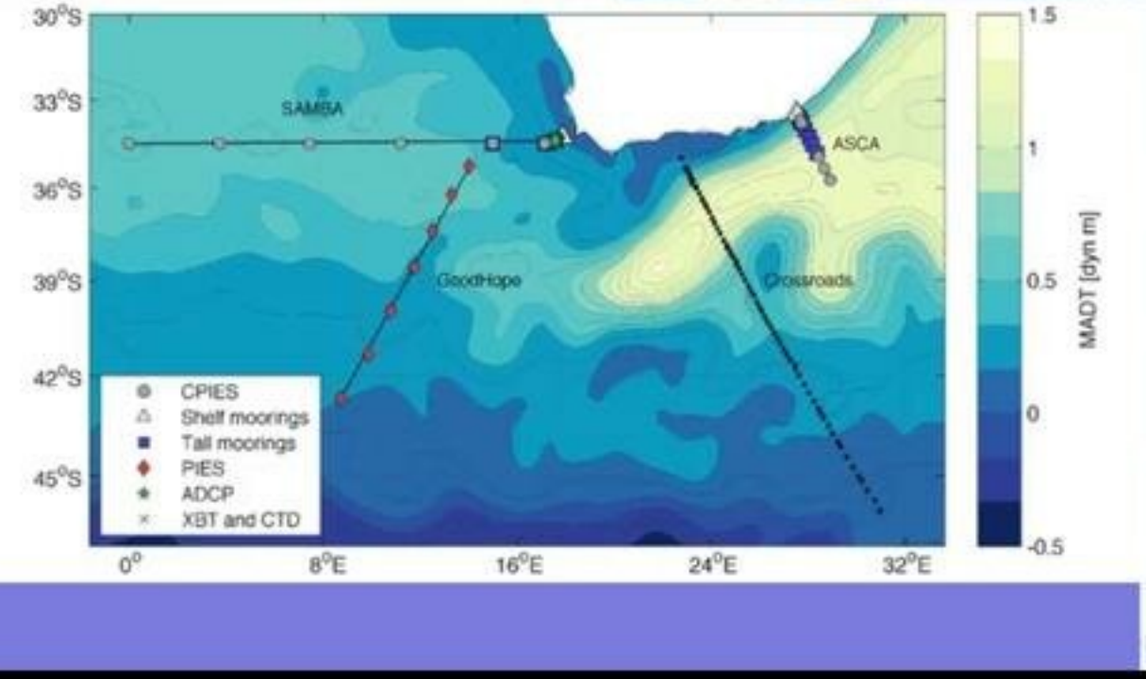
OCEAN OBSERVING INSTRUMENTS

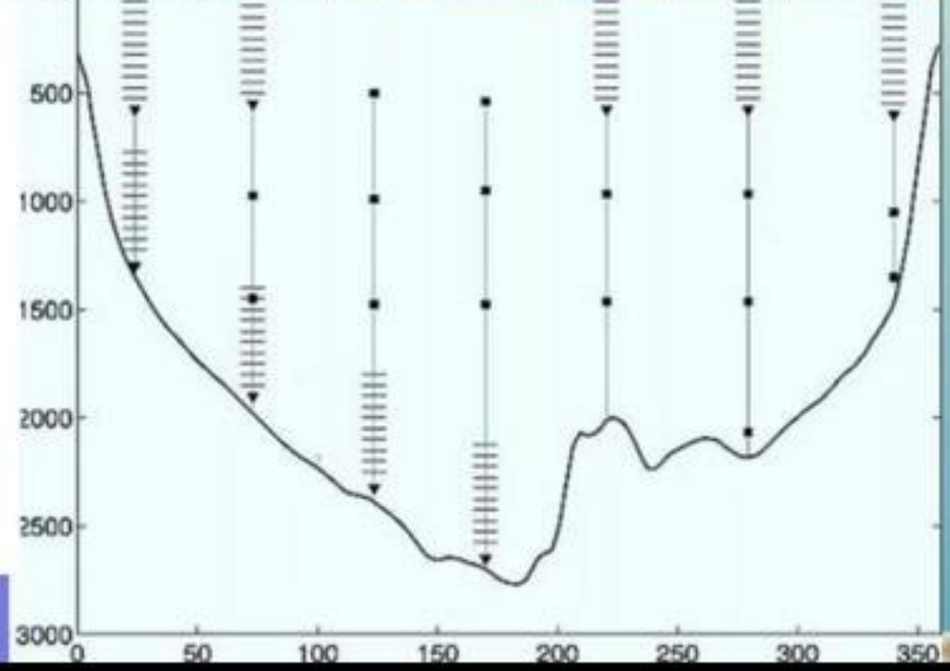
Sub-surface - linked to **OceanGliders**



OCEAN OBSERVING INSTRUMENTS

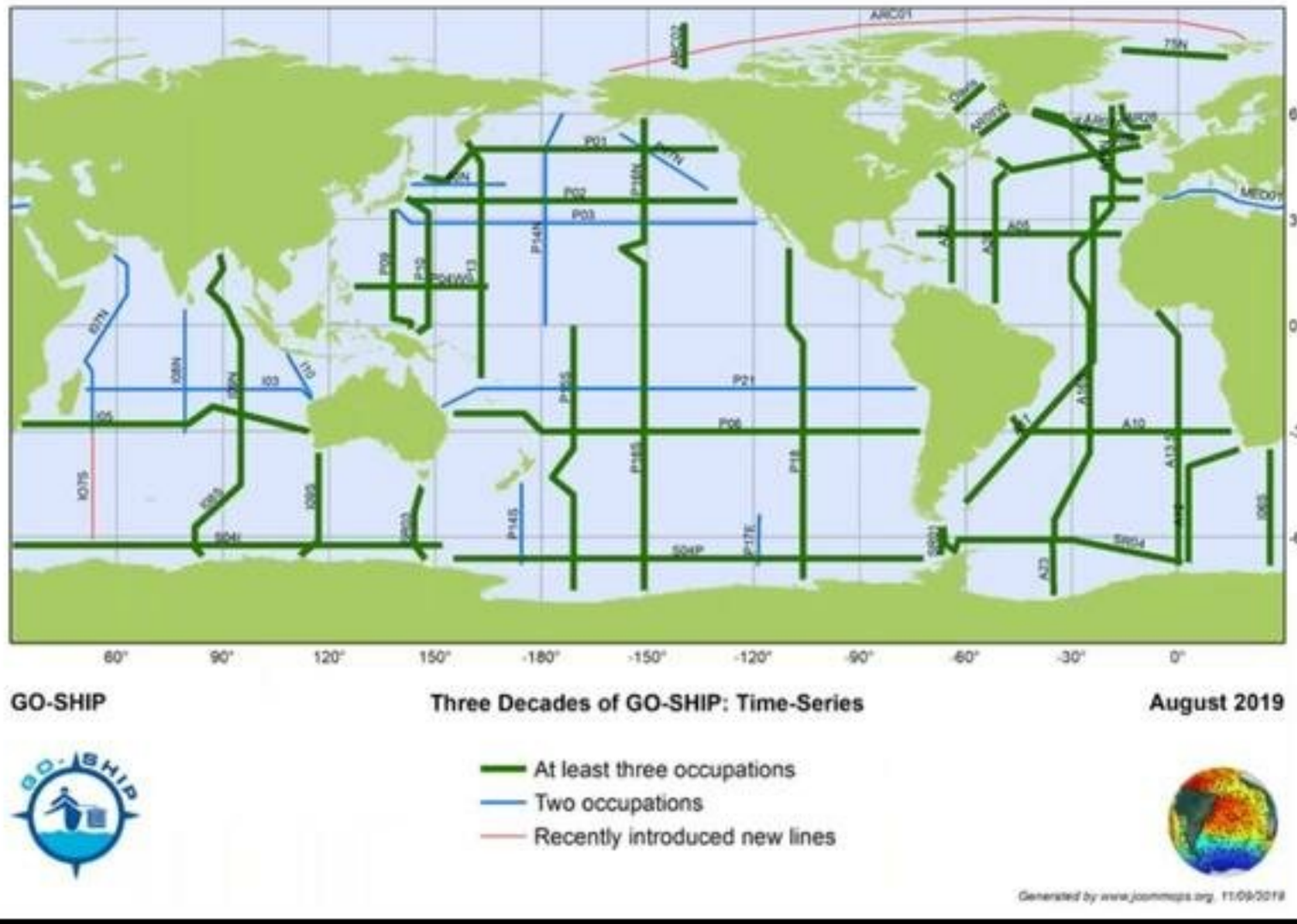
Sub-surface - linked to **OceanSITES**





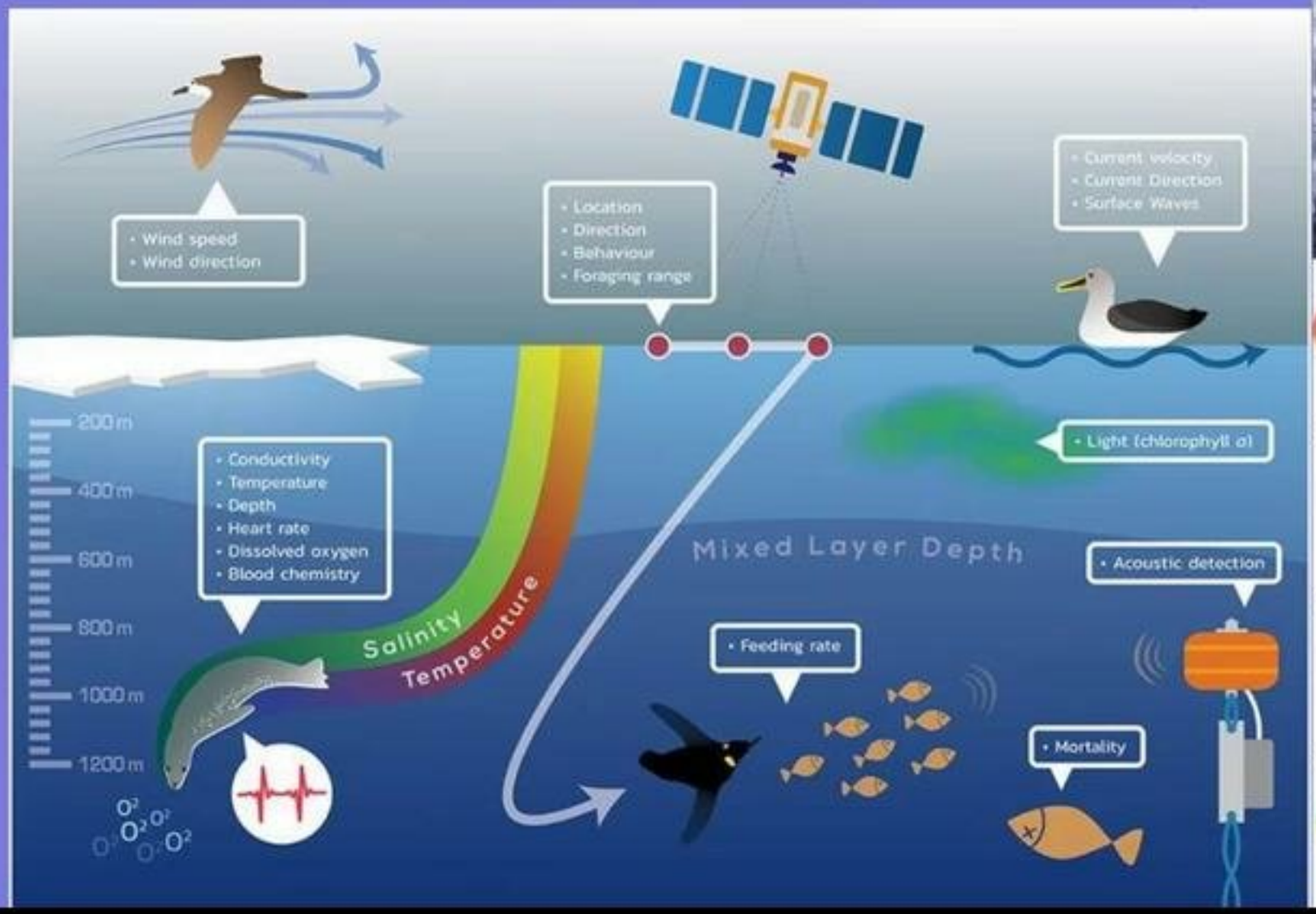
OCEAN OBSERVING INSTRUMENTS

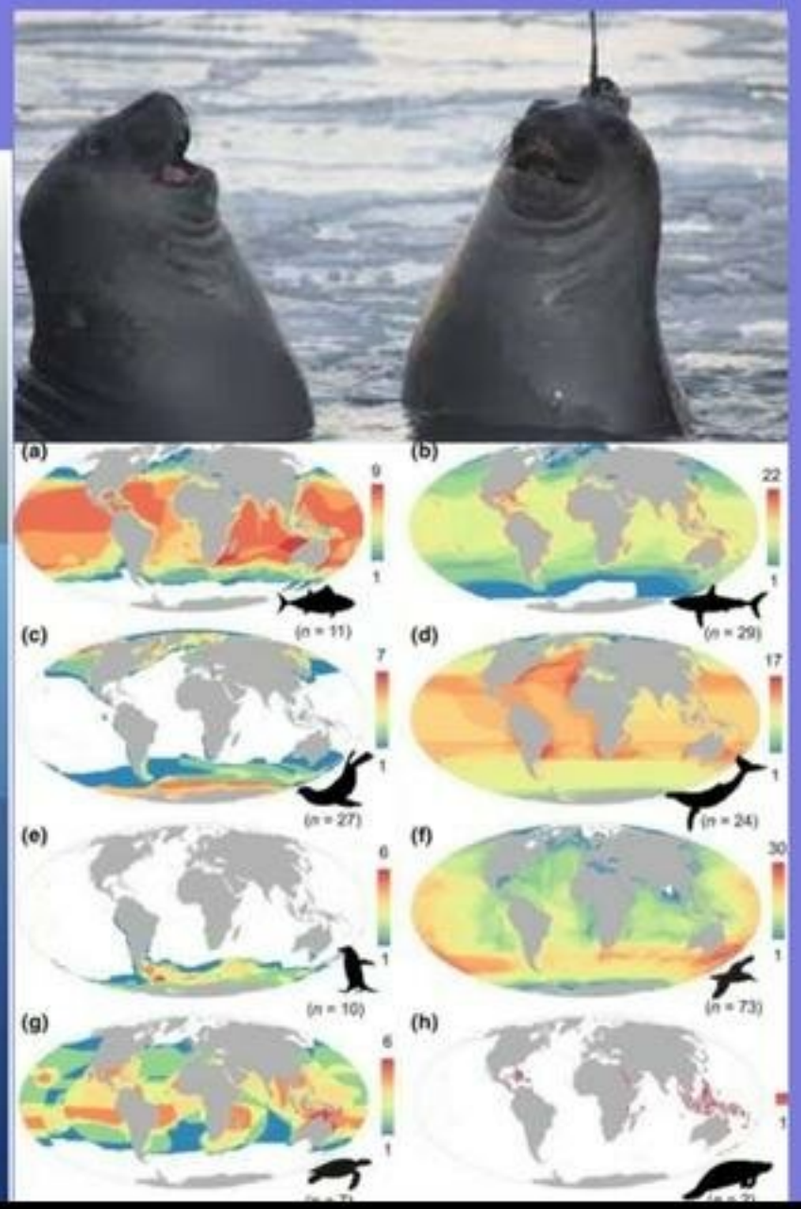
Sub-surface - linked to **GO-SHIP**



OCEAN OBSERVING INSTRUMENTS

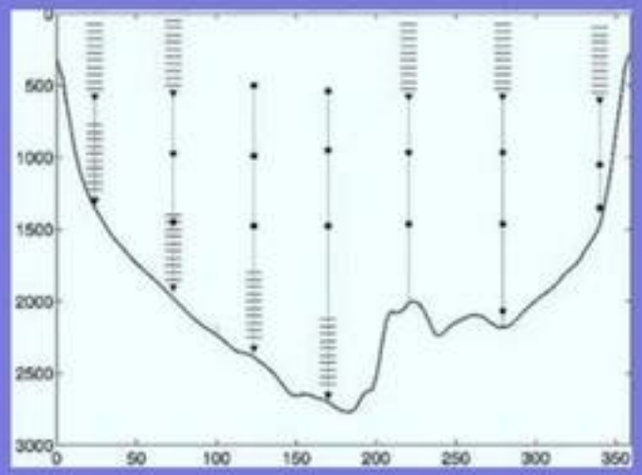
Sub-surface - linked to **AniBOS**



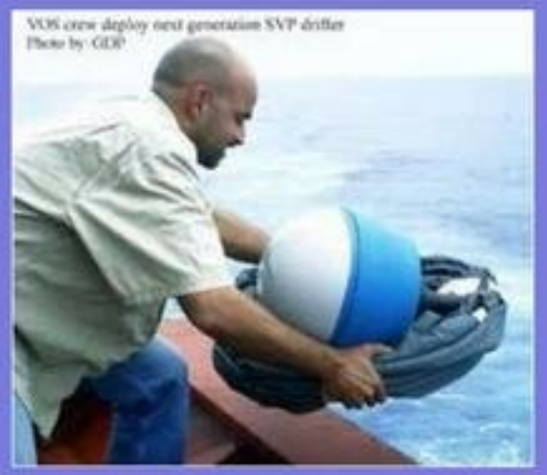


From the coast to offshore - established ideas

Gliders



Moorings



Drifters

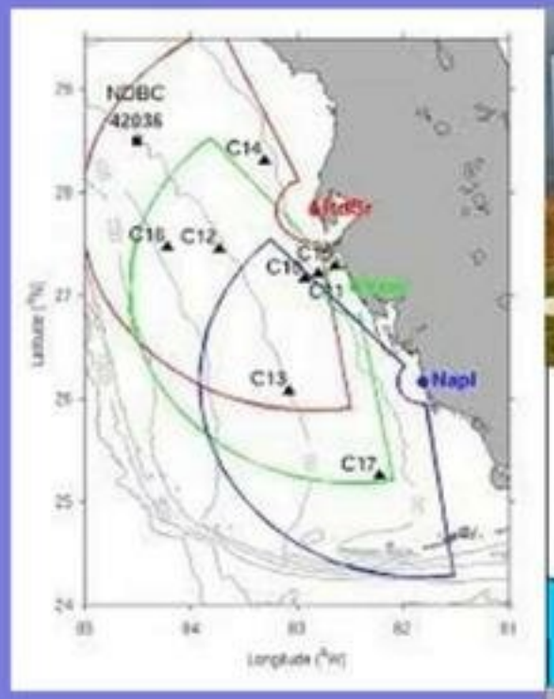
Ship-based

Argo floats are trickier as they require changes to mission parameters to capture data shallower than 2000 m

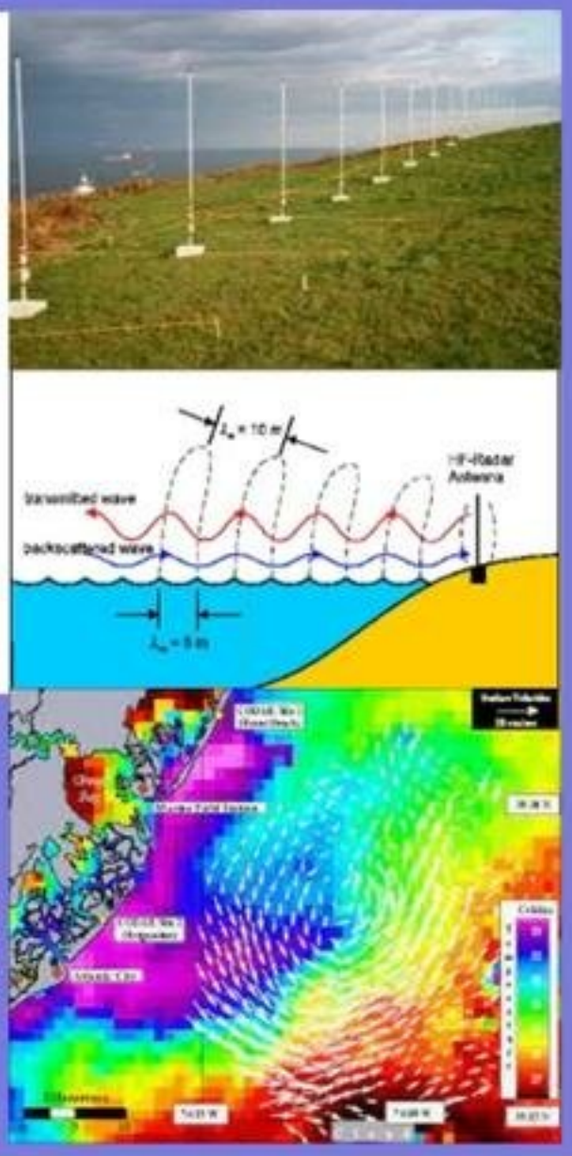
- AWS and upper air
- XBT, TSG, PCO2
- CTD surveys
- CPR tows
- Etc etc

From the coast to offshore - emerging ideas

Saildrone - commercial company



HF Radar



How can you get involved?

International Context

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

UN environment

International Science Council

The Global Ocean Observing System

Project Office

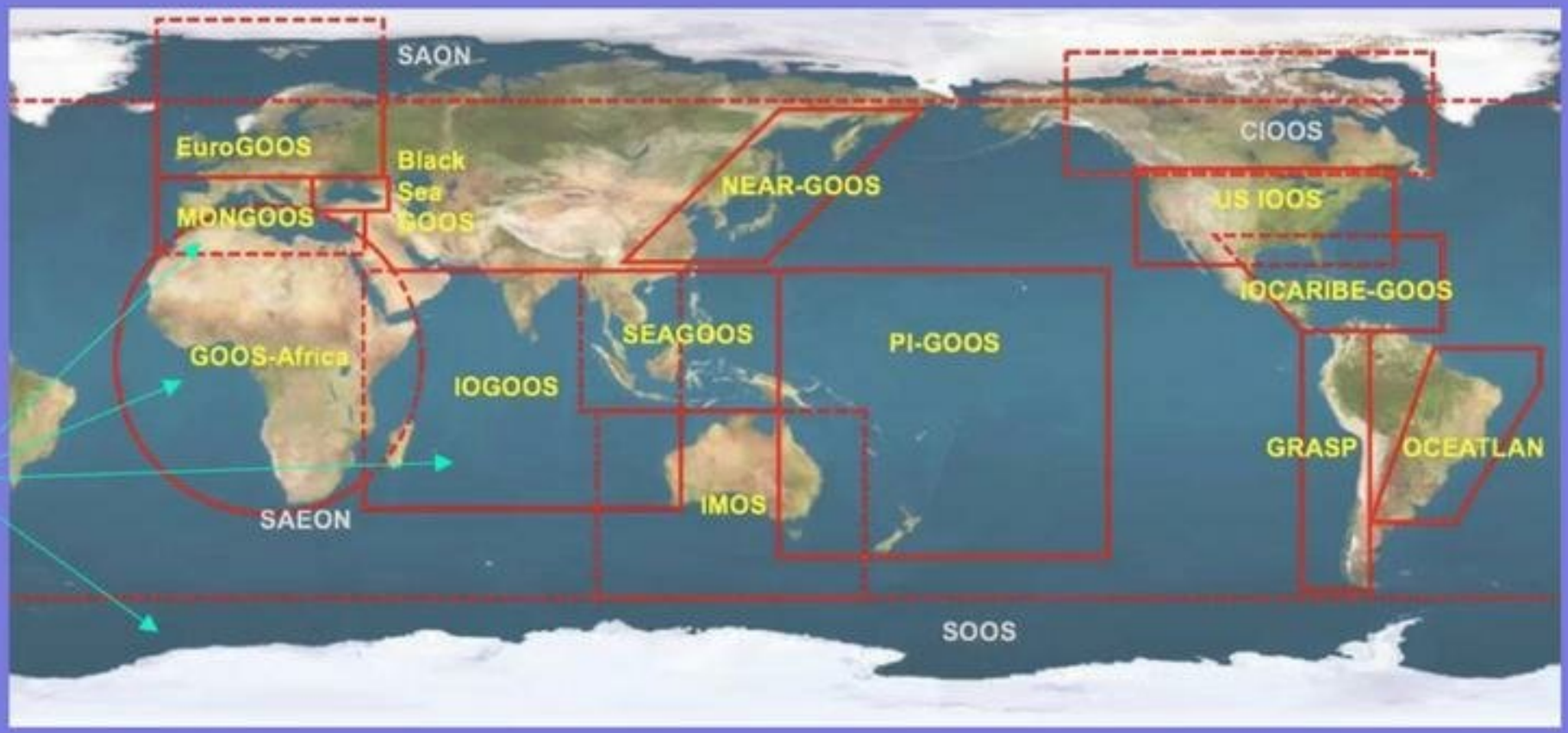
https://www.goosocean.org/

Multinational **Steering Committee** to provide oversight

Scientific **Expert Panels** to guide system requirements

Observations Coordination Group that implement global unified network execution

GOOS Regional Alliances (GRAs)



GRAs are coalitions of nations and/or institutions which share GOOS principles and goals, but are mostly concerned with local priorities and organized around regional seas or coastal environments.

GOOS Resources

https://www.oceanbestpractices.org/

GOOS Webinar series on Boundary Currents, but also Ocean Info Hub and various data repositories of ocean observing systems

https://www.goosocean.org/index.php?option=com_content&view=category&layout=blog&id=32&Itemid=444

Ocean Coordination Group

(which has an executive team to drive collaborations, ocean best practices, capacity development, etc)

The Global Ocean Observing System

Ocean Coordination Group

(which has an executive team to drive collaborations, ocean best practices, capacity development, etc)

Ocean observing network:

OneArgo, DBCP, SOT, GLOSS, OceanSITES, OceanGliders, GO-SHIP, HF Radar, AniBOS

OceanOPS

Collate metadata
Loading of potential cruises for deployment opportunities
Maintaining the global networks

Data portals

Prepared for and made available by the ocean observing networks themselves
Some are more advanced than others

The Global Ocean Observing System

(which has an ... s, capacity

ALL DATA COLLECTED THROUGH THE OCEAN OBSERVING NETWORKS HAS TO BE MADE FREELY AVAILABLE FOR EVERYONE TO USE!

OneArgo, DB ... kadar, AniBOS

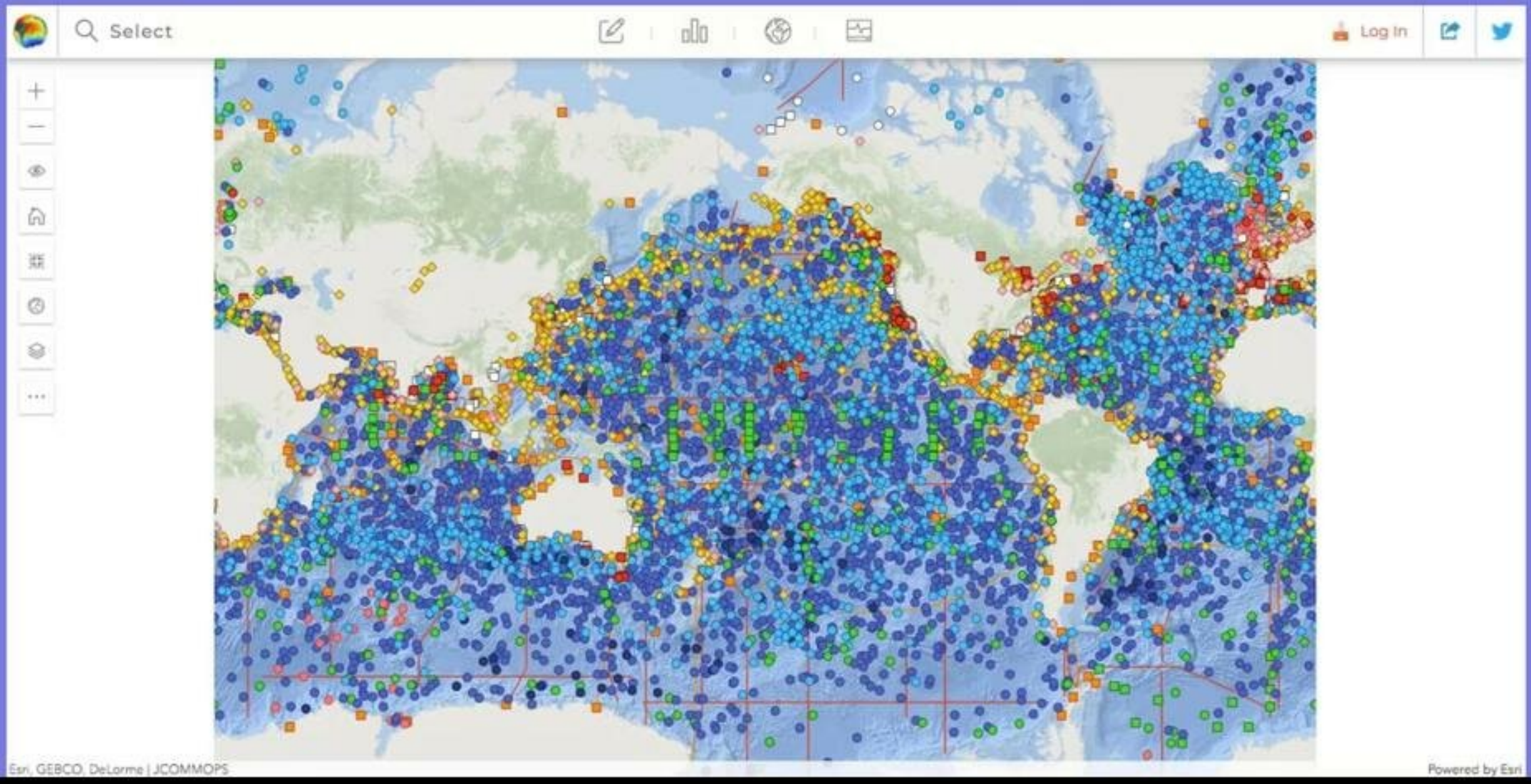
Collate met...
Loading of potential cr... for
deployment opportu...
Maintaining the globa... tworks

...portals

...red for and made available by the
...cean observing networks themselves
Some are more advanced than others

OceanOPS

https://www.ocean-ops.org/board



OceanOPS

Discovering the interface: https://youtu.be/kTK45zY8K0k

Checking my fleet: https://youtu.be/Mhp66mM8SVQ

Filtering by EOV / Basin: https://youtu.be/zgPXNvOIAAo

Filtering by variables / depth: https://youtu.be/-raxYBdJPwY

*Submitting a cruise record: https://youtu.be/wgA4LNOiVnI

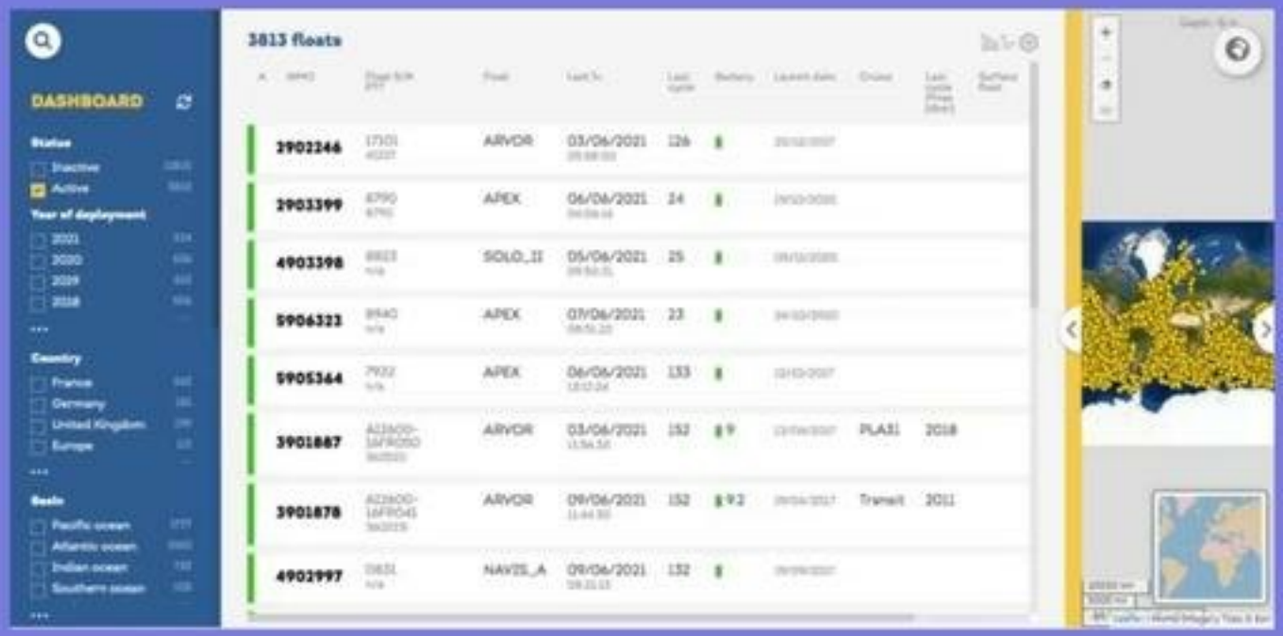
*Comparing (instrument) model performance: https://youtu.be/fqMCktLPd3M

Data Portals

For Argo {Ian Walsh presentation}
https://dataselection.euro-argo.eu/
https://fleetmonitoring.euro-argo.eu/dashboard

For SOT
AWS and Upper air data from vessels of opportunity goes directly to the GTS. However, XBT data can be found here:
https://www.aoml.noaa.gov/phod/hdenxbt/index.php
http://www-hrx.ucsd.edu/links.html

For GLOSS
http://www.ioc-sealevelmonitoring.org/list.php
http://www.ioc-sealevelmonitoring.org/list.php
https://www.psmsl.org/data/high_frequency/table.php



Data Portals

For DBCP

Drifters:

https://www.aoml.noaa.gov/phod/gdp/real-time_data.php accessible through https://www.osmc.noaa.gov/

https://www.aoml.noaa.gov/phod/gdp/interpolated/data/all.php

https://www.aoml.noaa.gov/phod/gdp/hourly_data.php - use this one!!

(Falls under DBCP and OceanSITES)

Equatorial moorings:

http://www.oceansites.org/tma/index.html

For OceanGliders

Very limited regions where data is available:

- Coriolis gliders data sets on ERRDAP : http://www.ifremer.fr/erddap/tabledap/OceanGlidersGDACTrajectories.graph
- IOOS gliders on ERRDAP : https://gliders.ioos.us/erddap/search/index.html?page=1&itemsPerPage=1000&searchFor=glider
- IMOS web portal : https://portal.aodn.org.au/search

Data Portals

For GO-SHIP
https://www.go-ship.org/DataDirect.html - entire data directory listed under variables

For AniBOS
The AniBOS portal is still being developed, so data is available at MEOP:
https://www.meop.net/

Emerging networks and others…
https://www.sofarocean.com/
https://www.saildrone.com/

Lastly...

Get involved!

The networks are open platforms where groups can get involved. South Africa does not have the resources to purchase loads of instruments, but we deploy for other teams and countries in our waters, increasing our observations whilst assisting global observations. We train our technicians on the instruments, we use the data for research.

Contact the OceanOps team: support@ocean-ops.org

Contact us in South Africa: tamaryn.morris@weathersa.co.za and we can help put you in touch too!

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