Ocean Observing Co-Design

by The Global Ocean Observing System

Transforming our ocean observing system assessment and design process

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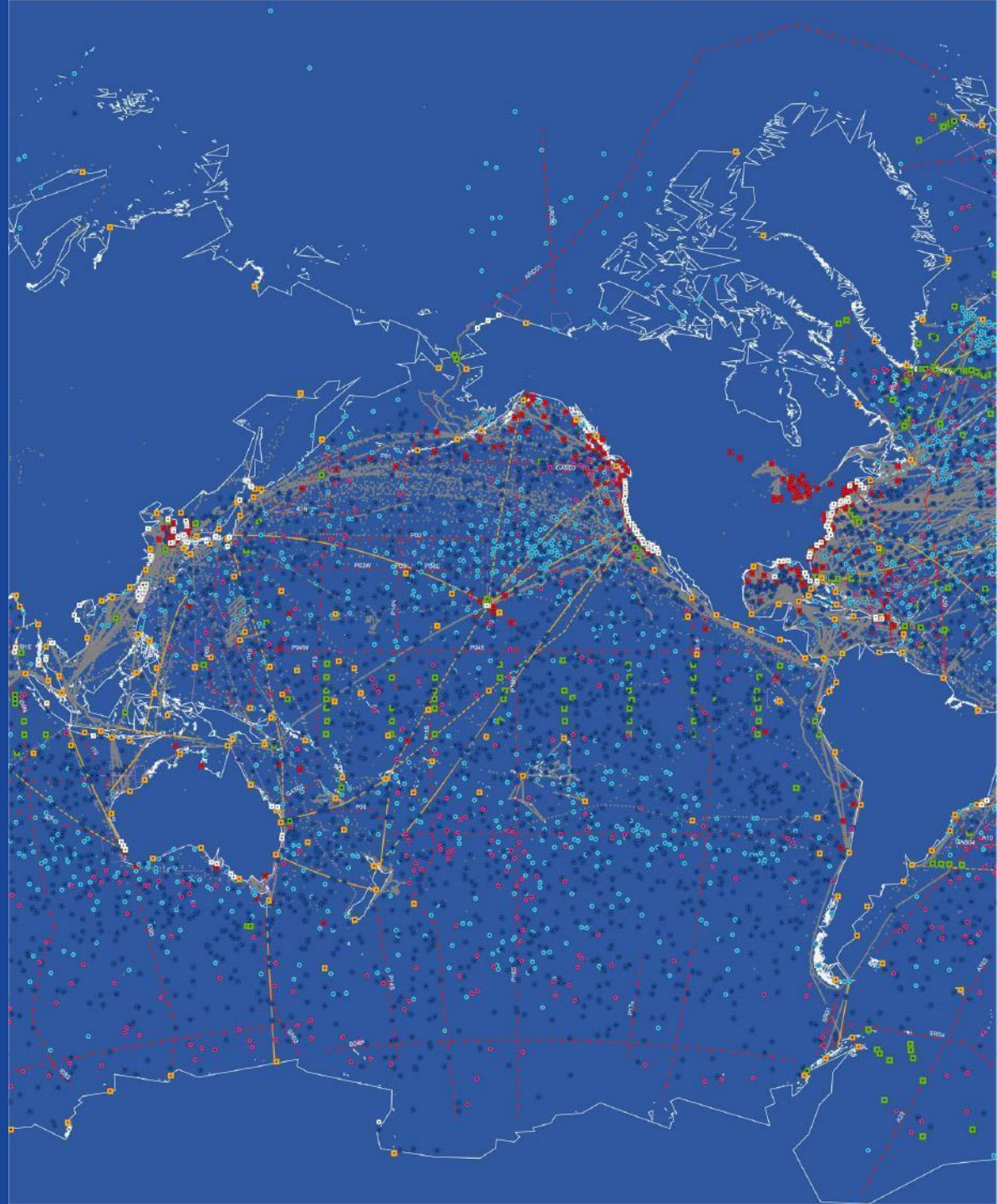
Programme support: Andrea McCurdy, Ocean Leadership; Mairéad O'Donovan, GOOS - IOC UNESCO; Ann-Christine Zinkann, NOAA



This programme is endorsed by the **UN Decade of Ocean Science**

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

“Ocean Observing Co-Design will develop a more **user-focused co-design process** to evolve a truly **integrated, responsive ocean observing system**.

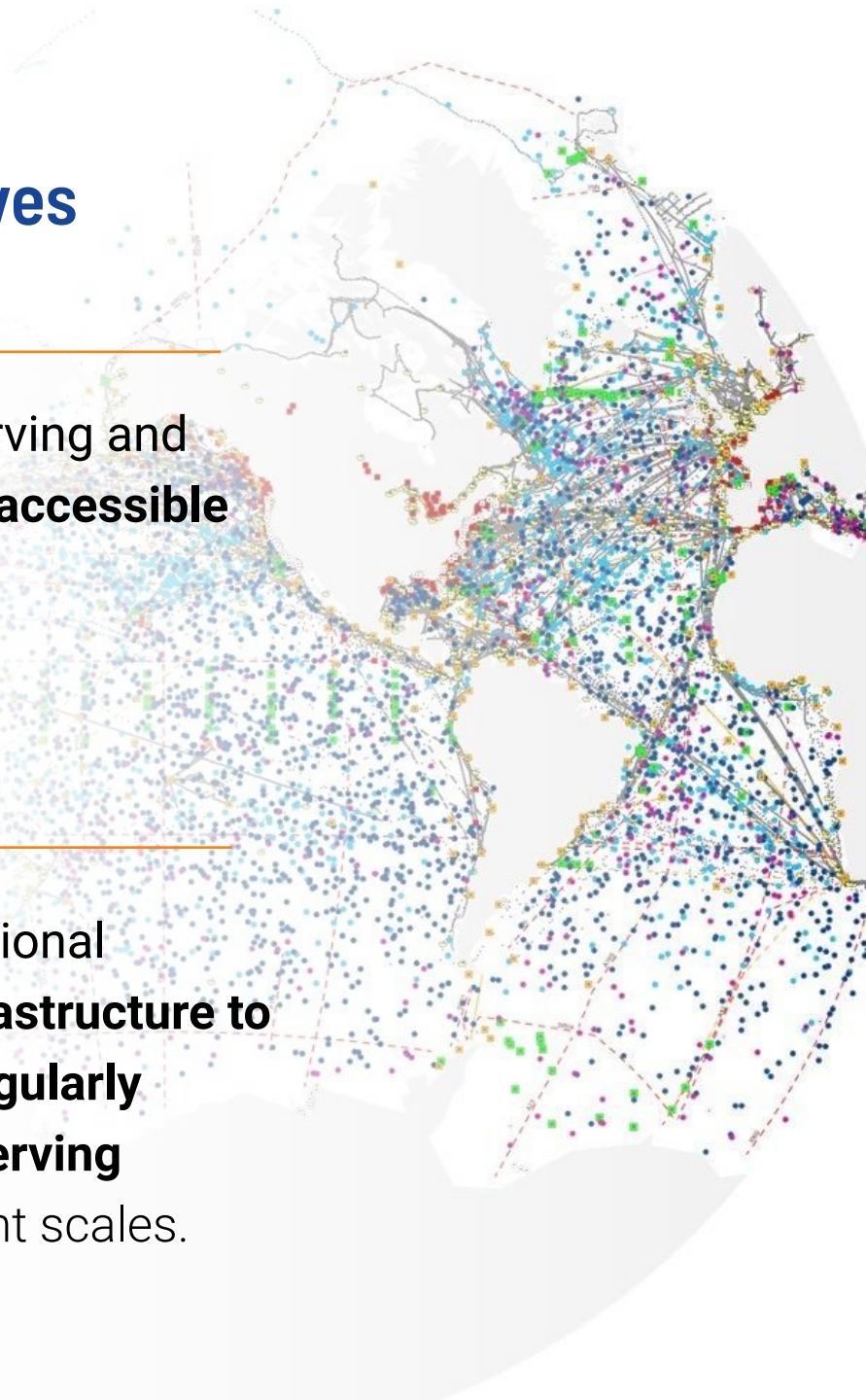
Ocean Observing Co-Design Programme objectives

1. Provide national government funders the **information needed to target investment globally, regionally and locally**.

2. Make ocean observing and information more **accessible and impactful**.

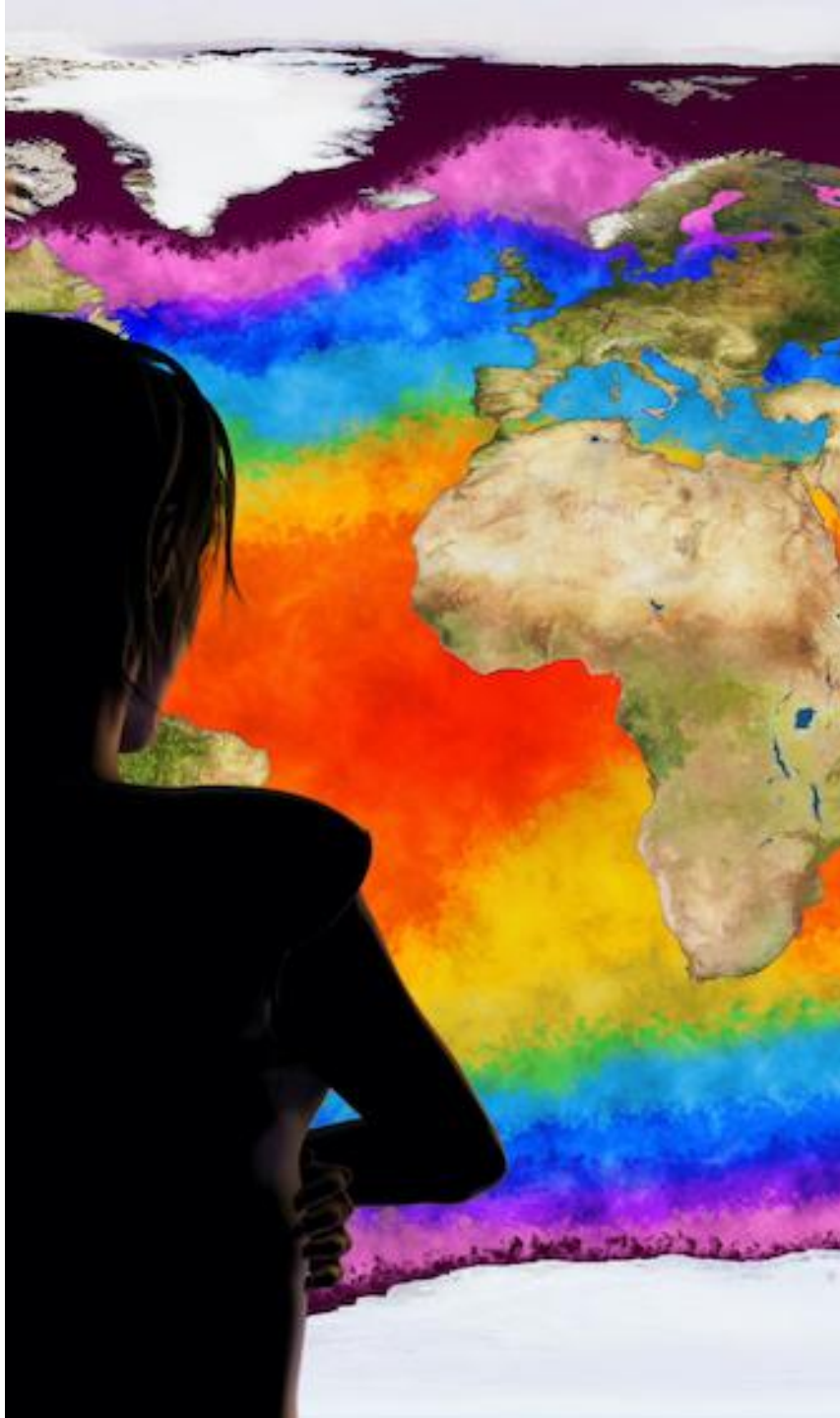
3. **Develop system diagnostics, tools and reporting capability** to better assess fitness-for-purpose across evolving requirements and use-inspired needs.

4. Establish international **capacity and infrastructure to co-design and regularly evaluate the observing system** at different scales.



PROGRAMME BENEFITS

- Better track the **current state** and **future variability** of the ocean
- **Predict** and **warn** more skillfully
- **Manage** ocean resources and **assess** the impact of action towards a sustainable ocean
- **Empower** society to adapt to change
- **Incentivise investment** to lift the ocean observing system in key exemplar area
- **Look at a problem holistically** - integration along the chain from implementers to users



Exemplars – how they work

CO-DESIGN: a continuous, collaborative, iterative process involving all stakeholders - observing system implementers, data managers, modeling/assessment, service providers & / or users

> focus on specific user groups

> map value chain & evaluate existing connections to identify appropriate level of 'user' to participate in co-design

> elevate collaboration with existing elements of the value-chain i.e. ocean observing system components / modelling / services

> co-develop observing system design, assess Return On Investment

> develop recommendations for addressing gaps in the value-chain

↓

Develop best practices

↓

Implement recommendations as part of GOOS infrastructure

tools that track, evaluate, and communicate recommendations

Start with Co-Design Exemplar Projects

Improving carbon data
to inform climate targets, such as net zero.

Advancing cyclone forecasting
to save lives and property.

Monitoring marine life
to forecast impacts of climate change on living marine resources and coastal communities.

Improving storm surge predictions
to minimise impacts on vulnerable communities and natural resources.

Monitoring marine heatwave impacts
to ensure food security, protected areas management, tourism, climate and weather services.

Observing key current systems
which are critical drivers of the global climate and fisheries productivity.

Focus on key areas of societal need

Lift data delivery and impact

Develop practice, expertise and tools for co-design

WORKSHOP JUNE 2022 LEARNINGS

- Resourcing co-design processes incl. effective engagement with users
- Paradigm shift away from conventional measure of scientific success
- Demonstrate benefits to society
- Optimising observations to address user needs
- Collaboration across the value-chain

Develop strong benefit statement (supported through economic impact analysis where possible)

Boundary Currents are a critical underlying drivers that border ocean basins and can be either **highly energetic** contributing to the **global climate system**, or **productive** and **rich in fisheries**, critical to **food security globally**.

Boundary Current Exemplar

Enage stakeholders and characterize interactions

- **Methods** to ensure **full representative** of stakeholders
- Document requirements
- Design in **feedback loops** and **trusted and sustained flows of information** for iterations on platform design, data exchange, needs
- Seek funding opportunities to allow for **compensation**

Thoughts from multiple exemplars

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Develop value chain; identify stakeholders

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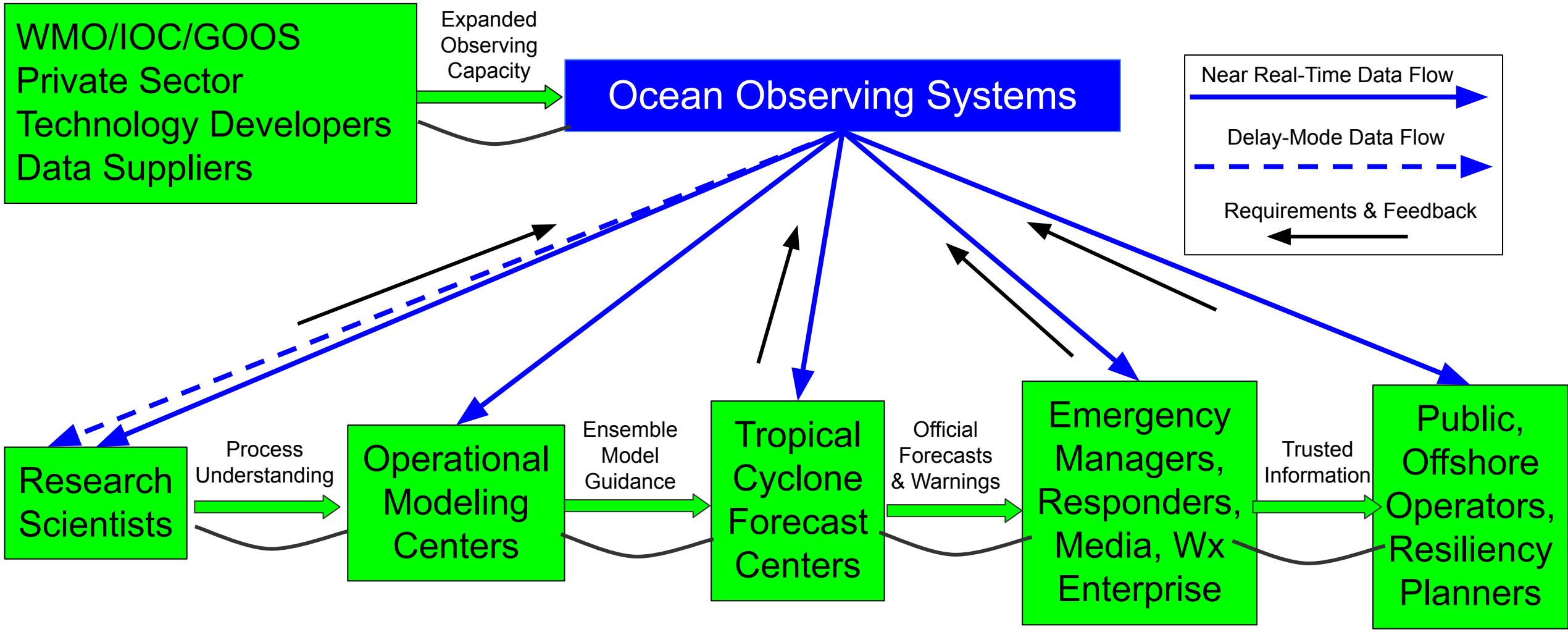

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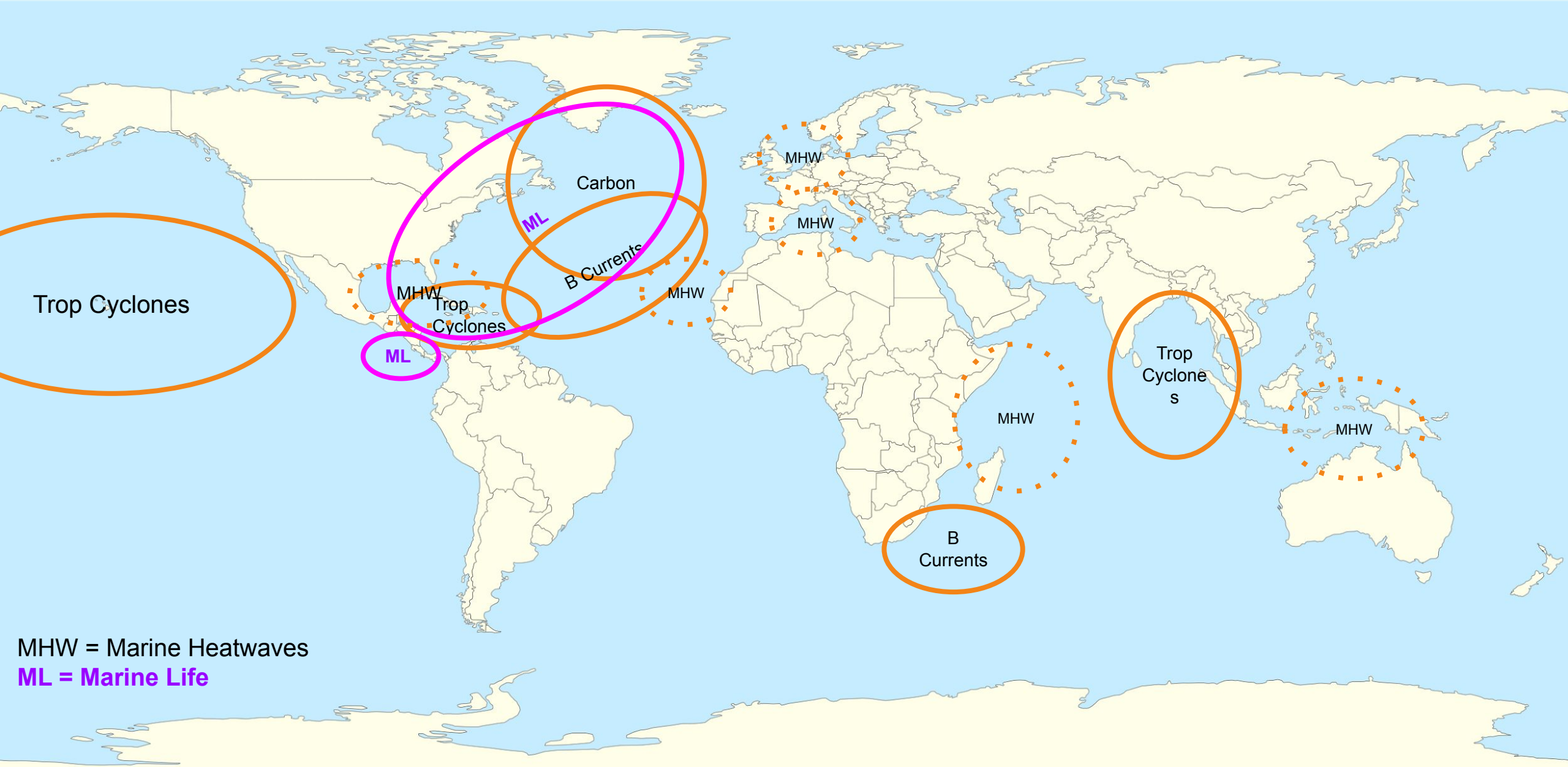
PILOT AREAS



MHW = Marine Heatwaves

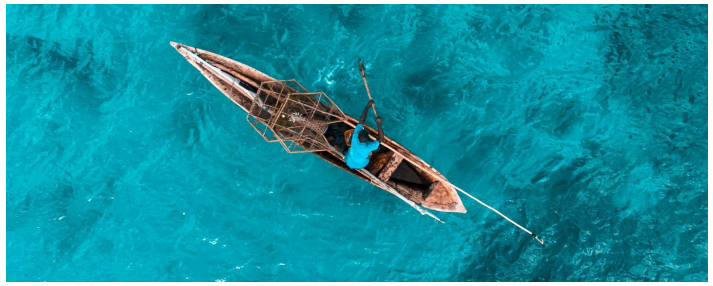
ML = Marine Life

Recent Ocean Observing Co-Design Activities

- **Paper** to present initial summary of co-design best practices: ‘Co-designing Science for the Ocean We Want - ICES Journal of Marine Science - abstract submitted
- **2-page flyer for the** UN Ocean Conference and COP-27
- **Stakeholder and funders forums:** December-January

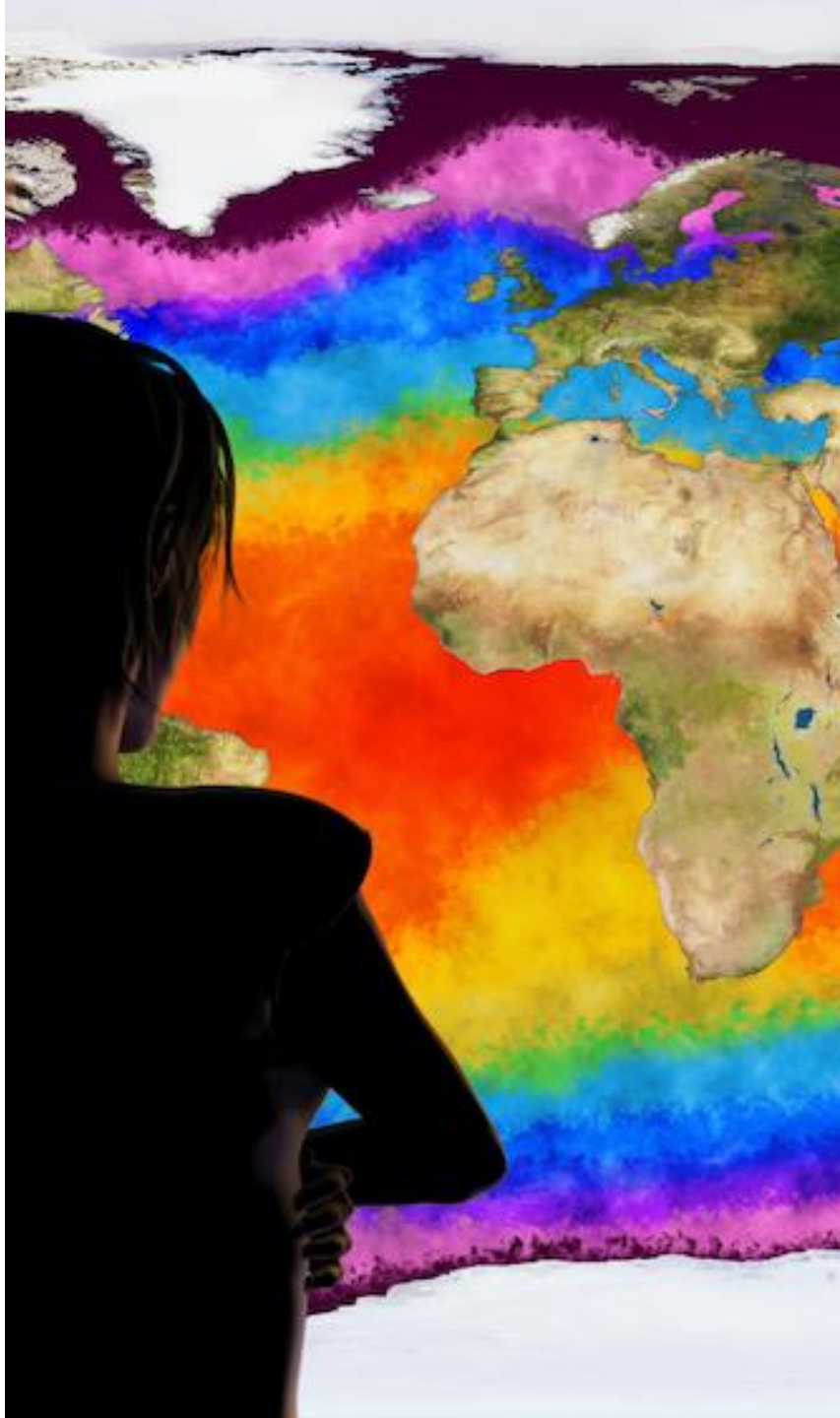
Next Steps with Synobs (Ocean Predict, etc)

- Thanks to those in the modeling community already involved in Co-Design Exemplars
- Great discussions with Synobs around engagement in exemplars, particularly in providing OSE model runs for
  - Tropical Cyclones
  - Marine Heatwaves
  - Boundary Currents
- Need for dialogue, and building capacity to store and analyze OSE model runs
- Great opportunity! Next steps are under discussion.



Summary

- Ocean Observing Co-Design Programme will Transform our ocean observing system (and how we design and develop it)
- Exemplars on cyclones/hurricanes, marine heat waves, boundary currents, ocean carbon, storm surge, and marine life are in planning stages with expectation of activities in 2023
- Exemplars offer great opportunities to integrate observing with model-based tools to inform observing design
- Exciting opportunity to work the Synobs and Ocean Predict (and others) on these exemplars and to advance use of OSE-type tools



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Thank you

goosocean.org

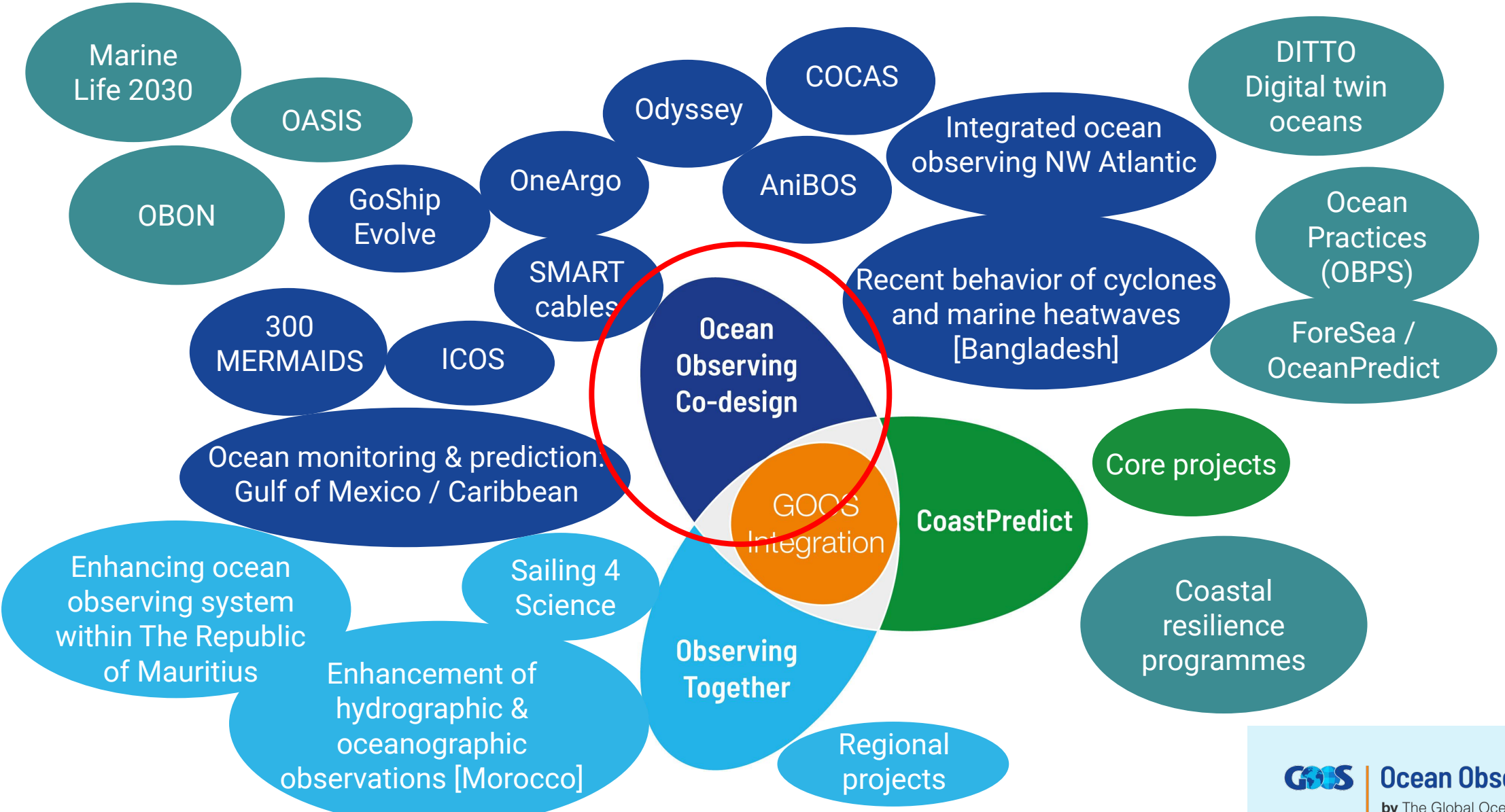
unesco
Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

UN environment programme

International Science Council

Working together: elevated level of collaboration for the Decade



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