EuroGOOS
European Global Ocean Observing System

EuroGOOS Annual General Assembly Meeting

21-23 May 2024

Welcome notes

João Paulo Ramalho Marreiros
Director-General Hydrographic Institute, Portugal

Henning Wehde
Chair, EuroGOOS

Agenda – Day 1

EuroGOOS Annual General Assembly Meeting
21 May 2024
Special session

Meeting document O1.1

Special open session on the future look at ocean observing
Tuesday 21 May 2024, 09:00-13:30

09:00 - 09:25	**1. Introduction and overview of EuroGOOS activities**
09:00 - 09:10	**Welcome and introduction** João Paulo Ramalho Marreiros, Director-General Hydrographic Institute, Portugal Henning Wehde, Chair, EuroGOOS
09:10 - 09:25	**Overview of EuroGOOS activities** Inga Lips, Secretary General, EuroGOOS
09:25 - 11:00	**2. Ocean observations: European and global developments**
09:25 - 09:45	**IOC-GOOS updates** Joanna Post, GOOS, IOC-UNESCO
09:45 - 10:05	**Ocean Decade implementation** Julien Barbier, IOC- UNESCO
10:05 - 10:25	**Towards Mercator International Center for the Ocean** Pierre Bahurel, MOi
10:25 - 10:45	**EU Digital Twin Ocean and related initiatives** Zoi Konstantinou, EC DG MARE
10:45 - 11:00	**Moderated discussion with the audience** *Moderator Holger Brix*
11:00 - 11:30	Coffee break

11:30 - 13:30	**3. EuroGOOS as Decade Implementing Partner**
11:30 - 11:40	**Introduction: EuroGOOS role as Decade Implementing Partner (DIP)** Dina Eparkhina
11:40 - 11:55	**Keynote: Coordination of Decade activities on ocean observing & forecasting** Terence McConnell, DCO Ocean Observations
11:55 - 12:10	**Keynote: EuroGOOS collaboration through ROOS** Vanessa Cardin, MonGOOS
12:10 - 12:50	**Panel discussion on European regional coordination within the Decade** Terence McConnell (DCO OO), Vidar Lien (Arctic ROOS), Jun She (BOOS), Manuel Ruiz Villareal (IBI ROOS), Sebastien Legrand (NOOS), Vanessa Cardin (MonGOOS), *moderated by Ghada El Serafy*
12:50-13:20	**Observing the Ocean in collaboration with industry** Paul Holthus, Founding President and CEO, World Ocean Council, *moderated by Inga Lips*
13:20-13:30	**4. Summary of the session & closing remarks** Henning Wehde, Chair, EuroGOOS
13:30-14:30	Lunch

Overview of EuroGOOS activities

Inga Lips
Secretary General, EuroGOOS

EuroGOOS GA, 21-23 May 2024

European Global Ocean Observing System - EuroGOOS

EuroGOOS
European Global Ocean Observing System

46 Member Organisations of EuroGOOS Association

19 from countries

ArcticROOS
EuroGOOS Arctic Regional Ocean Observing System

NOOS
EuroGOOS North West European Shelf Operational Oceanographic System

IBIROOS
EuroGOOS Ireland Biscay Iberia Regional Operational Oceanographic System

BOOS
EuroGOOS Baltic Regional Operational Oceanographic System

MonGOOS

Working Groups

EuroGOOS coordinates expert working groups in areas underpinning its objectives, to identify strategies, cooperate, co-produce and promote the operational oceanography value for society.

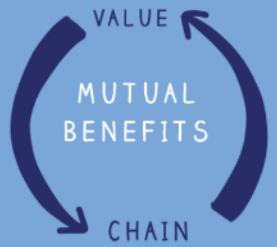
The following working groups are currently active in EuroGOOS:

- Biological Observations Working Group
- Coastal Working Group
- Data Management, Exchange and Quality Working Group
- Science Advisory Working Group
- Technology Plan Working Group
- Ocean Literacy Working Group

Task Teams

EuroGOOS Task Teams are networks of ocean observing platforms. Task Teams promote scientific and technological synergies among European ocean observing infrastructures. Task Team members collaborate in the areas of shared priorities, exchange best practices, and feed data to the EuroGOOS ROOS regional portals, EMODnet, and Copernicus Marine Service.

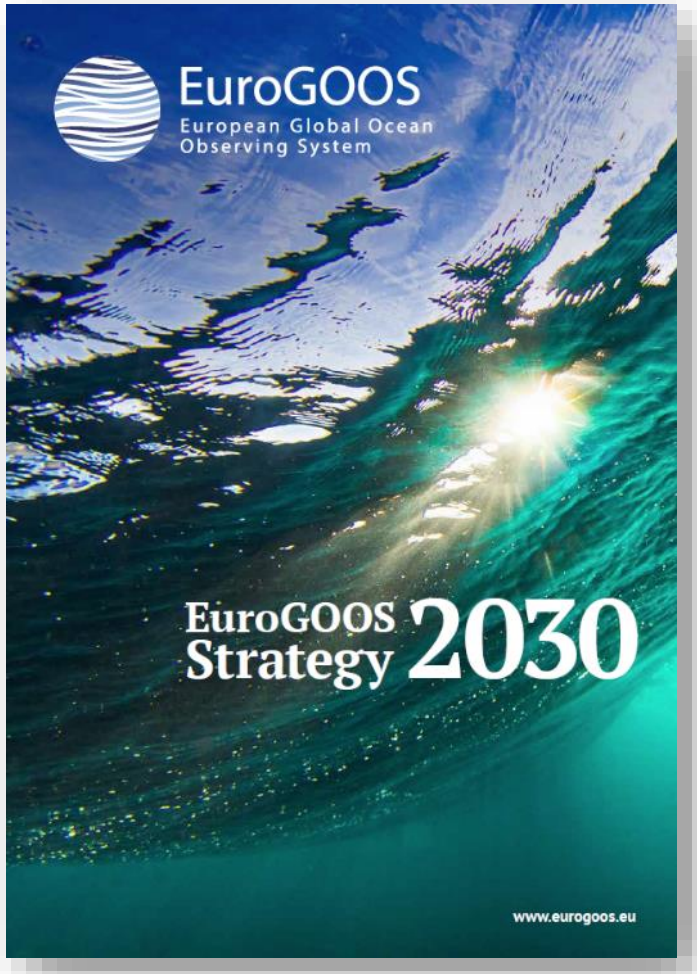
The following Task Teams are currently coordinated by EuroGOOS:



- FerryBox
- Tide Gauge
- Gliders
- High Frequency Radar
- Argo
- Fixed Platforms

EuroGOOS | Secretariat

EuroGOOS Strategy 2021-2030



Vision

SUSTAINED OCEAN OBSERVING
and **operational oceanography services that benefit the European society** and **are supported by it.**

Mission

TO LEAD
the development and **implementation** of **sustained** and **coordinated operational oceanography across Europe.**

1 **STIMULATE**
communities of **practice.**

2 **ADVOCATE**
for **coordinated** and **integrated European ocean observing and operational oceanography.**

3 **STRENGTHEN**
and **expand partnerships.**

4 **PROMOTE**
sustainability across the value chain of **operational oceanography** and **ocean observing.**

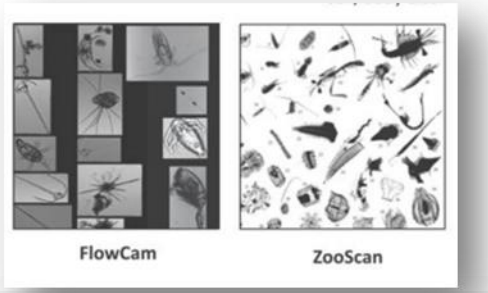
5 **MOBILISE**
the public on **the importance** of **the ocean** and **oceanographic services.**

EuroGOOS Regional Systems

EuroGOOS Working Groups

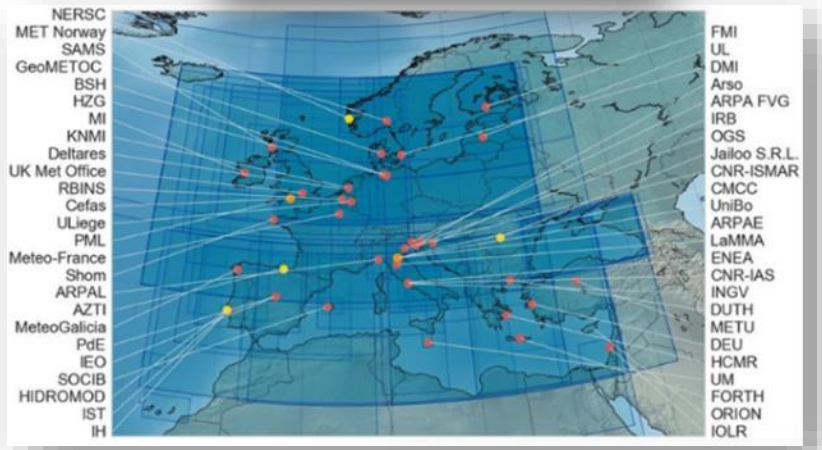
Biological Observations Working Group

Omics and imaging – SOPs, recommendations for new sensors and autonomous platform development



Coastal Working Group

Examine the entire value chain from coastal observations, satellite data, ocean forecasts and analysis, to products and services for coastal users



Technology Plan Working Group

Optimise collaboration and integration on technology and technical issues across the many observing system elements and communities

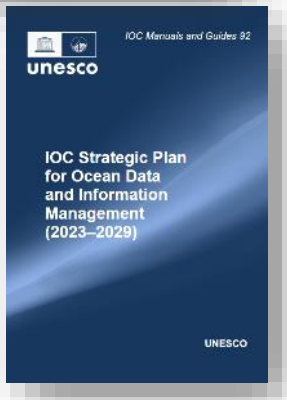
EuroGOOS Working Groups

Science Advisory Working Group

Support cross-cutting integration among ROOS, WGs, and TTs on scientific and technological aspects, identify scientific gaps and address the scientific challenges

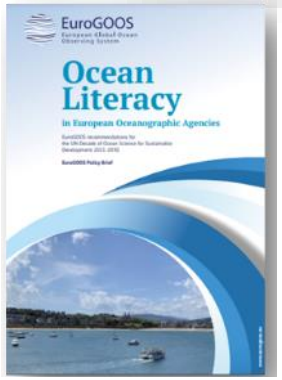
Data Management, Exchange and Quality Working Group

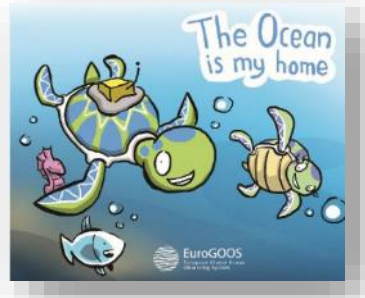
Develop an overall concept for the management of EuroGOOS observation data – EuroGOOS Data Policy 2023



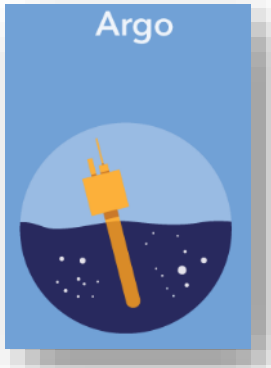
Ocean Literacy Working Group

Upscale the national ocean literacy efforts in Europe and contribute to broader ocean literacy efforts globally

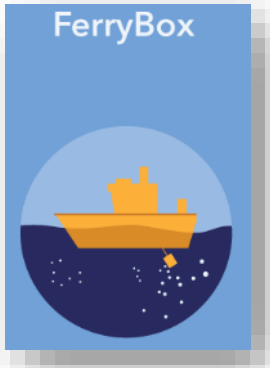




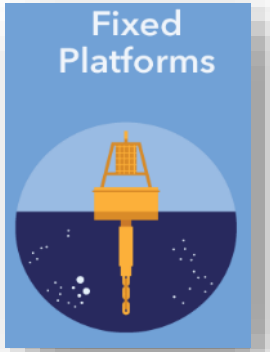
EuroGOOS Task Teams



Facilitate interactions between non-Euro-Argo ERIC institutes/countries and the Euro-Argo ERIC

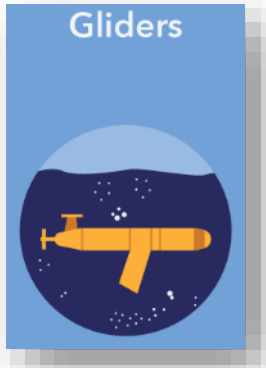


Act as the European component of the global community using ships of opportunity, ensure and enable data availability, including data quality procedures

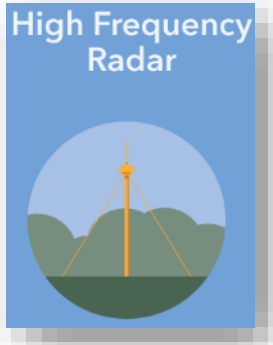


Develop Europe's FP network and assist in the standardisation of operations by sharing the best practices, also in keeping contact with other relevant programmes at a global level

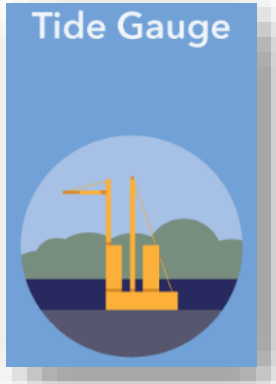
EuroGOOS Task Teams



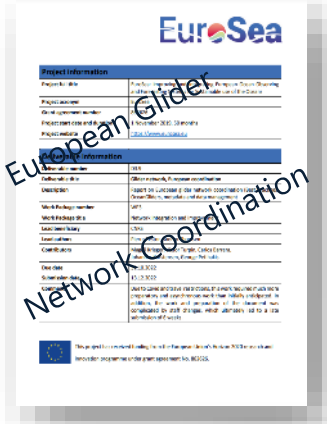
Support the coordination of European glider activities, and assist the standardisation of glider operations, data and applications



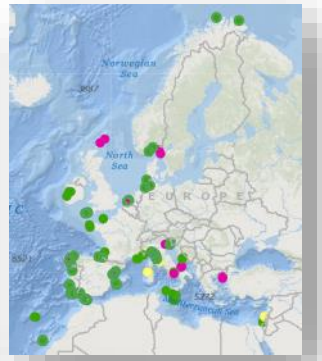
Act as the European operational HF Radar node, define data and quality assurance and quality control standards



Promote the integration of tide gauges in European initiatives and identify relevant products required by sea-level data users, act as the European component in GLOSS



https://github.com/OceanGliders Community

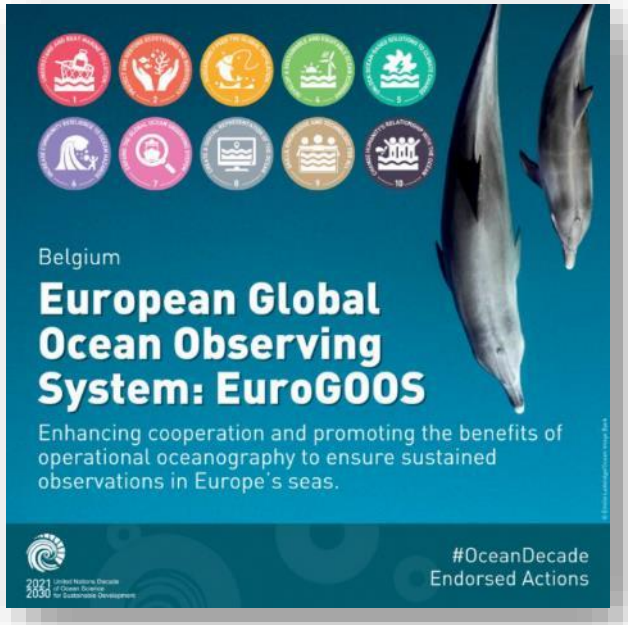


Linking communities along the value chain

The future of operational oceanography lies in the continued co-development and integration of advanced technologies, new scientific innovations, sharing of knowledge/capacity, and FAIR access to the data

International leadership /contribution

Decade Implementing Partner



Supporting Ocean Prediction DCC

SciNMeet
Science We Need for the Mediterranean Sea We Want

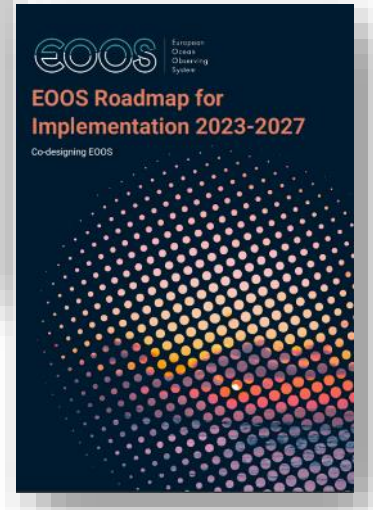
Facilitating collaboration in the Arctic

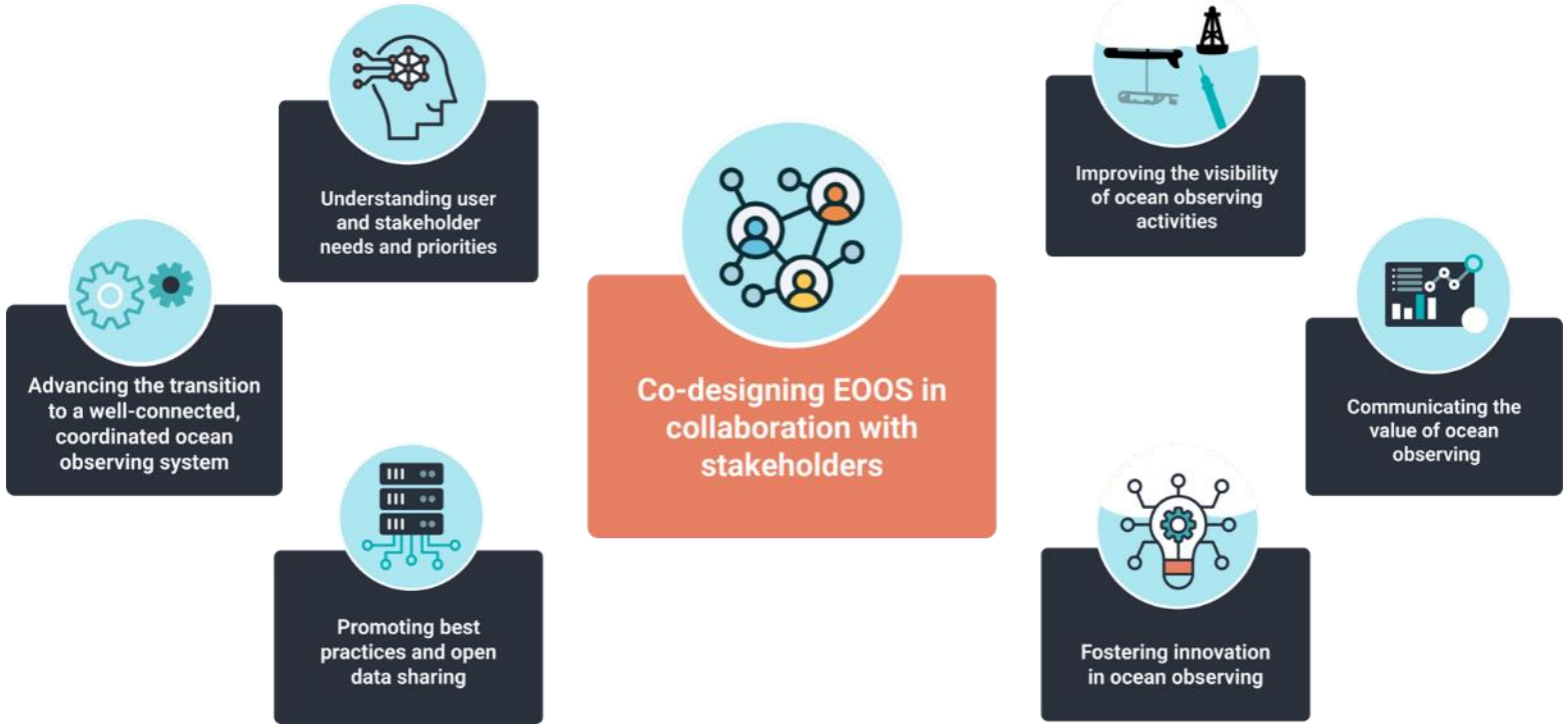
Promoting accessible technologies

Leading a Decade Project

SCIENTISTS FOR OCEAN LITERACY (OCEANOGRAPHERS AND METEOROLOGISTS FOR OCEAN LITERACY)

Advancing European Ocean Observing System (EOOS)





EuroGOOS Priorities

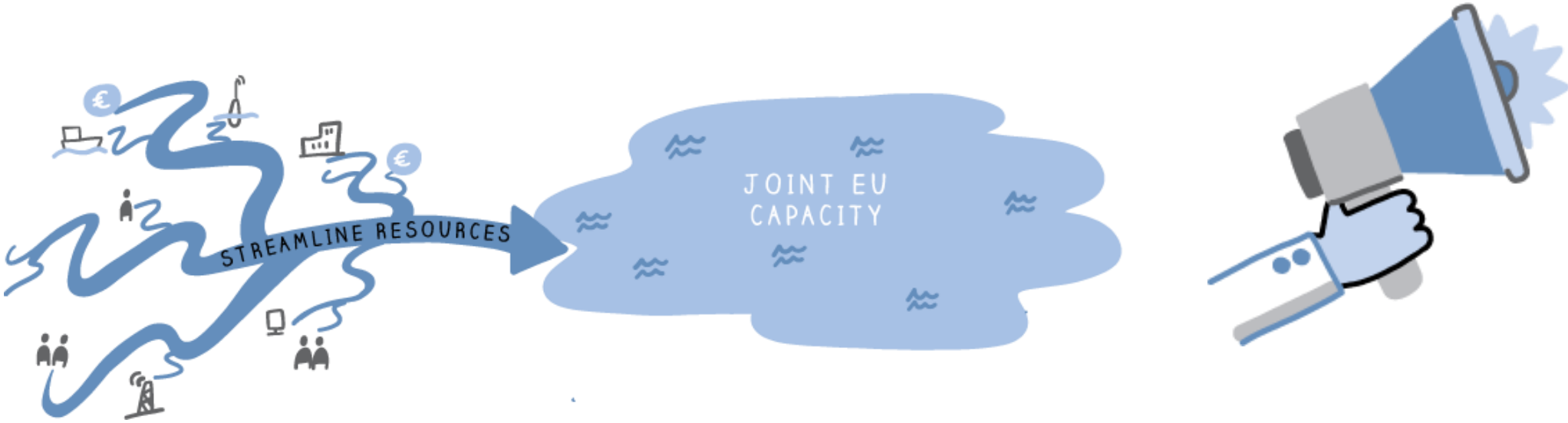
Short-term (in the next year or two)

- **Communicate with stakeholders and public** – there are no sustained oceanographic services for society without sustained ocean observations
- **Identify the observation gaps** for developing Digital Twins
- **Contribute** to the OceanPredictions DCC **global model inventory**

Long-term (5+ years)

- **Strengthen** and further EuroGOOS' role in **ocean health and climate services**
- **Promote** sustainability across the **value chain** of operational oceanography
- **Implement** of **EOOS** supported by Member States

EuroGOOS
European Global Ocean Observing System



@EuroGOOS

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www.eurogoos.eu

IOC-GOOS updates

Joanna Post
GOOS, IOC-UNESCO

EuroGOOS GA, 21-23 May 2024

The Global Ocean Observing System

GOOS and its future

Dr Joanna Post, Head of Section for Ocean Observations and Services, IOC-UNESCO

Why ?
Ocean observations: fundamental to society

Why? Need for a critical ocean infrastructure for risk management, human health and ocean economy

Enabling communities to stay healthy and protected

Delivering blue economic growth

Underpinning forecasting and sustainable development


Not Sufficient to meet needs
climate action (inc. G3W),
operational forecasting (EW4All),
sustainable ocean planning

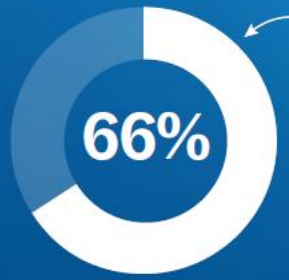
The Opportunity

https://impact.economist.com/ocean/sustainable-ocean-economy/the-oceans-silent-sentinel

Oceans will be critical in solving the climate crisis

By 2050 marine-centred climate change solutions could make up 21% of the emissions reductions needed to limit global warming to 1.5°C. This equates to more than all the emissions from coal-fired power plants worldwide[1]

Ocean observation data:[5] A hidden asset

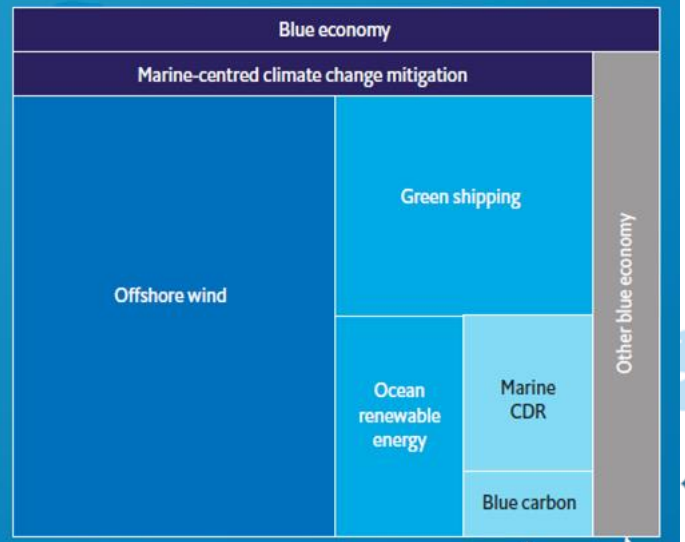


Currently, two-thirds of the US$52bn global marine-centred climate change sector is dependent on ocean observation data

Without this access, the sector could lose up to **US$34bn**

Industries in scope

Most developed — Least developed



OCEAN RENEWABLE ENERGY

Ocean observations benefit the ocean renewable energy (wave and tidal) industry by providing critical data on wave patterns, tidal currents and ocean conditions.[10,11]

For example, these data help with:

- designing and placing energy devices (converters, turbines, etc)
- optimising energy production
- durable installations

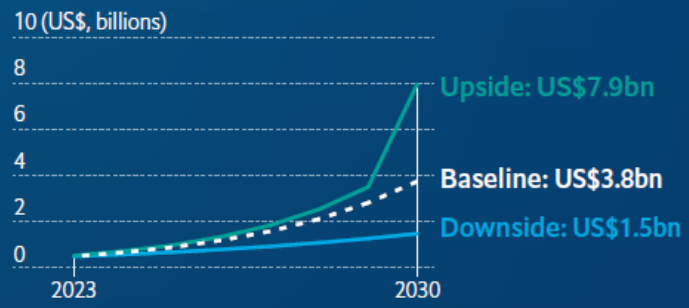
78%

of the US$666m industry is dependent on ocean observation data in 2023

US$517m

estimated loss without access to ocean observation data

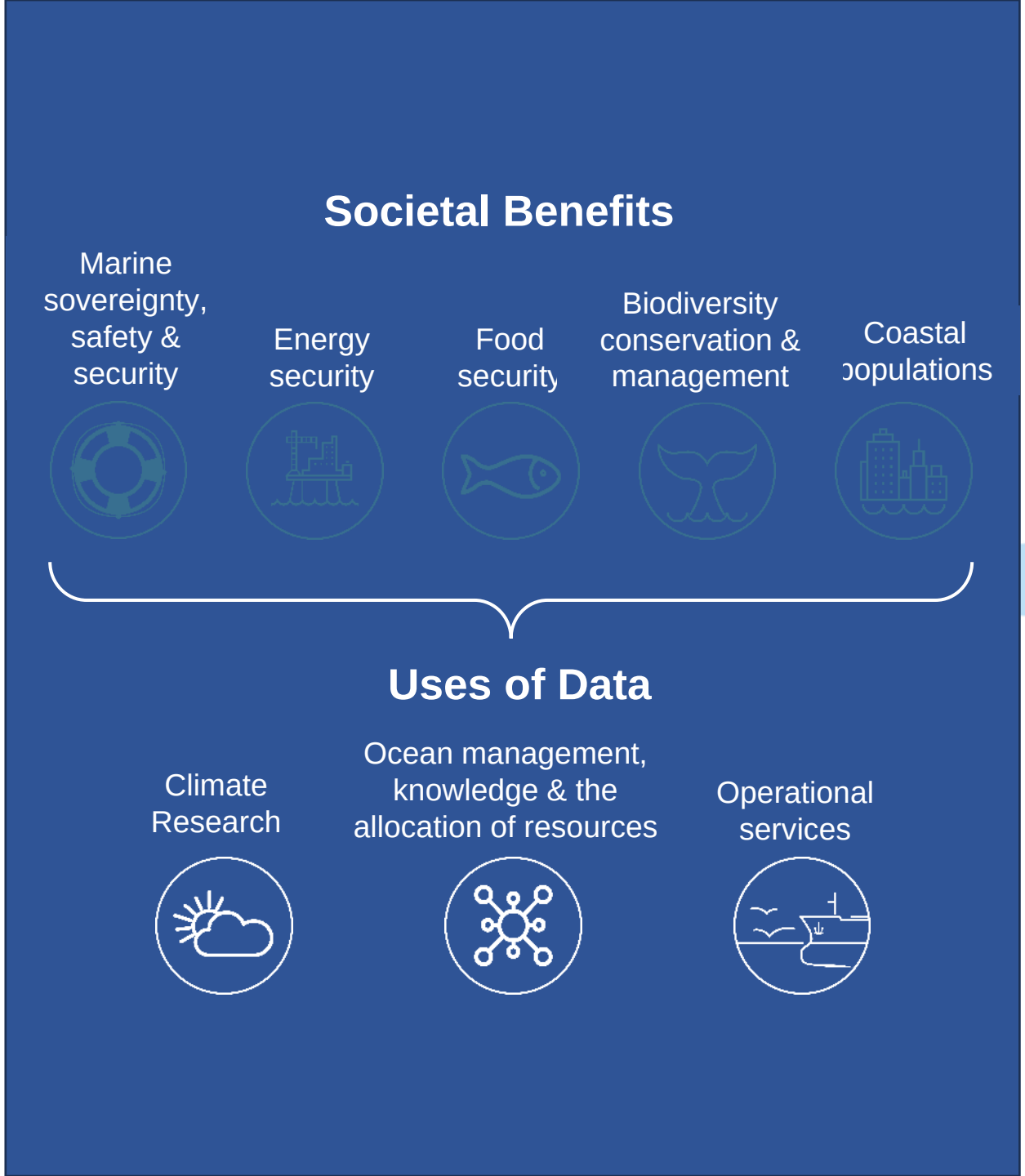
As the industry expands, ocean observations will become the sole basis for its GVA by 2030. This is equivalent to:

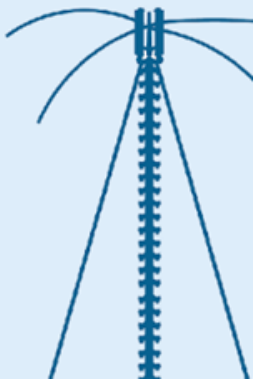


Integrated Marine Observing System (IMOS), Australia

Principles

- Contribute to community, management, legal and policy needs in Australia
  - Deliver observations and data, products and services needed by management and industry
  - Enable outcomes through use of our data
  - Partner with industry and stakeholders to meet their data needs and create societal benefit





Return on investment

Economists have put a benefit-cost ratio of up to 12:1, with approximately $4.70 of benefits generated for every dollar of cost to IMOS and its partners.

This, however, came with a caveat:

To a significant extent, some benefits from IMOS's activities and data cannot be quantified.
Knowledge of the ocean is a public good, the immediate value of which to humanity is not always obvious or possible to quantify in dollar terms.

IMOS
Integrated Marine Observing System

IMOS acknowledges the Traditional Custodians and Elders of the land and sea on which we work and observe and recognise their unique connection to land and sea. We pay our respects to Aboriginal and Torres Strait Islander peoples past and present.

Leading the ocean observing community

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

Early Warnings for All

Global Greenhouse Gas Watch (G3W)

United Nations Climate Change

14 LIFE BELOW WATER

Operational national and regional forecasting

Convention on Biological Diversity

Post-2020 Biodiversity Framework

IMO INTERNATIONAL MARITIME ORGANIZATION

SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015-2030

FAO Fisheries & Aquaculture

UNEP

- Global Environmental Monitoring Service (GEMs)
- International Legally Binding Instrument on Plastic Pollution 2024

THE LAW OF THE SEA

Biodiversity Beyond National Jurisdiction

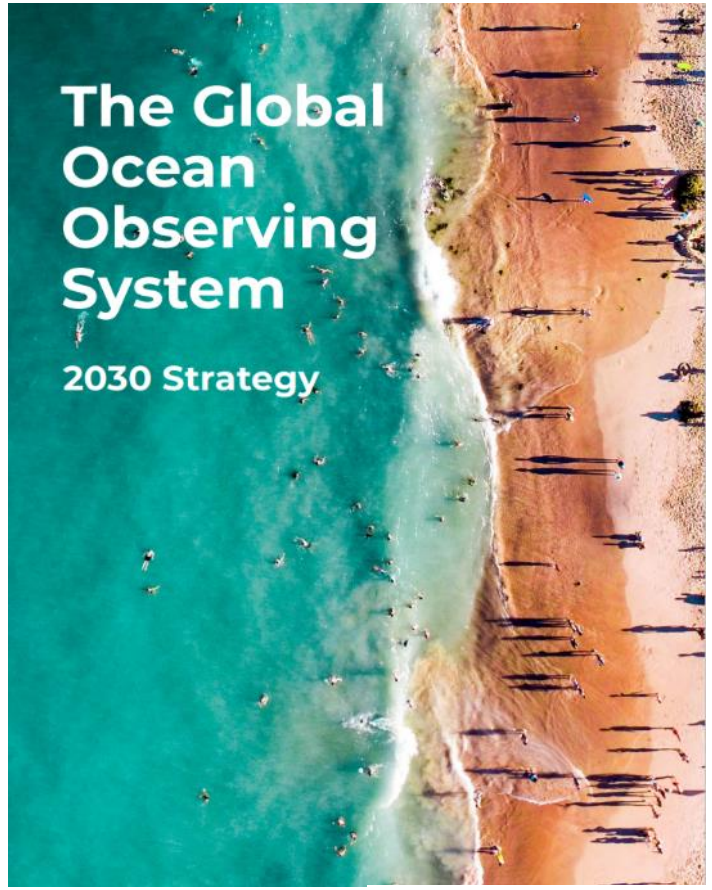
GOOS

GOOS 2030 Strategy

- 2019: GOOS launched ambitious 2030 Strategy

Vision: A truly global ocean observing system that delivers the essential information needed for our sustainable development, safety, wellbeing and prosperity

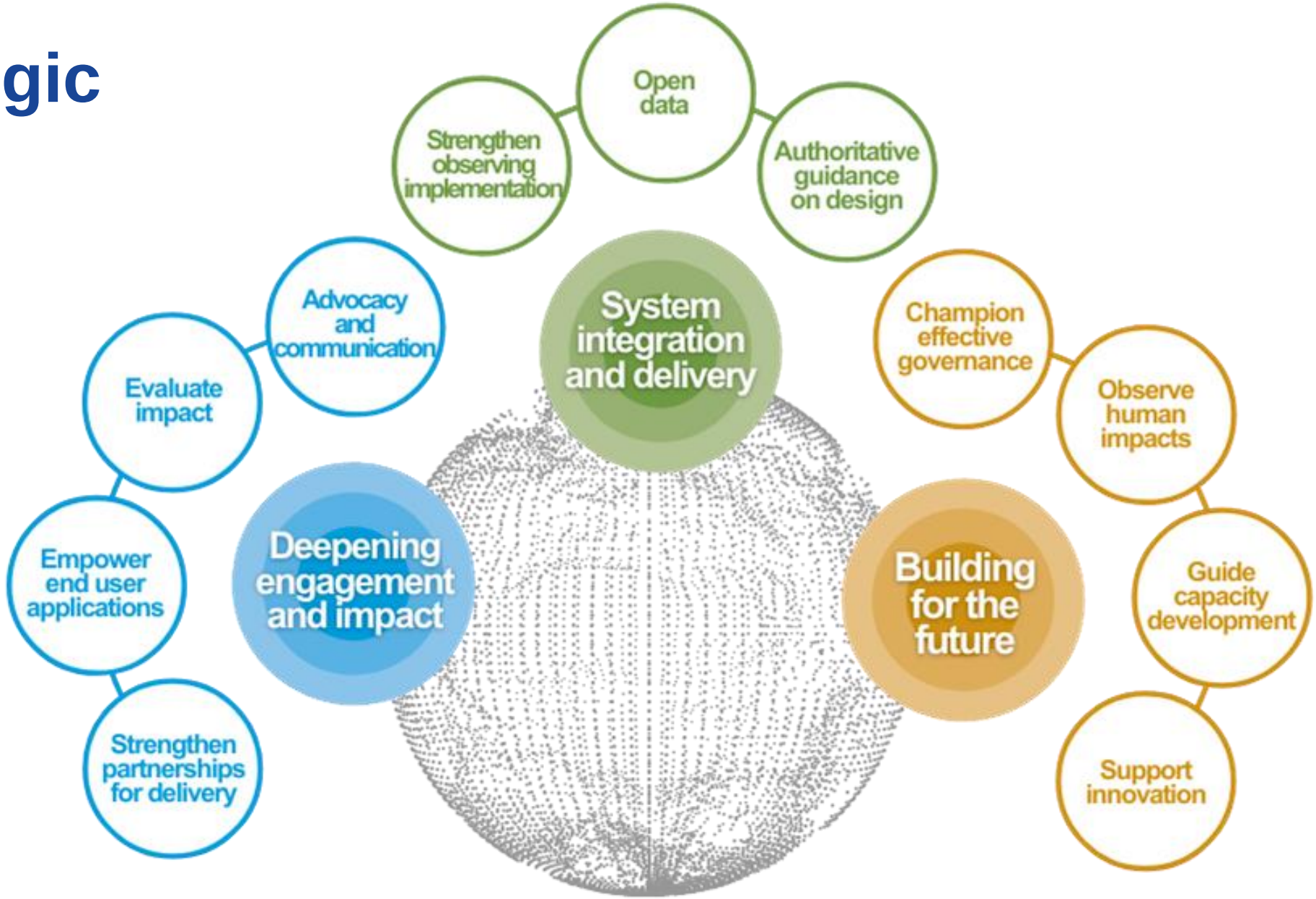
- UN Ocean Decade launched in 2021: Challenge 7 ‘Expand the Global Ocean Observing System’



2021 2030 United Nations Decade of Ocean Science for Sustainable Development

OCEAN OBS’19

3 Strategic Goals



Who?

Member States
Decision Makers | System Providers | Users | Funders

Decade Coordination Office| Decade Programmes + Projects
GOOS Projects | Partners
Research community | WCRP

Metadata, data & modelling

OceanOPS

Expert Team on Operational Ocean Forecast Systems (ETOOFS)

OBIS/ BioEco Hub

GOOS Regional Alliances (GRAs)

Observing coordination

Observations Coordination Group (OCG)

GOOS Observing Networks

National Focal Points (NFPs)

Requirements

3 Expert Panels
Physics and Climate (OOPC) |Biogeochemisty (BGC) | Biology and Ecosystems (BioEco)

WMO: RRR | WIGOS
GCOS

GOOS Management Team*
Coordination | Integration | Advocacy

GOOS Steering Committee

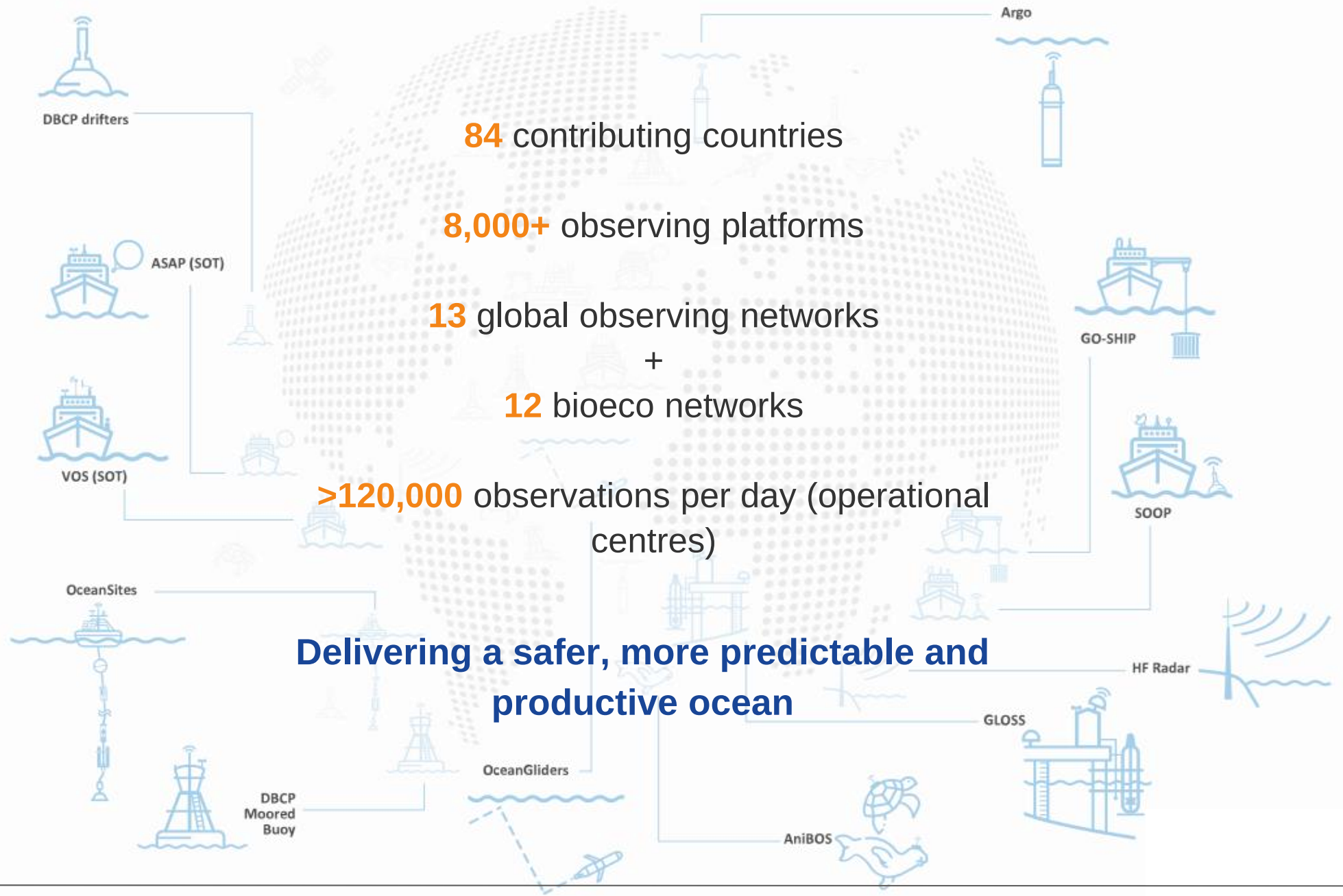
Sponsors

IOC - UNESCO* | WMO | UNEP | ISC

IODE |
Data | Data portals

Science Community

*GOOS Management Team HQ based at IOC secretariat, Paris



84 contributing countries

8,000+ observing platforms

13 global observing networks

+

12 bioeco networks

>120,000 observations per day (operational centres)

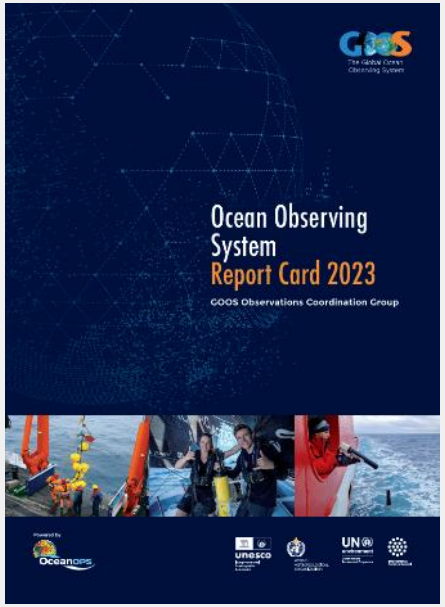
Delivering a safer, more predictable and productive ocean

Deepening engagement and impact

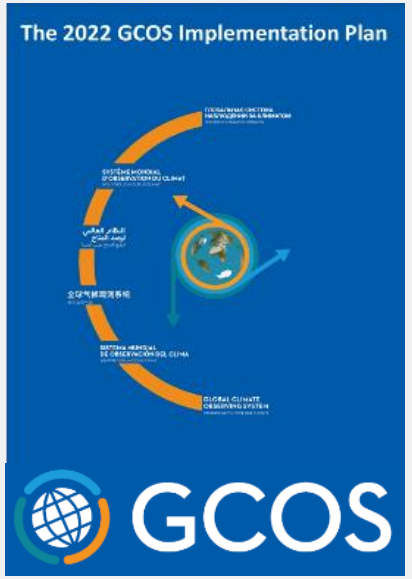
Advocacy within United Nations

Implementing GOOS Communication Plan

2000+ mailing list subscribers
Articles and stories from the observing system
Flagship annual **Report Card**



Strengthened partnerships



WORLD METEOROLOGICAL ORGANIZATION

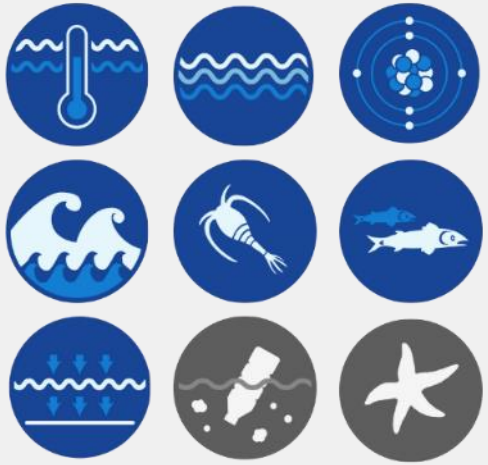
IODE

OECD

System integration and delivery

Structure & Standards

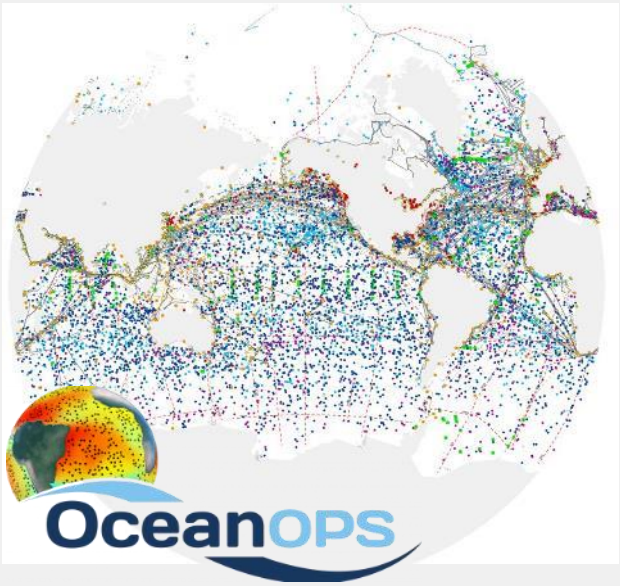
35 Essential Ocean Variables
2000+ Ocean Practices, **10** GOOS-endorsed



Ocean best practices

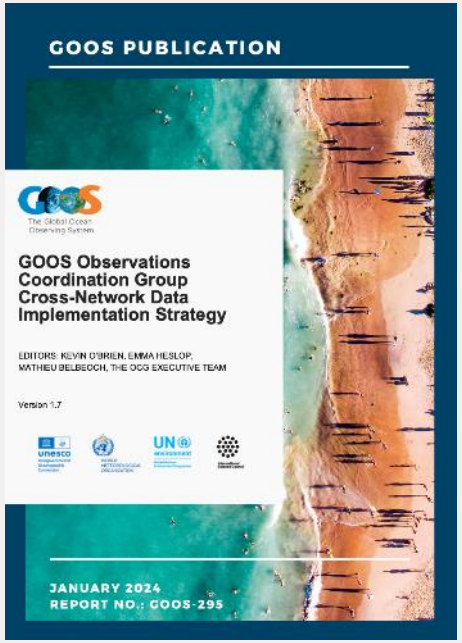
Tracking & Metrics

90% of daily observations reach operational users, metadata needs work
600+ sustained programmes in new BioEco Portal



Open Data

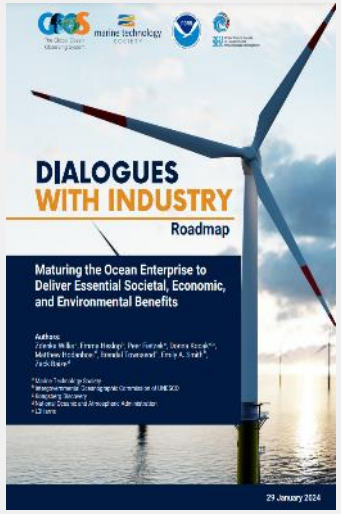
First cross-network data implementation strategy
10x increase sharing species EOV data



Building for the future

Collaboration with private sector

Dialogues with Industry **Roadmap** - just released!



Tracking human impacts

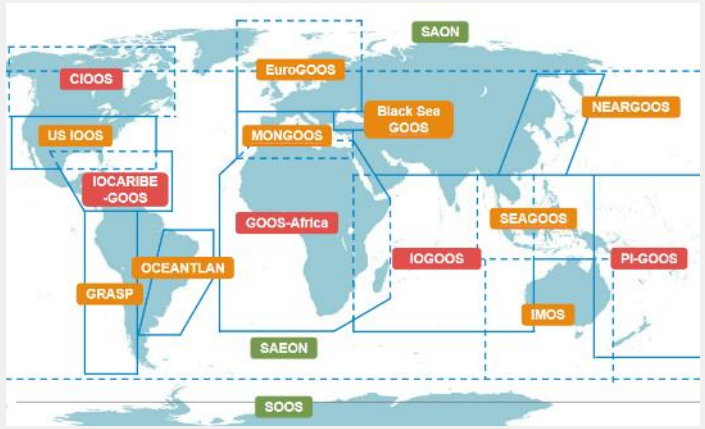
3 Essential Ocean Variables

- Marine debris
- Ocean colour
- Ocean sound

National Focal Points & Regional activation

76 GOOS National Focal Points

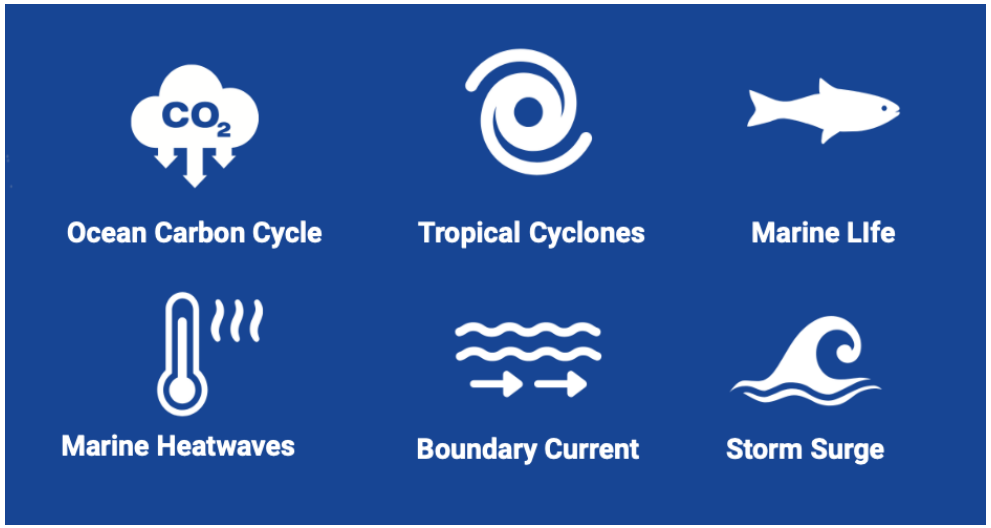
Reinvigorate **Africa, Caribbean & Pacific Islands** Regional Alliances



2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Ocean Observing Co-Design

Co-Design observing - modelling - users
Establish clear priorities for investment
Accessible ocean information
Effectively meet global challenges
6 Co-Design Exemplar Projects



CoastPredict

GlobalCoast - implementation
30 Regions
120+ Pilot Sites
65 countries

GOOS Decade Coordination Office: Ocean Observing

11 Ocean Decade Programmes
91 Projects
31% Ocean Decade Actions

Ocean Decade Coordination Office
Ocean Observing

DCO – Ocean Observing Vision

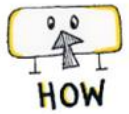
Institutional strategy: Cohesive, coordinated and interoperable ocean observing systems; global, regional and national

Community Engagement: Private sector and societal participants in the Blue Economy and a healthy Ocean

Sustained Ocean financing: Innovative, long-term finance for a sustainable Global Ocean Observing system

Prioritization of societally relevant observing requirements: Geographic & Thematic.

Standardization around universally agreed EOVs, ECVs and measurement & data management best practice.



Capacity Development: Ensure equitable access to observational data and technology for all stakeholders

Technology Development: Autonomous & low-cost sensors. Complementary use of remotely sensed & in-situ data

Ocean Decade Coordination Office
Ocean Observing

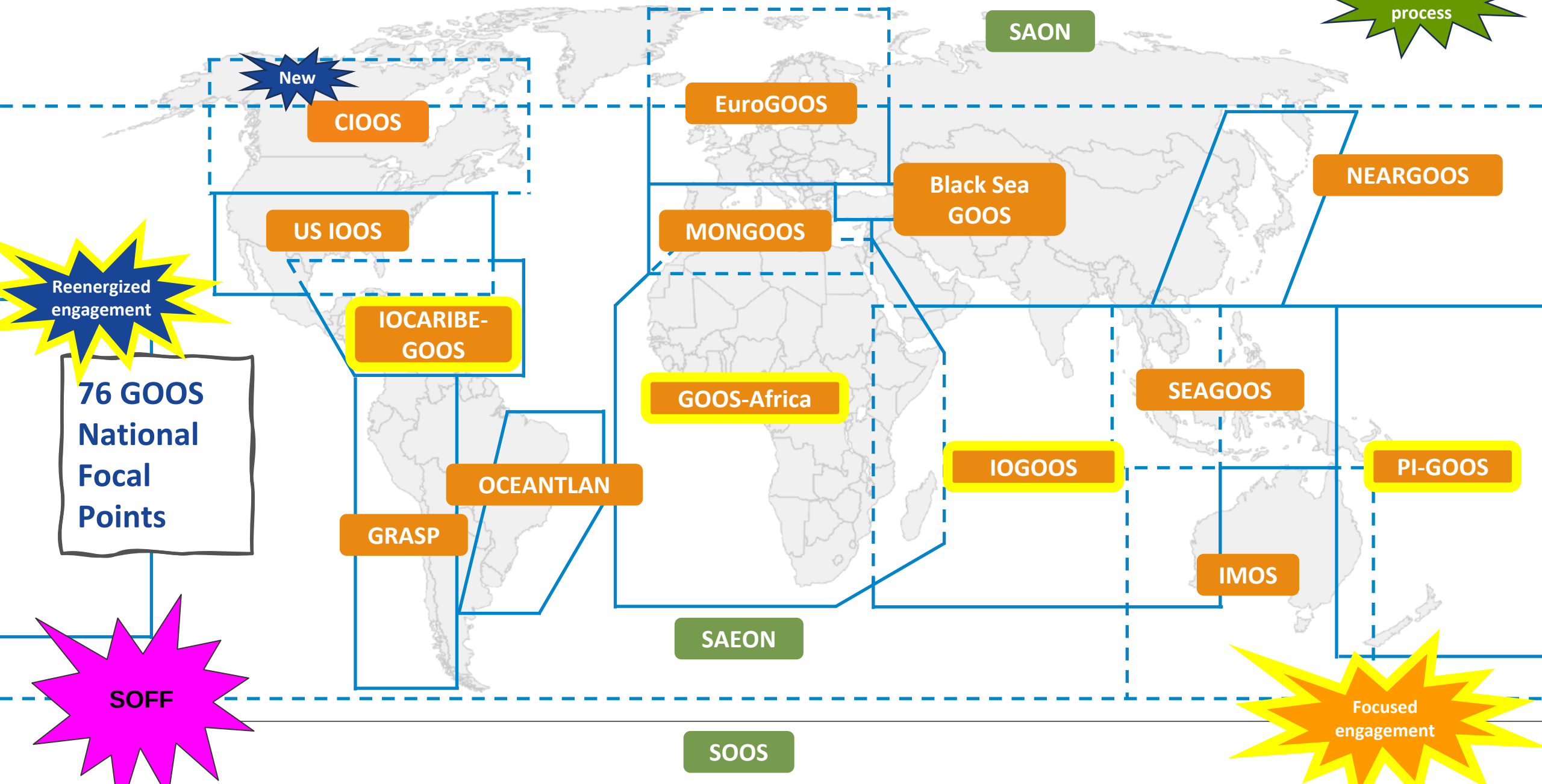
A global ocean observing system responsive to the needs of end users; enabling a healthy, resilient ocean and sustainable blue economies.

END-USER APPLICATIONS

Ocean Prediction

Ocean Data Sharing

Regional Alliance & National Focal Points



National Focal Point Role

National ocean observing system that is fit-for-purpose, integrated and sustained

National activities align nationally, regionally, and globally, lowering cost, increasing efficiency

Visibility of national ocean observing contribution to global system

Communicate with GOOS Member States and system around national needs

National advocates ocean observations

Strengthen national and global ocean observing systems

Increase efficiency and scope through cooperation and capacity sharing

Align priorities, understanding national needs, towards fit for purpose system

What Next?

We must build the **critical national and international global infrastructure** for ocean risk management and sustainable ocean planning. **Only GOOS can provide**

- **Global framework and voice for ocean observation inc. implementation plans (e.g. carbon)**
- **National / Regional support / capacity exchange for infrastructure / metadata / data**

We need to **liberate FAIR data** (in situ and satellite) and build global ocean digital ecosystem targeted at specific delivery areas at national, regional, international level. (Observation - Data - Prediction)

We need to **advance metadata standards** and **data quality** and **trust** providing coherence on delivery of EOVs (QA and QC) with GRAs & NFPs

We need to embrace new technologies and new collaborations.

We need to evolve governance to support an evolved GOOS 2.0 – Review / Revise / Focus

The Global Ocean Observing System

Thank you

goosocean.org

unesco
Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

UN environment programme

International Science Council

Ocean Decade implementation

Julien Barbier
IOC-UNESCO

EuroGOOS GA, 21-23 May 2024

Update on the implementation of the Ocean Decade

Julian Barbiere
IOC/UNESCO
Ocean Decade Coordinator

unesco
Intergovernmental Oceanographic Commission

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

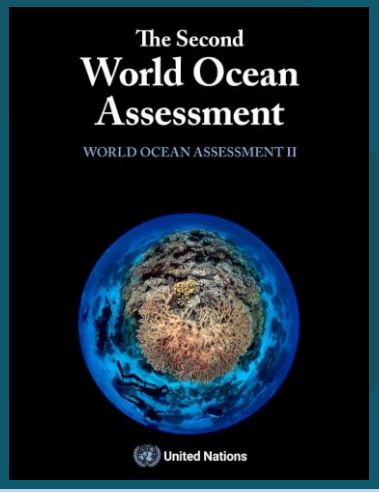
EuroGOOS
European Global Ocean Observing System

The Rationale for the Ocean Decade

Vision: The science we need for the ocean we want

UNFCCC

Convention on Biological Diversity



Mission: Transformative ocean science solutions for sustainable development, connecting people and the ocean

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2021 2030 United Nations Decade of Ocean Science for Sustainable Development

10. Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction

New York, 19 June 2023

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

THE OCEAN DECADE

in a snapshot

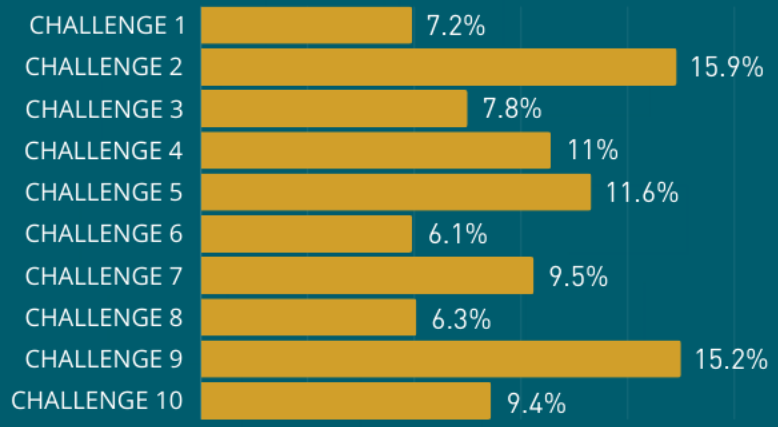
As of April 2024

ENDORSED OCEAN DECADE ACTIONS

52 PROGRAMMES **99** CONTRIBUTIONS
363 PROJECTS **715** ACTIVITIES

DECADE ACTIONS LED BY PARTNERS FROM **62** COUNTRIES

ENDORSED ACTIONS PER CHALLENGE



REGIONAL AND NATIONAL COORDINATION

12 DECADE COLLABORATIVE CENTRES/ COORDINATION OFFICES

16 DECADE IMPLEMENTING PARTNERS

38 NATIONAL DECADE COMMITTEES

6 REGIONAL TASKFORCES AND PROGRAMMES

ENGAGEMENT AND OUTREACH

7 INFORMAL WORKING GROUPS

11 PATRONS AND **19** INSTITUTIONAL MEMBERS OF THE OCEAN DECADE ALLIANCE

OVER **20** MEMBERS OF THE FOUNDATIONS DIALOGUE

8300 MEMBERS FROM **173** COUNTRIES ON THE OCEAN DECADE NETWORK

OCEANDECADE.ORG

@UNOceandecade

@un-ocean-decade

1.5+ MILLION REACH

The Ocean Decade Successes

Global movement convening scientific community, governments, philanthropy & industry

Increased awareness of role of ocean science to underpin sustainable development

Relevant science generated for emerging global policy frameworks

Recognition of Indigenous and local knowledge and advances in inclusivity in ocean science

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Intergovernmental Oceanographic Commission

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

The Remaining Challenges

Remaining critical knowledge gaps – deep-sea, pollution, small-scale fisheries, ocean economy

Clear process for policy triggers for science globally, regionally & nationally

Support to SIDS and LDCs to set and fulfill national & regional priorities

Investment in science & in infrastructure for observations, data and predictions

unesco
Intergovernmental Oceanographic Commission

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Decentralised Coordination Structures

- Decade Coordination Offices (DCOs) and Decade Collaborative Centres (DCCs) have tailored but similar mandates including:
  i. Coordination of Decade Actions at programme level
  ii. Gap analyses and priority setting
  iii. Catalysis of new Actions
  iv. Resource mobilisation
  v. Communications and outreach
  vi. Monitoring and reporting

- DCO = UN led centre
- DCC = non-UN led centre

Regional Coordination Structures (existing)

Northeast Pacific

Indian Ocean

Southern Ocean

South Pacific

West Pacific (IOC)

Regional Coordination Structures (planned or being resourced)

Africa (IOC)

Caribbean (IOC)

Arctic

Thematic Coordination Structures (existing)

Ocean Prediction

Coastal Resilience

Ocean Climate Nexus

Ocean Climate Solutions

Data Sharing (IOC)

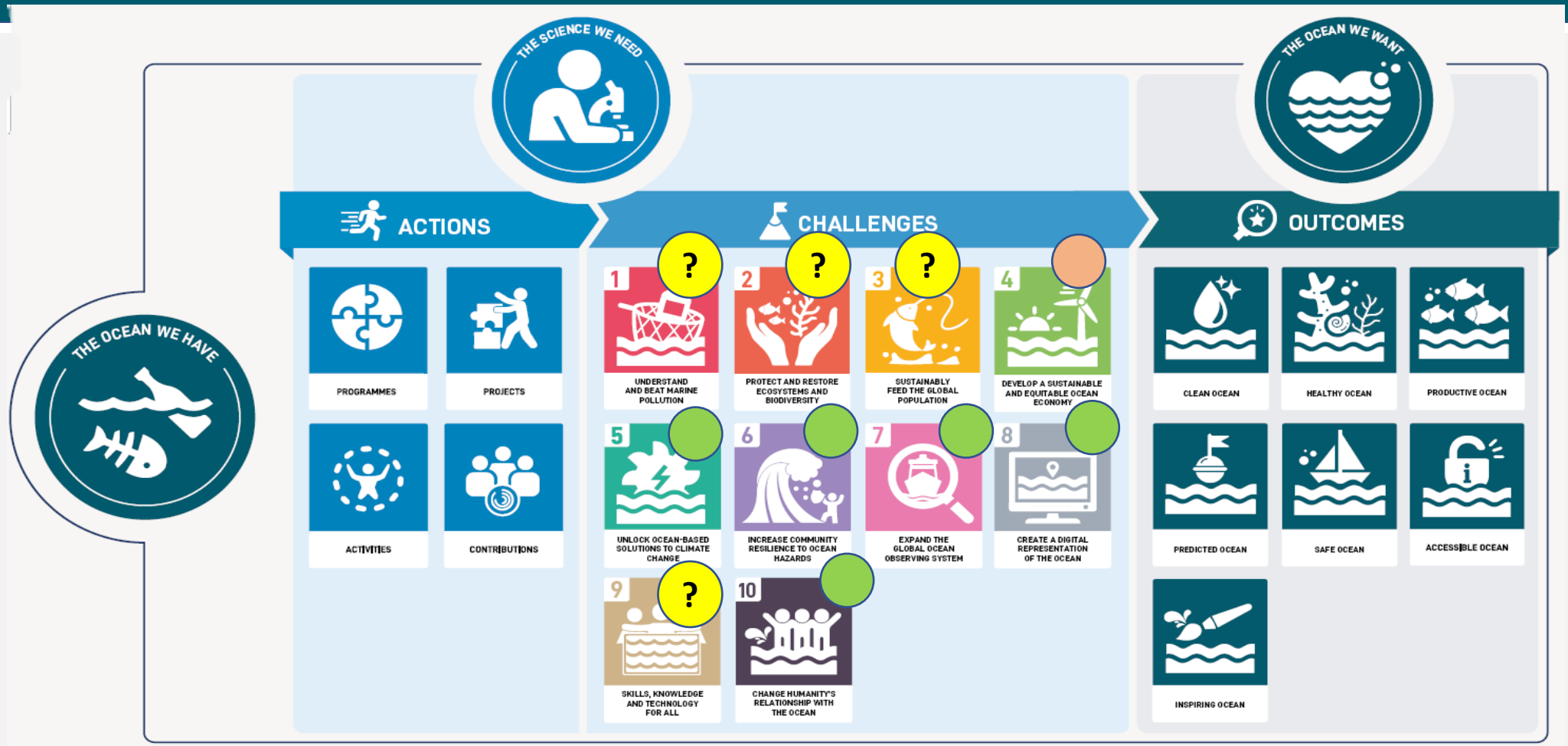
Ocean Literacy & Cultural Values (IOC)

Thematic Coordination Structures (planned or being resourced)

Ocean Observations (IOC)

Sustainable Ocean Economy

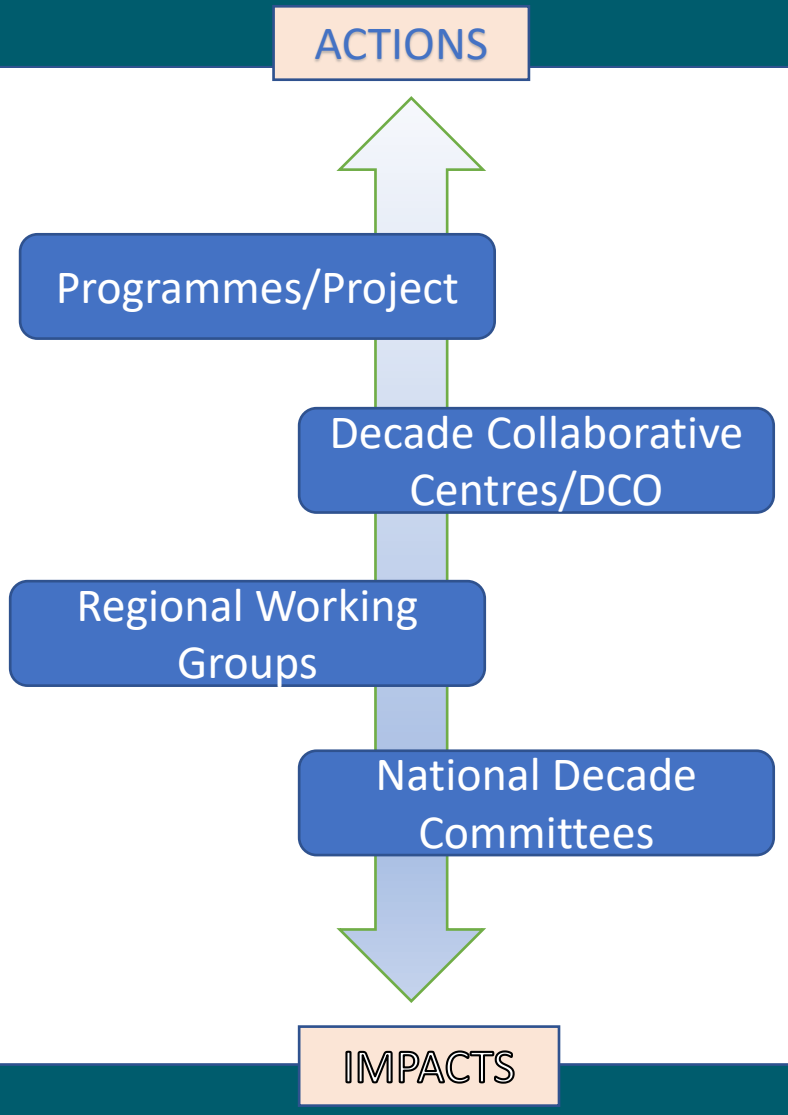
GAPS in Thematic Areas (Challenges)



Optimizing the Decade architecture

As of April 2023, the 34 countries indicated in the map have created a National Decade Committee, with more being formed all the time. The goal for the Ocean Decade is for all 150 IOC/UNESCO Member States to have a National Decade Committee by 2030.

Decade Collaborative Centres/DCO



Vision 2030 Process

- Overall portfolio of existing Decade Actions developed through **strongly bottom-up approach driven by proponents of Decade Actions**
- Critical moment being approached:
  1. Strong demand from Decade community to **shape a common vision** for the next 8 years & enhance collective impact and measure progress to achievement of Ocean Decade Challenges
  2. Unique window of opportunity to **deliberately design the 'science we need'** and avoid dispersion of Decade Actions
  3. Growing need to **measure & document impact** of the Ocean Decade

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Vision 2030 will set a Challenge specific strategic ambition to answer the following…

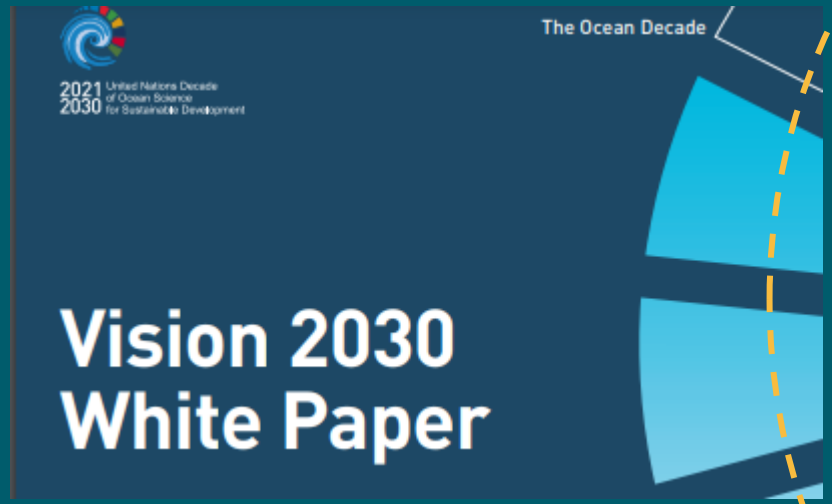
1. What does success look like for this Ocean Decade Challenge at the end of the Decade?
2. What milestones / targets do we need to achieve throughout the Decade to be on the path for success for this Challenge?

A strategic ambition will allow measurement of progress towards fulfillment of Challenges leading to:

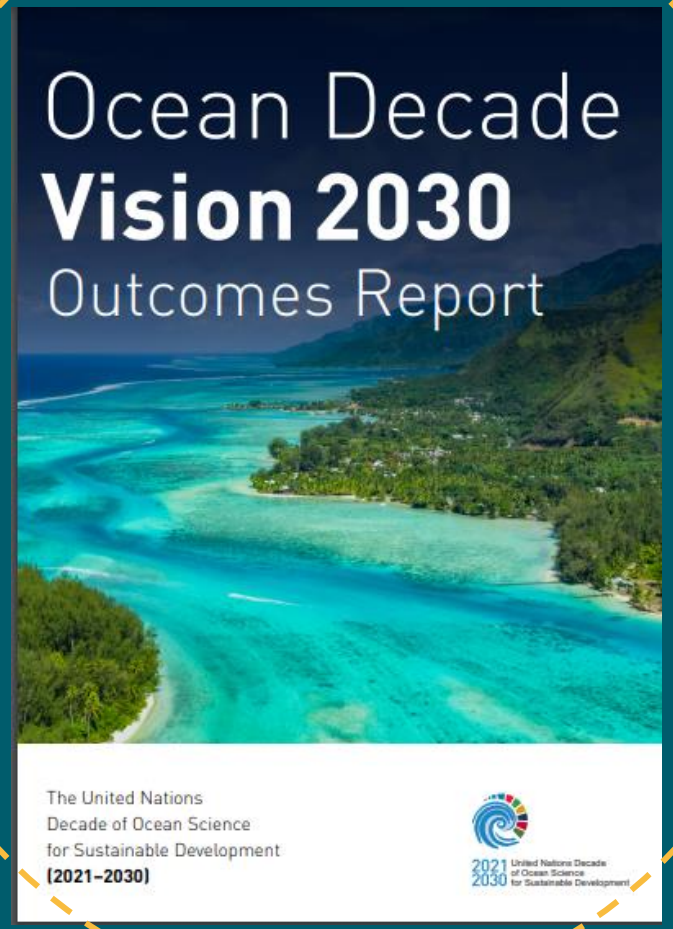
1. Identification of achievements and successes
2. Identification of residual gaps and future priorities
3. Alignment of resources to priority needs
4. Refinement / addition of Challenges

Framework of the Vision 2030 process

- **10 Expert Working Groups** have developed a series of **White Papers** documenting the strategic ambition for each Ocean Decade Challenge
- The **White Papers** reviewed and discussed at the Barcelona Conference
- DCU is developing a **Vision 2030 Outcomes** report to look across Challenges and develop a set of key messages and recommendations
- Dissemination and further discussion at regional level – Regional Decade Conference and beyond



10 White Papers authored by 10 Expert Working Groups



Analysis drawing on White Papers and including additional analyses authored by DCU

2024 OCEAN DECADE CONFERENCE

BARCELONA STATEMENT

12 April 2024

Barcelona, Spain

Synthesis of key elements of Outcomes Report + additional discussions in Conference authored by DCU as reflection of Conference discussions

2024 Ocean Decade Conference

Barcelona, Spain: 10 - 12 April 2024

Milestone event to convene Decade Actions and Decade partners to celebrate achievements, take stock and set collective vision for coming years…

Over2,600 participants from 124 countries and over 3,000 online viewers, and was the culmination of Ocean Decade Week with 120 Satellite Events (April 8-12).

The main outcome of this event was the Barcelona Statement which identifies priority areas for action for the Ocean Decade in the coming years.

6| Vision 2030 Outcomes – Key Elements

Refinements of Challenges

Minor refinements to Challenge titles and descriptions aim to highlight *inter alia*:

- Ecosystem based management priorities
- Nutrition aspects of blue food
- Broader definition of resilience
- Needs for sustained resources for observations
- 'Restoration' rather than 'changing' of human relationship with ocean

Priorities by Challenge

1. Marine pollution across the land-sea continuum
2. Marine and coastal ecosystem-based management including deep-sea ecosystems & emerging threats
3. Small-scale fisheries and aquaculture & sustainable aquatic food production
5. Sustainable and climate resilient ocean economy
6. Climate mitigation and impacts of eventual marine carbon dioxide removal initiatives
7. Decision support tools for resilience of coastal communities

Priorities across Challenges

Biodiversity – climate – food security nexus

Pollution – sustainable ocean economy nexus

Evidence-based and resilient Sustainable Ocean Plans and ocean accounting

Ocean health – human health links

Financial instruments to diversify and accelerate investment in ocean science

Social science and ocean literacy research on human-ocean connection

Priority infrastructure for observations and data

Best practices and standards

Cross-Cutting Issues

Policy frameworks as drivers of ocean science and knowledge priorities

Increased recognition and approaches to embrace all knowledge systems in ocean science

Increased action at the national level including influence on national policy and funding decisions

Meaningful engagement of industry and innovation sectors

Broadening / linking of ocean literacy & strategic communications

Targeted, expanded and innovative resource mobilisation for Decade implementation

Diversity, inclusivity and equity across the Decade

2024 OCEAN DECADE CONFERENCE

DELIVERING THE SCIENCE WE NEED FOR THE OCEAN WE WANT 10-12 APRIL 2024
BARCELONA, SPAIN

As part of the Ocean Decade Week (8-12 April 2024)

The Barcelona Statement

Discover the priorities that will define the future of the Ocean Decade in coming years:

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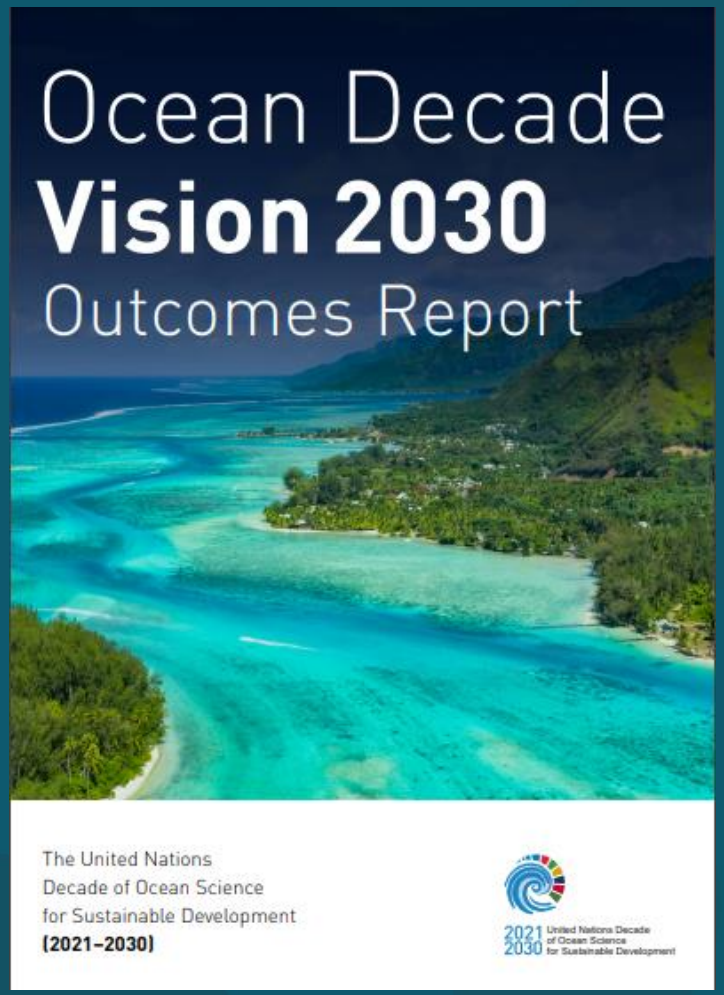
2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Looking towards 2030 - and beyond



OUR OCEAN
GREECE - APRIL 15-17, 2024

United Nations
4th International Conference on SIDS
27-30 MAY, 2024 - ANTIGUA AND BARBUDA

immersed
IN CHANGE

COP16
COLOMBIA
Paz con la Naturaleza

G20
BRASIL 2024

UNFCCC
United Nations
Climate Change
COP 29
November 2024

United Nations
2025 UN OCEAN CONFERENCE
June 2025, France

unesco
Intergovernmental
Oceanographic
Commission

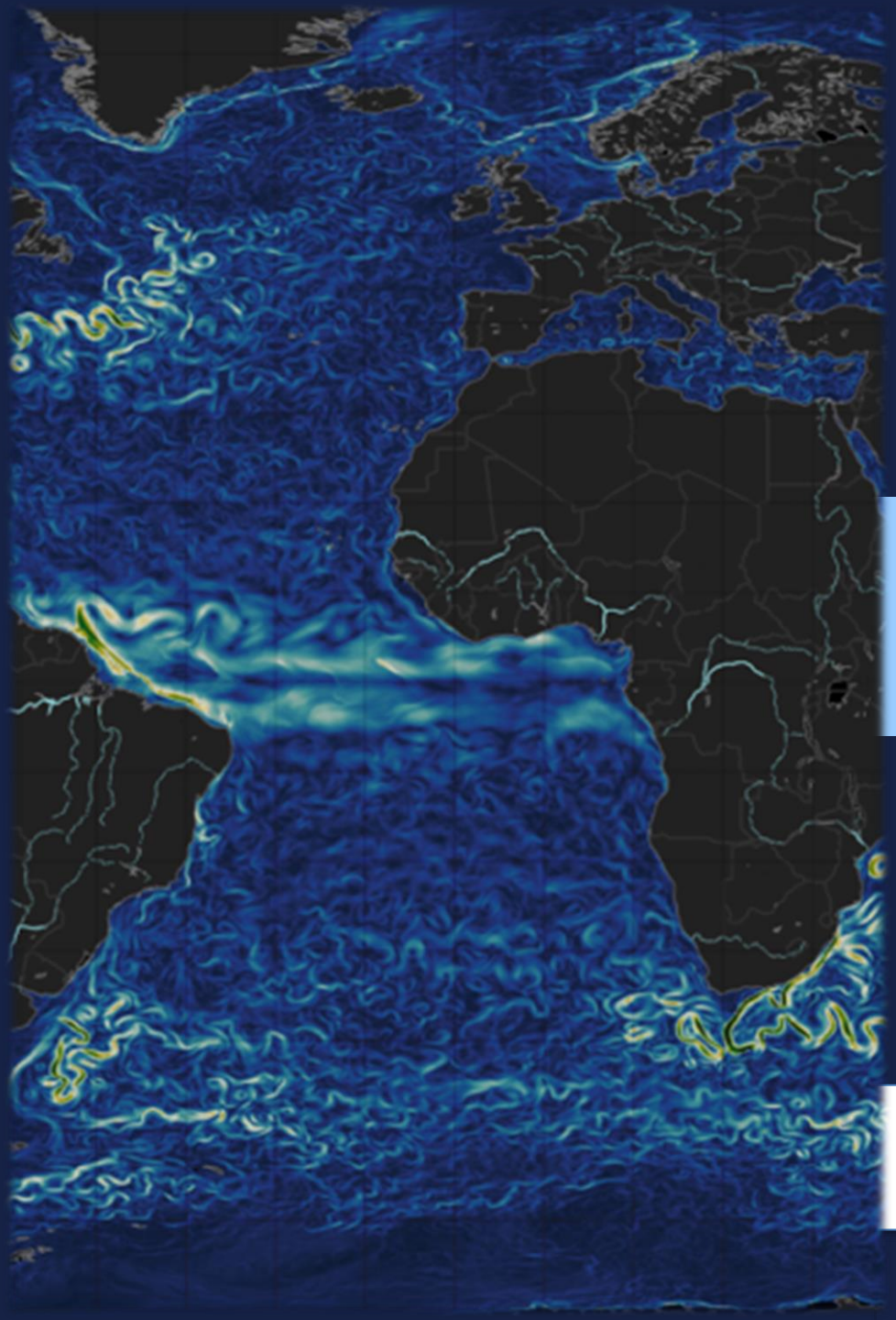
2021 2030 United Nations Decade
of Ocean Science
for Sustainable Development

And many others that have contributed in-kind support…

Towards Mercator International Center for the Ocean

Pierre Bahurel
Mercator Ocean International

EuroGOOS GA, 21-23 May 2024



MERCATOR OCEAN INTERNATIONAL

Towards MERCATOR International Centre for the Ocean

Pierre Bahurel

21 May 2024, Lisbon, EuroGOOS General Assembly

EuroGOOS
European Global Ocean Observing System

Mercator Ocean, a EuroGOOS Member

EuroGOOS > Members > France > Mercator Ocean International (MOi)

Mercator Ocean International (MOi)

Mercator Ocean International (MOi) is a non-profit organisation, in the process of transforming into an intergovernmental organisation, providing ocean science-based services of general interest focused on the conservation and the sustainable use of the oceans, seas and marine resources. At the One Ocean Summit organised by France in Brest in February 2022, six European states (France, Italy, Norway, Portugal, Spain, and the UK) showed commitment to developing European oceanographic excellence by transforming MOi into an intergovernmental body through the "Brest Declaration".

MOi has developed complex ocean simulation systems (numerical models) based on ocean observation data (satellite and in situ) that are able to describe, analyse and forecast the physical and biogeochemical state of the ocean at any given time, at the surface or at depth, on a global scale or for a specific zone, in real-time or delayed mode. The organisation was founded and is funded by the five major French institutions involved in operational oceanography: CNRS (National Center of Scientific Research), Ifremer (French Research Institute for Exploitation of the Sea), IRD (Institute of Research for Development), Météo-France and SHOM (Hydrographic and Oceanographic Service of the French Navy. In December 2017, they decided to open up the capital of Mercator Ocean to major and prominent players in operational oceanography to strengthen Mercator Ocean's capacity to expand in Europe and internationally. They are major national players in operational oceanography worldwide and key scientific partners of the Copernicus Marine Service and they now include: the Italians CMCC (Centro Euro-Mediterraneo sui Cambiamenti Climatici) and CNR (Consiglio Nazionale delle Ricerche), the Norwegian NERSC (Nansen Environmental and Remote Sensing Center), the British MET OFFICE, and the Spanish Puertos Del Estado.

EuroGOOS
European Global Ocean Observing System

Members | Regions | Working groups | Task Teams | EU Projects | Ocean Literacy

Members Map

MERCATOR OCEAN INTERNATIONAL

Mercator Ocean International

Multinational governance ES, FR, IT, NO, UK

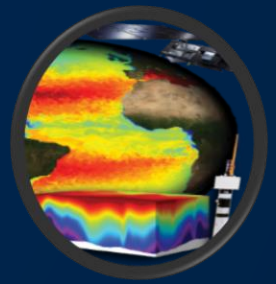
Delegated entity of the European Union

Public interest mission

Digital oceanography, operational

100 persons, Toulouse, Madrid, Barcelona

International partners network



OCEAN FORECASTING

☞ **DATA - Science & Technology, Operations**

Real time monitoring of the ocean, 3D, worldwide

OCEAN SERVICES

☞ **INFORMATION – General Interest Services**

Open & free data, user support by marine experts

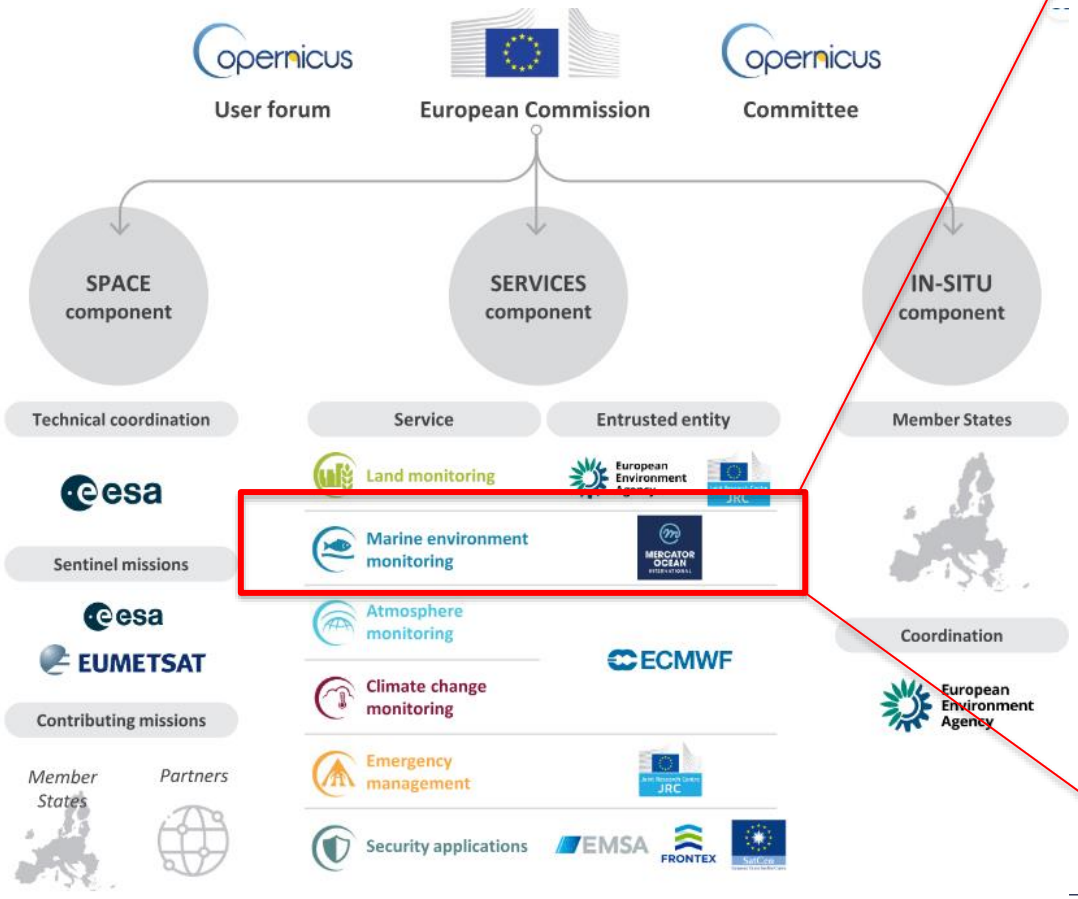
OCEAN PROGRAMS

☞ **KNOWLEDGE – Program Management**

EU, AU, UN frameworks of action

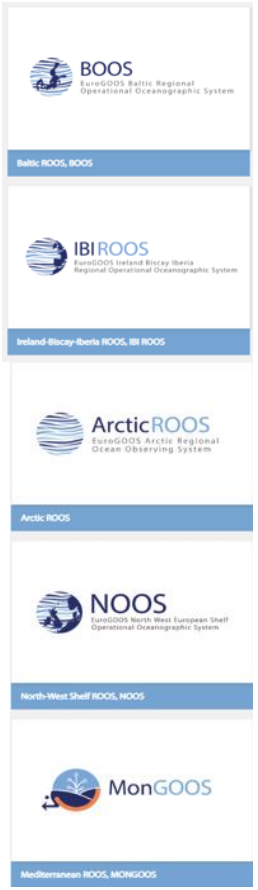
MERCATOR OCEAN INTERNATIONAL

Mercator Ocean, a European Union entrusted entity



Source: European Commission.

Structuring our value chain in Europe with Copernicus



EuroGOOS
European Global Ocean Observing System

NETWORK OF NATIONAL SERVICES

MoU

MERCATOR OCEAN INTERNATIONAL

EUROPEAN CORE SERVICE

MERCATOR OCEAN INTERNATIONAL

REPÚBLICA PORTUGUESA | XXII GOVERNO

PT EN

Pesquisar

Pesquisa avançada

Primeiro-Ministro Governo Área de Governo Comunicação Portugal Consultas Públicas

10 Feb 2022

Notícias

2022-02-11 às 14h53

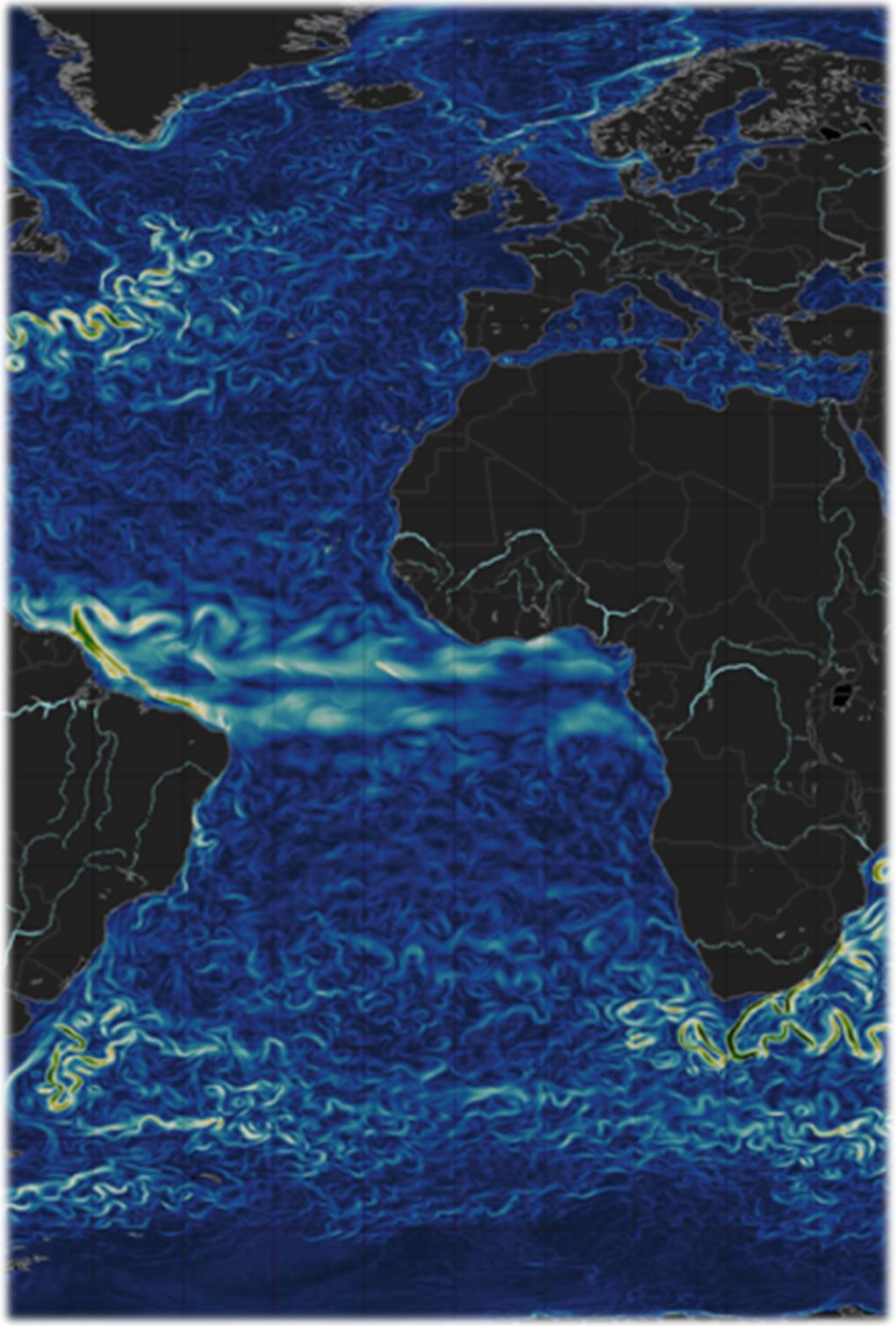
Declaração de Brest destacada pelo Ministro do Mar na cimeira One Ocean

Ministro do Mar, Ricardo Serrão Santos, participou em diversos painéis da cimeira One Ocean, em Brest, França, 10-11 de fevereiro de 2022

Portugal apoia a iniciativa de criar uma organização intergovernamental para desenvolver de forma harmonizada o «oceano digital», transformando o Mercator Ocean Internacional numa estrutura intergovernamental; tema que foi objeto da Declaração de Brest, assinada na cimeira One Ocean, que decorre na cidade de Brest em França, na qual participou o Ministro do Mar, Ricardo Serrão Santos, que realçou a importância dos dados e informação operacional atualizada e partilhada para a boa gestão dos recursos marinhos.

«No ano passado, quando Portugal exerceu a Presidência do Conselho da União Europeia (UE), promovemos a aprovação das Conclusões do Conselho, destacando, precisamente, o conhecimento dos oceanos como um dos quatro pilares para o desenvolvimento de uma economia oceânica sustentável. Sabemos que, para desenvolver esse conhecimento, é essencial dispor de instrumentos de previsão precisos e de informação digital adequada», disse o Ministro do Mar, ao fechar a sessão onde este tema foi debatido com governantes de vários países europeus.

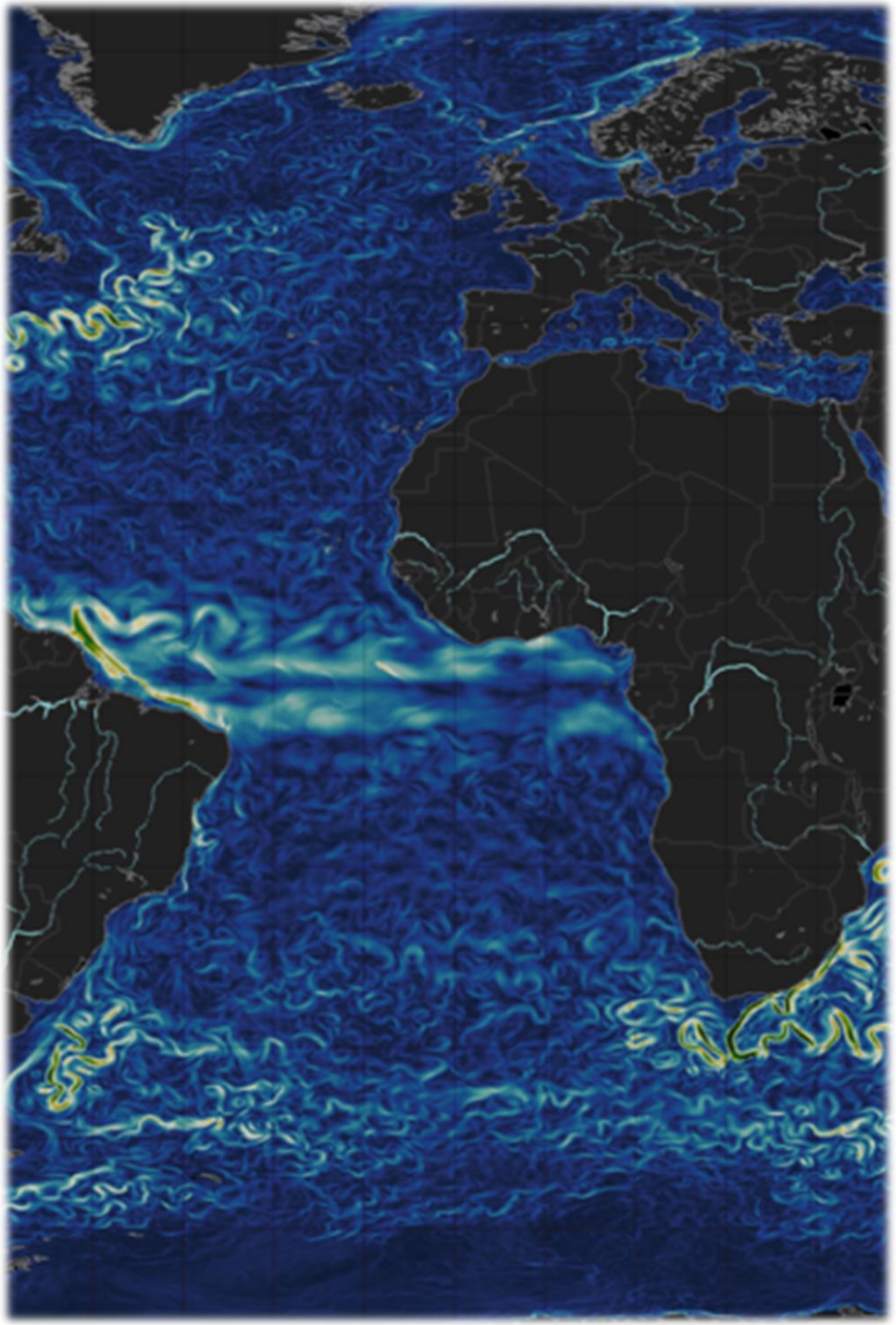
A Declaração de Brest foi assinada pelos governantes da área marítima de França, Itália, Noruega, Portugal, Espanha e Reino Unido.



Transforming Mercator Ocean into an intergovernmental organisation

Motivation

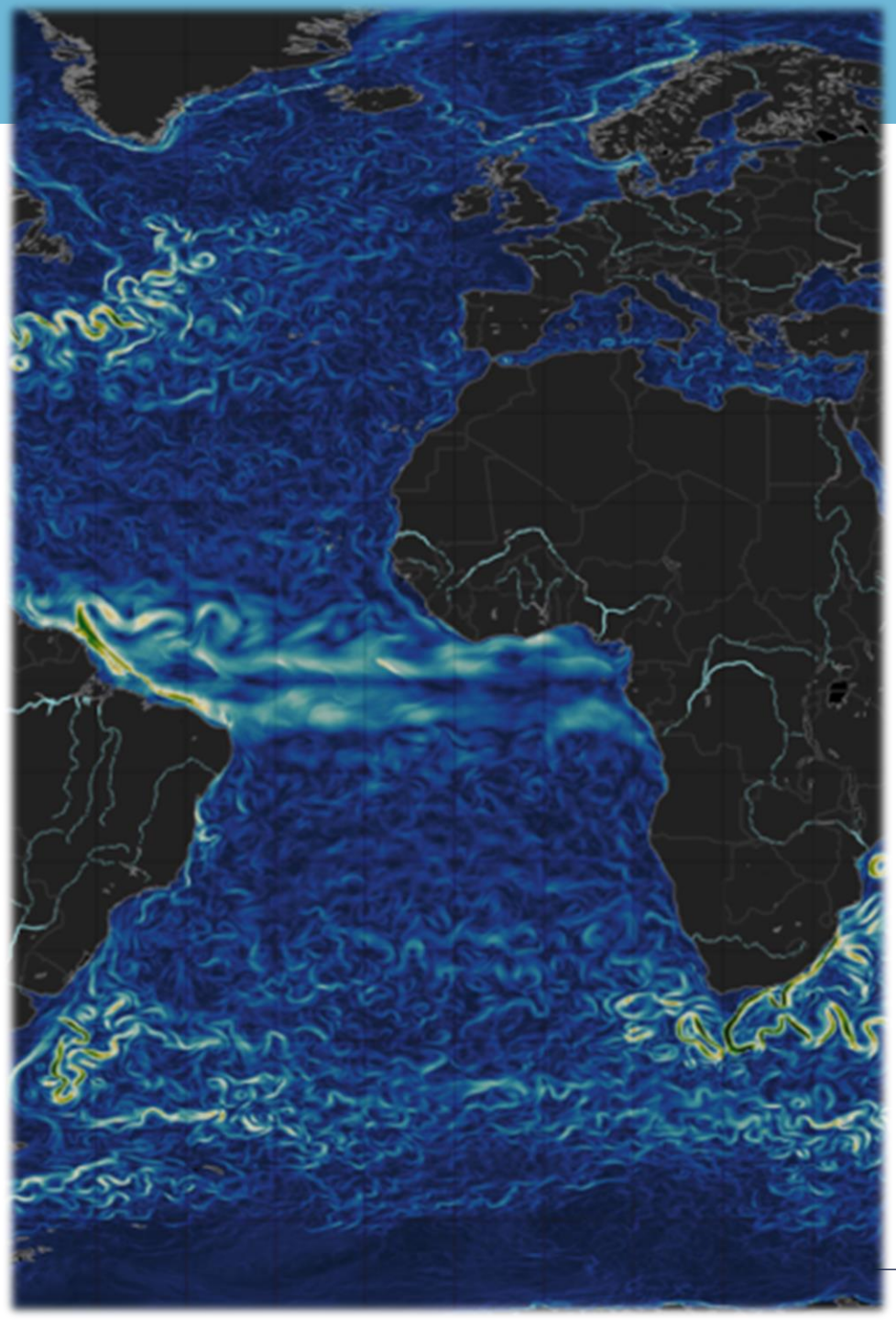
EuroGOOS
European Global Ocean Observing System



Bringing ocean prediction closer to the States, and States closer to ocean prediction.

Because ocean prediction is ready to contribute to government decisions for a sustainable ocean, and because our development requires major investment and cooperation between countries.

EuroGOOS
European Global Ocean Observing System



Transforming Mercator Ocean into an intergovernmental organisation

1. *To develop further the Europeanisation of Mercator Ocean governance and be representative of the European ocean prediction*

2. *To build a competent technical organisation in digital ocean systems supporting the European Member States and European Commission*

3. *To support inter-governmental and international agreements required for a further development of ocean prediction and support UNESCO/IOC*

EuroGOOS
European Global Ocean Observing System

3 decades of ocean prediction development

2000-2010

2010-2020

2020-2030

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Policies & governance

Services & operational infrastructures

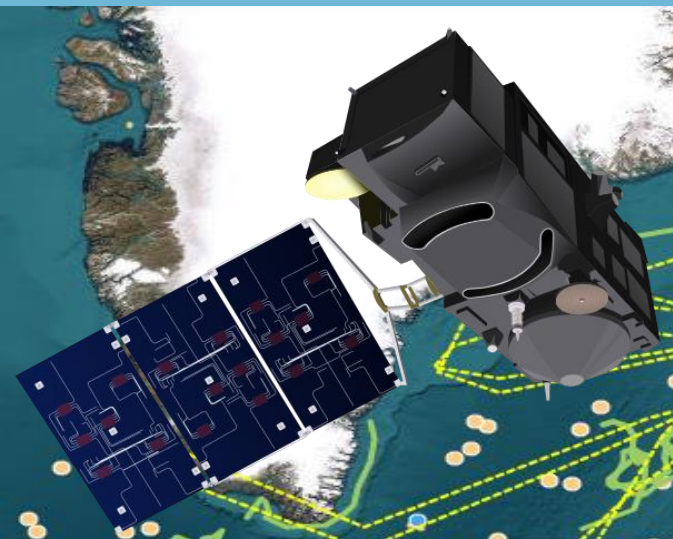
Science & international collaborations

Lisbon, 2022

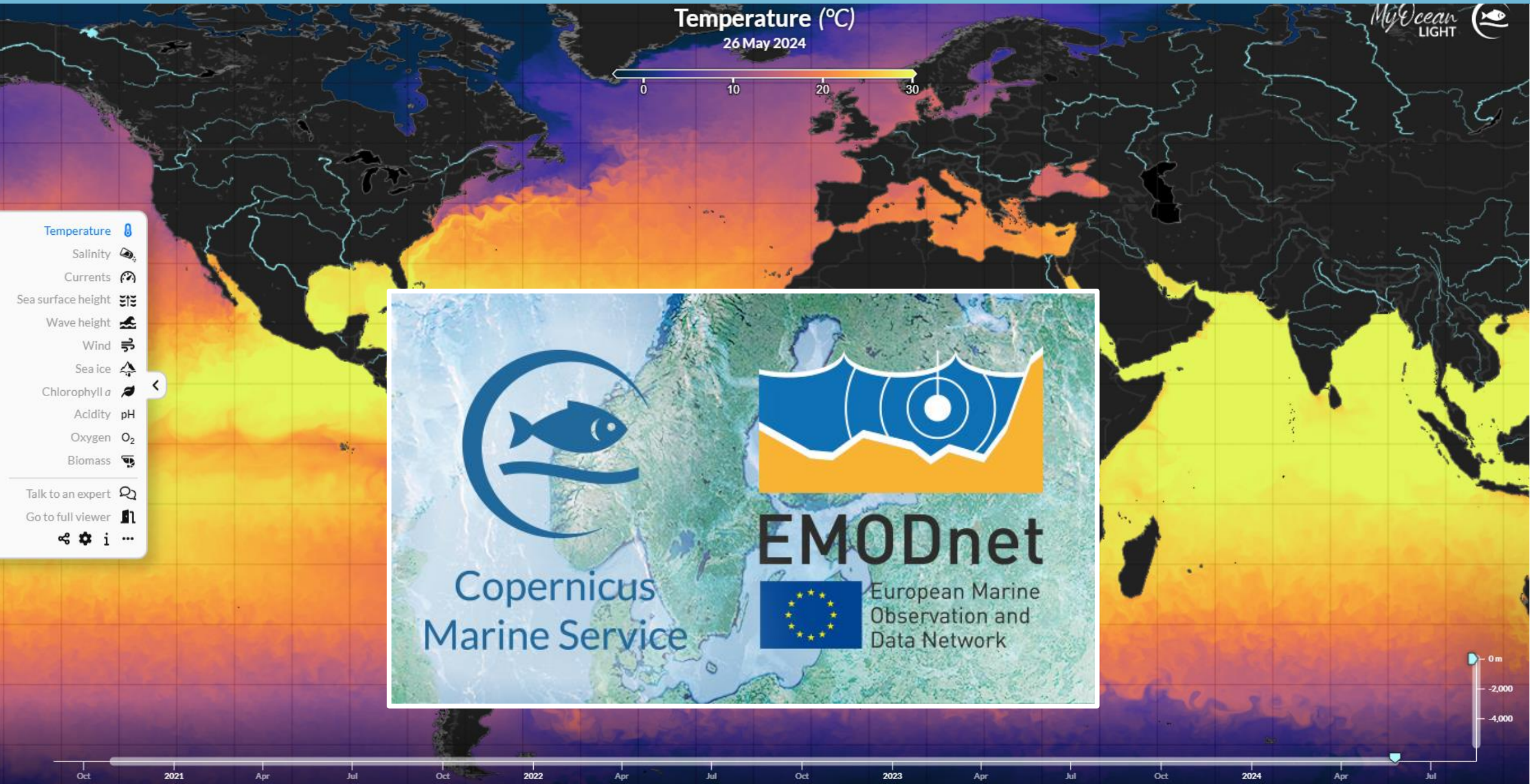
Barcelona, 2024

Nice, 2025

European Infrastructures : for Observation



European Infrastructures : Marine Services



Ocean Prediction National Centres

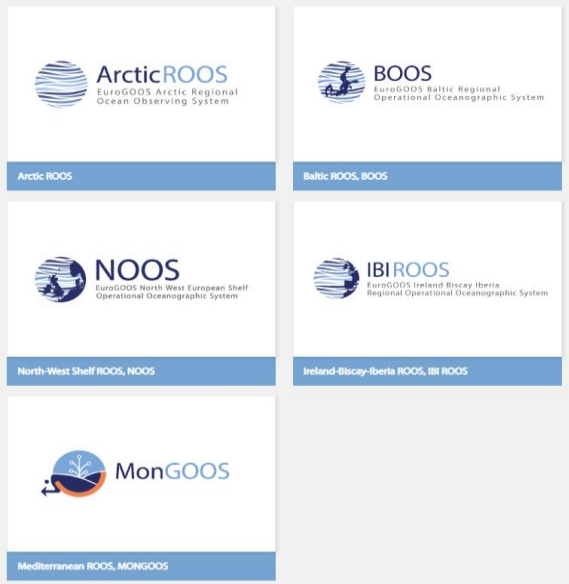
EuroGOOS > Regional Operational Oceanographic Systems (ROOS)

Regional Operational Oceanographic Systems (ROOS)

EuroGOOS supports five Regional Operational Oceanographic Systems (ROOS) in Europe. The EuroGOOS ROOS coordinate and support development and joint service production in European maritime regions. The ROOS feed marine data to pan-European portals bringing tangible added value to European cooperation. Working hand in hand, EuroGOOS members, ROOS, and other EuroGOOS networks jointly enhance the European leadership in ocean observing, forecasting and services.

Five ROOS work within EuroGOOS: in the Arctic (Arctic ROOS), the Baltic (BOOS), the North-West Shelf (NOOS), the Ireland-Biscay-Iberian area (IBI ROOS), and the Mediterranean (MonGOOS). EuroGOOS also fosters cooperation in the Black Sea region with Black Sea GOOS.

The objectives, activities, and governance of the ROOS are agreed in MoUs signed between regional EuroGOOS members and non-members. EuroGOOS insures pan-European representation and interface for ROOS and facilitates cooperation among them. ROOS report to the EuroGOOS General Assembly, while representatives of the EuroGOOS office participate in the ROOS annual meetings.

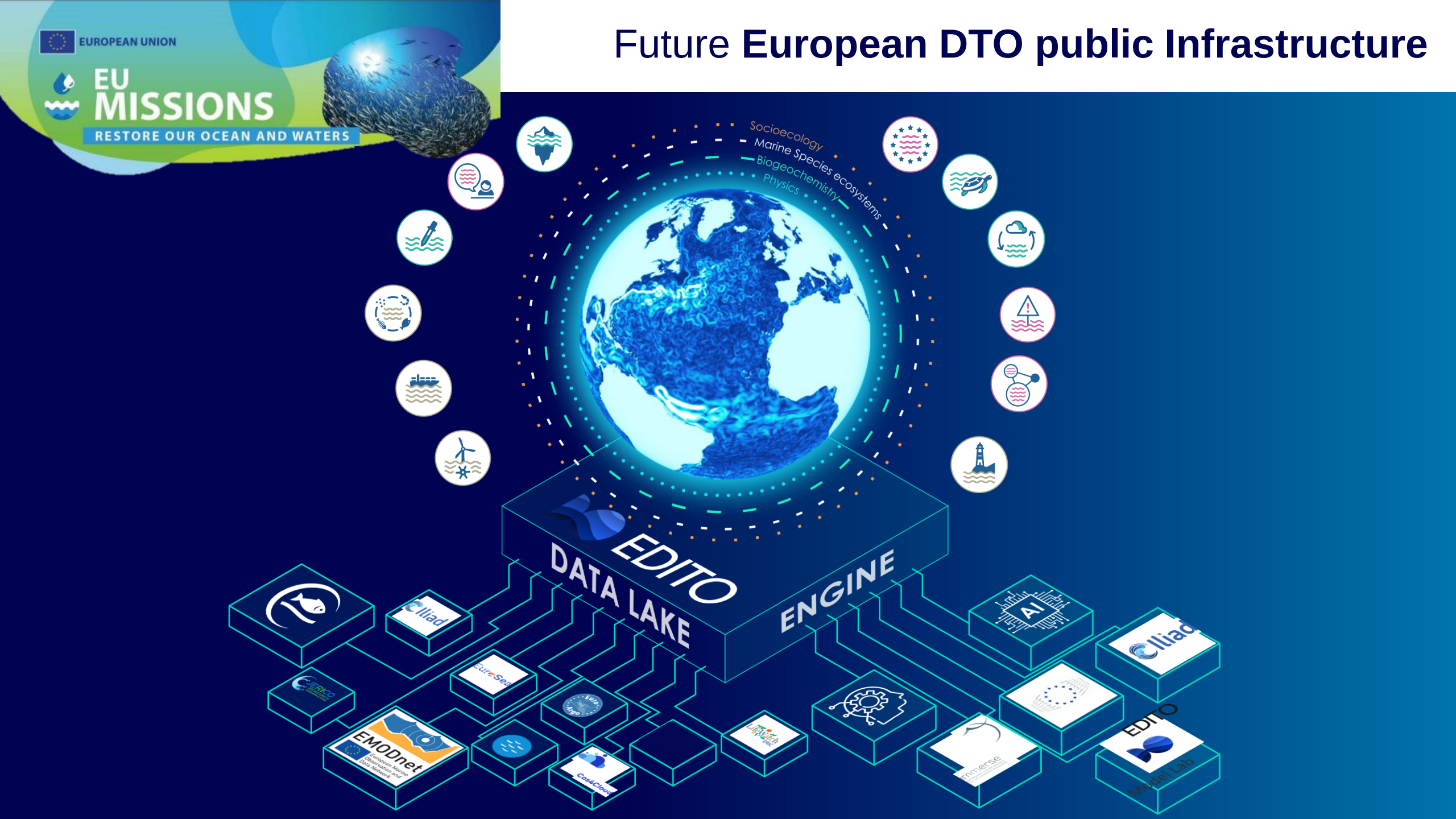


EuroGOOS > Links to Products

Links to Products

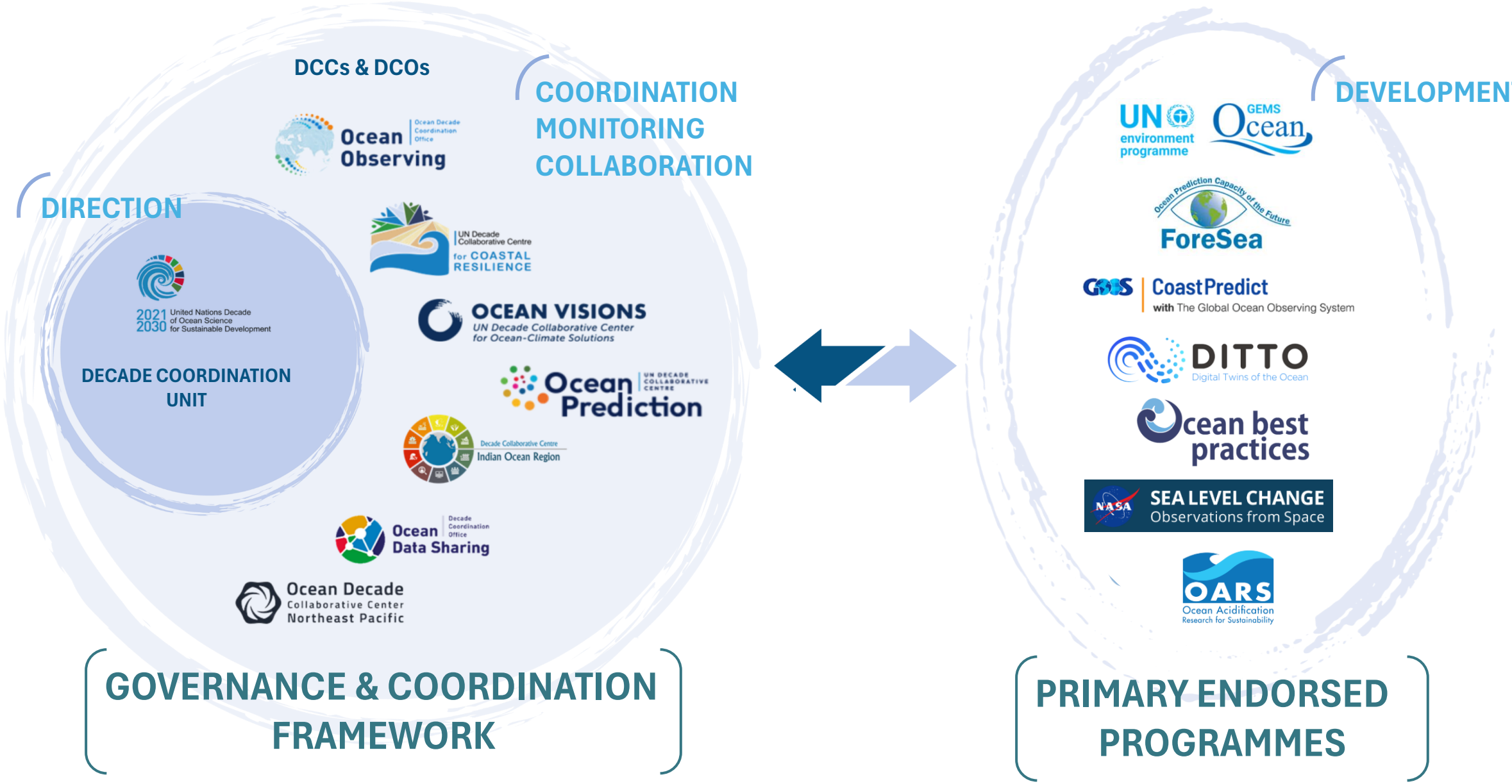
- Agency for Maritime and Coastal Services, Coastal Division (MDK)
- AZTI
- Balearic Islands Coastal Observing and Forecasting System (SOCIB)
- French Naval Hydrographic and Oceanographic Service (SHOM)
- Norwegian Institute for Water Research (NIVA)
- Oceanic Platform of the Canary Islands (PLOCAN)
- Slovenian Environment Agency (ARSO)
- The Cyprus Marine and Maritime Institute (CMMI)
- The French National Centre for Scientific Research (CNRS)
- Royal Belgian Institute of Natural Sciences (RBINS)
- Croatian Meteorological and Hydrological Service (DHMZ)
- Institute of Oceanography and Fisheries (IOR)
- Danish Meteorological Institute (DMI)
- Defence Centre for Operational Oceanography (FCOO)
- Tallinn University of Technology (TalTech)
- Finnish Meteorological Institute (FMI)
- French Research Institute for Exploitation of the Sea (Ifremer)
- Mercator Ocean International (MOI)
- Federal Maritime and Hydrographic Agency (BSH)
- Helmholtz-Zentrum Hereon
- Hellenic Centre for Marine Research (HCMR)
- Marine Institute (MI)
- Euro-Mediterranean Center on Climate Change (CMCC)
- National Research Council of Italy (CNR)
- Italian National Agency for new technologies, energy and sustainable economic development (ENEA)
- National Institute of Geophysics and Volcanology (INGV)
- Italian National Institute for Environmental Protection and Research (ISPRA)
- National Institute of Oceanography and Experimental Geophysics (OGS)
- Deltares
- Royal Netherlands Meteorological Institute (KNMI)
- Rijkswaterstaat – Water, Traffic and Environment
- Institute of Marine Research (IMR)
- Norwegian Meteorological Institute (MET Norway)
- Nansen Environmental and Remote Sensing Center (NERSC)
- Institute of Meteorology and Water Management (IMGW-PIB)
- Institute of Oceanology, Polish Academy of Sciences (IO PAN)
- Gdynia Maritime University, Maritime Institute
- Hydrographic Institute (IH)
- Portuguese Institute for the Ocean and Atmosphere (IPMA)
- National Institute of Biology (NIB)
- Spanish Institute of Oceanography (IEO)
- Puertos del Estado
- Swedish Meteorological and Hydrological Institute (SMHI)
- Centre for Environment, Fisheries and Aquaculture Science (Cefas)
- National Oceanography Centre (NOC)
- UK Met Office

Future **European DTO public Infrastructure**

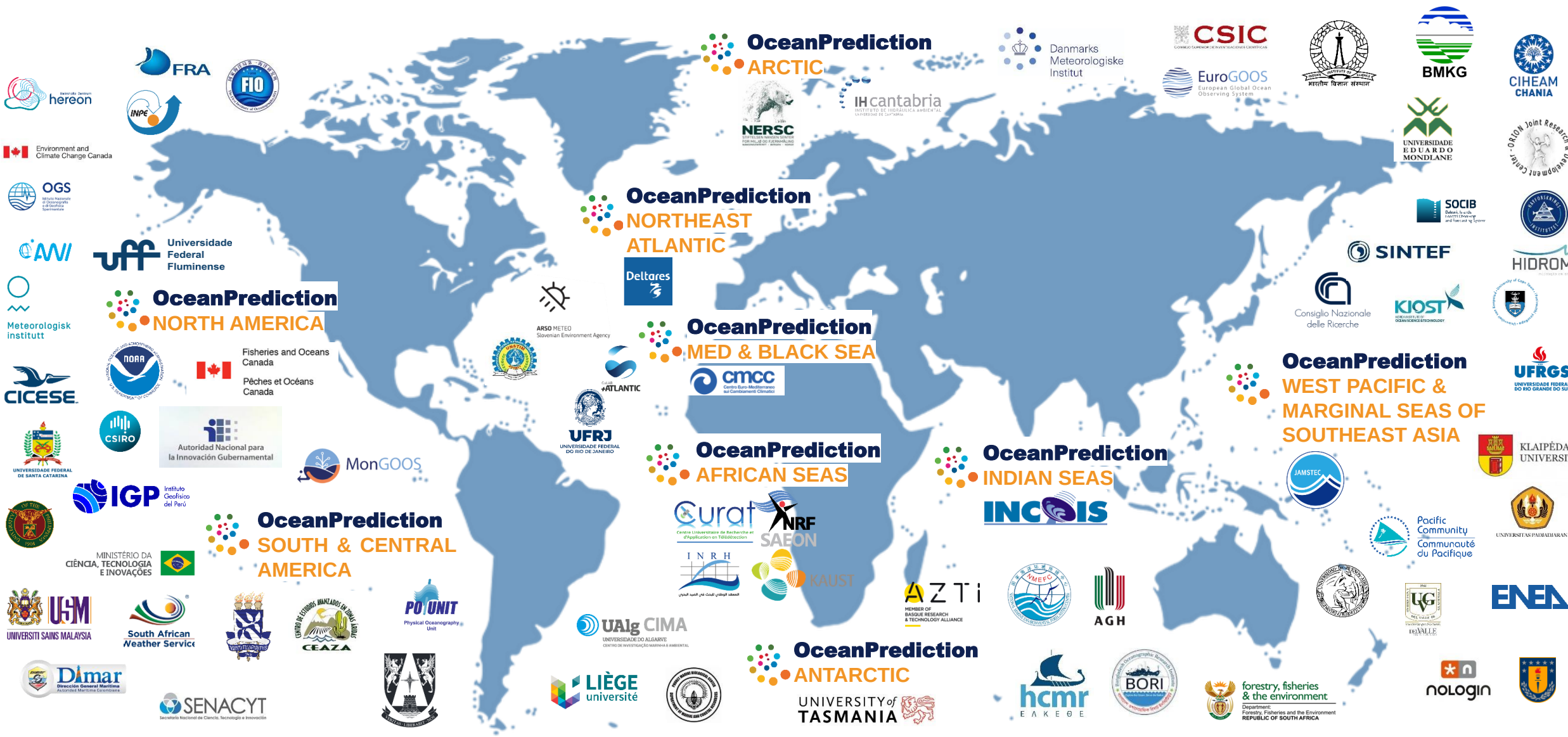


Preparing the legacy of the UN OCEAN DECADE

2021 2030 United Nations Decade of Ocean Science for Sustainable Development



OceanPrediction: a global community, ready for joint operations



LAUNCH OF IGO MERCATOR

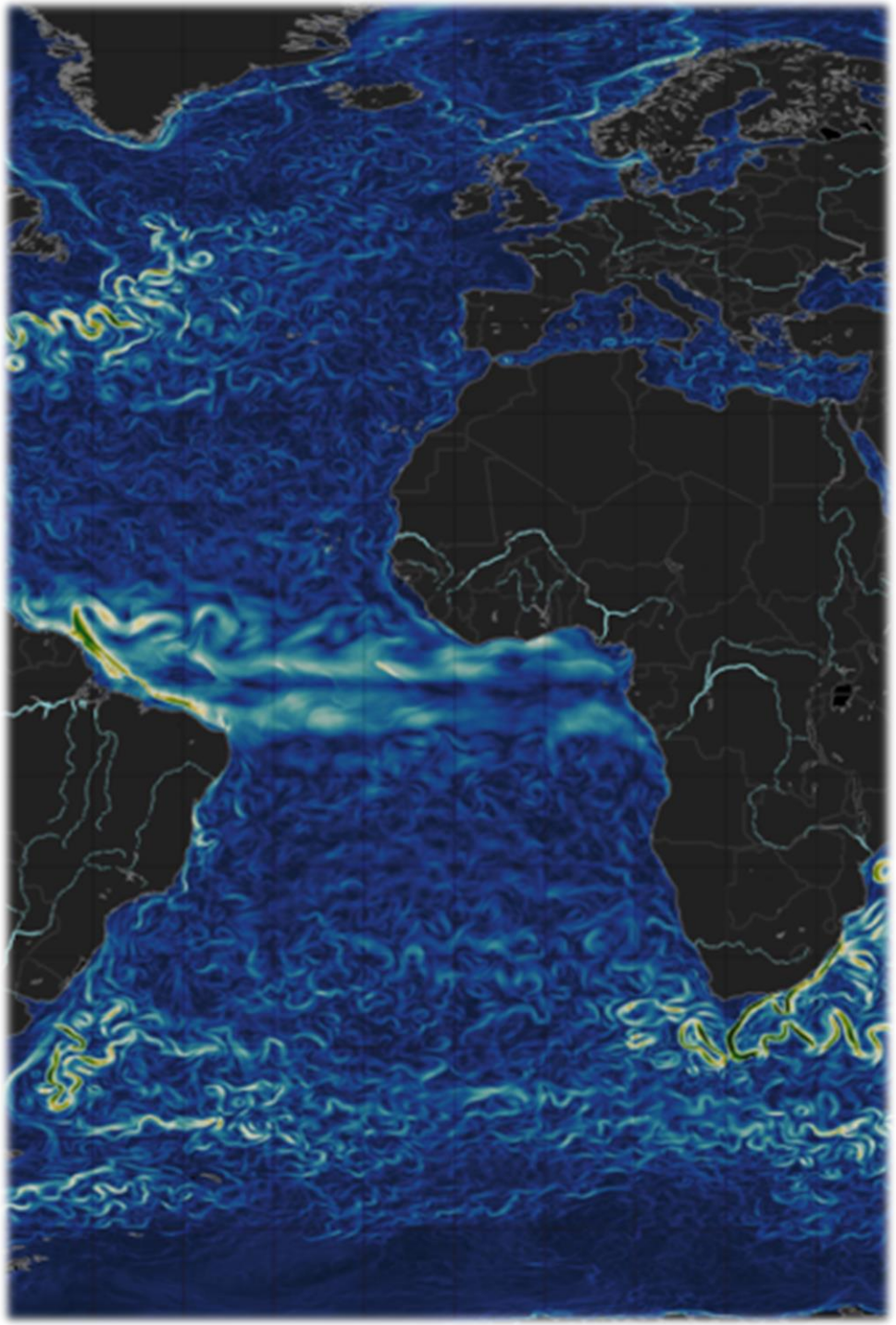
Legal transition / Services to Member States / UN Ocean 2025

EU DTO – FIRST VERSION

Demonstration / Infrastructures / EU Cooperation

GLOBAL ALLIANCE OF OCEAN FORECASTERS

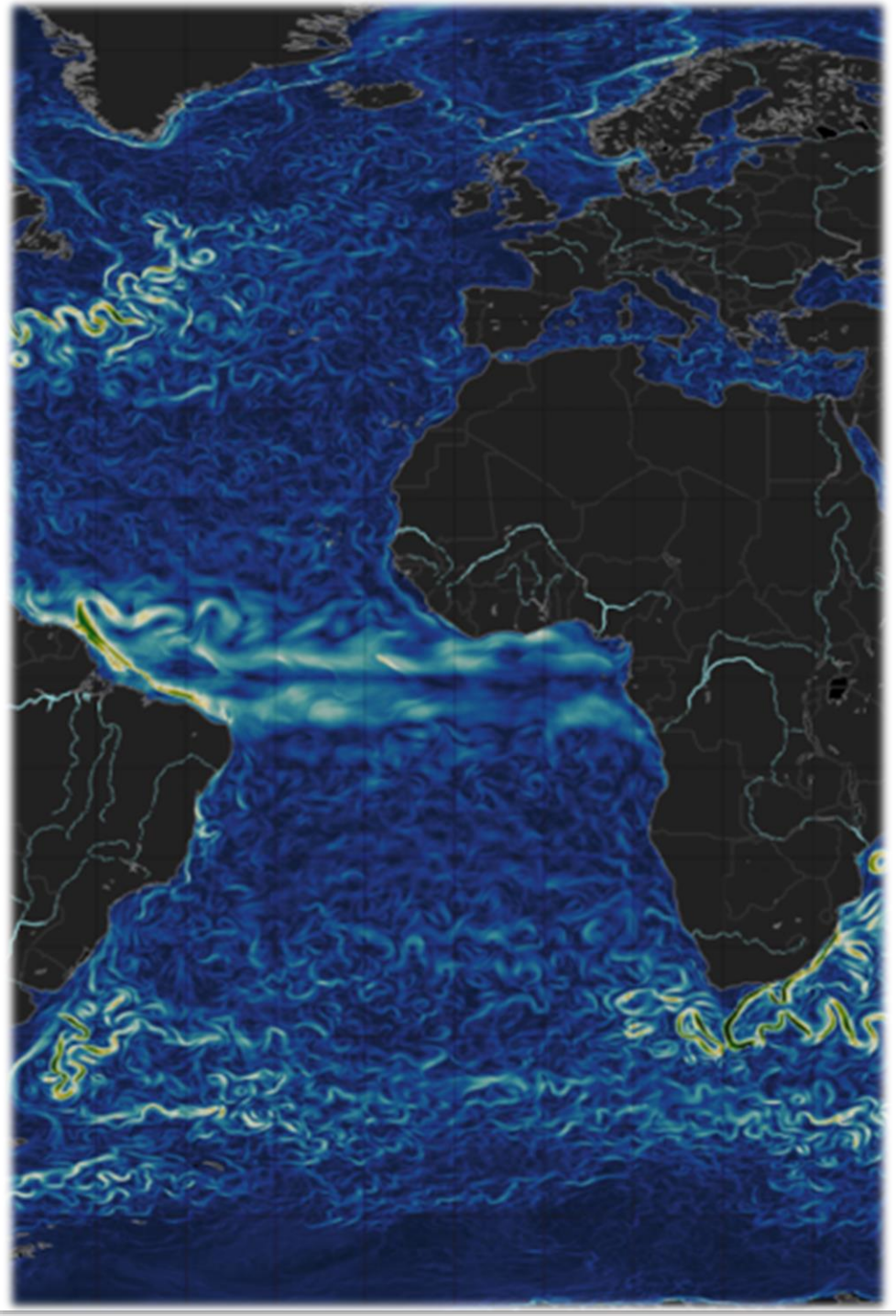
UN Decade / International cooperation



Transforming Mercator Ocean into an intergovernmental organisation

Status

EuroGOOS
European Global Ocean Observing System



Keeping the Mercator Ocean mission, changing the governance

1. *Create the IGO Mercator on a fast-track mode with a small group of States*
2. *Transition the Mercator activity from the current organisation to the new one*
3. *Extend the governance to a larger group of Member States and develop*

EuroGOOS
European Global Ocean Observing System

Decided in Feb 2022, started in June 2022

THE ONE PLANET SUMMIT FOR THE OCEAN
9, 10, 11 FEBRUARY 2022

11 Feb 2022, Brest, France

The 6 governments from France, Italy, Norway, Portugal, Spain and United Kingdom decided to transform the Mercator Ocean International organisation into an intergovernmental organisation (IGO) devoted to ocean prediction and call on other States to join

UNITED NATIONS OCEAN CONFERENCE LISBON

29 Jun 2022, Lisbon, Portugal (UN Ocean conf.)

The IGO Board of Delegates appointed by the 6 governments starts working on the creation of the IGO, and adopts a 3-year roadmap with the 2025 UN Ocean conference as a milestone.

Status : IGO Convention text finalized, to be approved

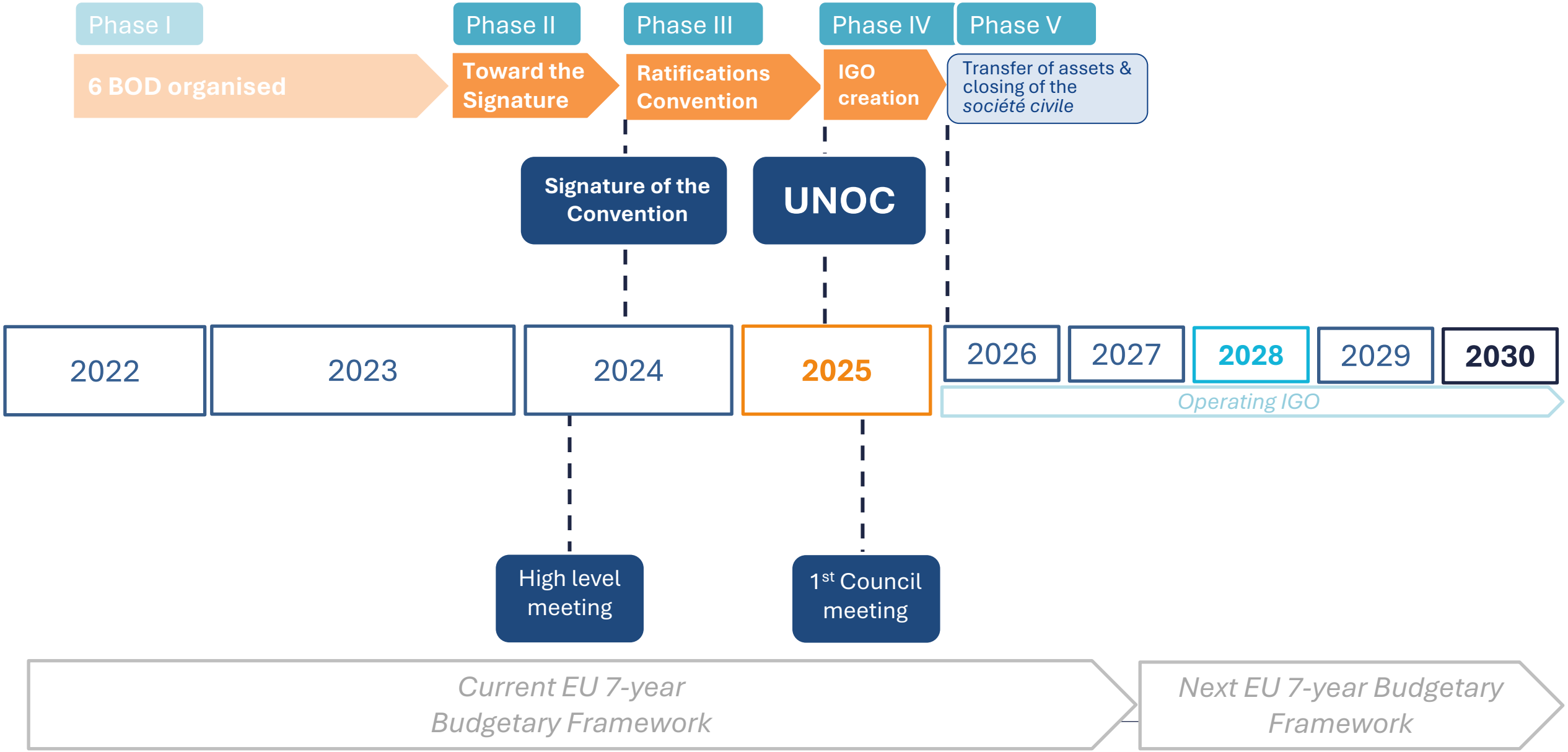
February 2022 – September 2023

The IGO Board of Delegates appointed by the 6 governments **organised 6 meetings** to develop the draft Convention for the IGO.

February 2024

A High Level Meeting was held to discuss the remaining open points of the draft Convention for the IGO, and prepare for the signature.

- **Name: MERCATOR, International Centre for the Ocean**
- **Purpose**: *The purpose of the IGO shall be based on research, to design, develop and operate world-class Digital Ocean Systems encompassing marine physics, biogeochemistry and ecosystems and to provide authoritative Digital Ocean Information Services of general interest to Member States and international ocean governance, including operational ocean forecast services.*


Phase I
Phase II
Phase III
Phase IV
Phase V
6 BOD organised
Toward the Signature
Ratifications Convention
IGO creation
Transfer of assets & closing of the *société civile*
Signature of the Convention
UNOC
2022
2023
2024
2025
2026
2027
2028
2029
2030
Operating IGO
High level meeting
1st Council meeting
Current EU 7-year Budgetary Framework
Next EU 7-year Budgetary Framework

CONVENTION ESTABLISHING AN INTERGOVERNMENTAL ORGANISATION

FOR THE DEVELOPMENT AND EXPLOITATION

OF DIGITAL OCEAN SYSTEMS AND INFORMATION SERVICES

(MERCATOR INTERNATIONAL CENTRE FOR THE OCEAN)

PREAMBLE

The States Parties to this Convention:

AWARE of the role of the ocean in the global climatic, environmental, and social balance and of the need for the international community to strengthen and enhance cooperation, coordination and collective work to preserve its biodiversity, resources and ecosystem services and to develop a blue economy that respects ecosystems, mitigates climate change and adapts to its inevitable impacts,

AWARE of the need to base global governance of the High Seas, considered as a common good, and European and national strategies for the Exclusive Economic Zones, and the coastal areas, on scientifically qualified and reliable digital services informing decision-makers on the state of the marine environment, marine life and the impact of human activities,

AWARE that advancing the understanding of the ocean and its interactions with human activity, and the development of digital ocean information services, requires a sustained and focused research and development effort,

- **Name: MERCATOR** International Centre for the Ocean

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CONVENTION ESTABLISHING AN INTERGOVERNMENTAL ORGANISATION

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ARTICLE 5

COOPERATION

1. For its purpose and the fulfilment of its objectives, Mercator International Centre for the Ocean shall co-operate to the largest possible extent with the governments and national agencies of its Member States, in particular for activities related to Member State coastal zones and adjacent regional seas […]

2. Mercator International Centre for the Ocean shall also co-operate to the largest possible extent with the European Union, the United Nations and their relevant agencies and programmes, other relevant organisations and relevant scientific international entities, including the European Centre for Medium-range Weather Forecasts (ECMWF), the European organisation for the exploitation of meteorological satellites (EUMETSAT) the European Space Agency (ESA) and the European Global Ocean Observing System (EuroGOOS)

3. […]

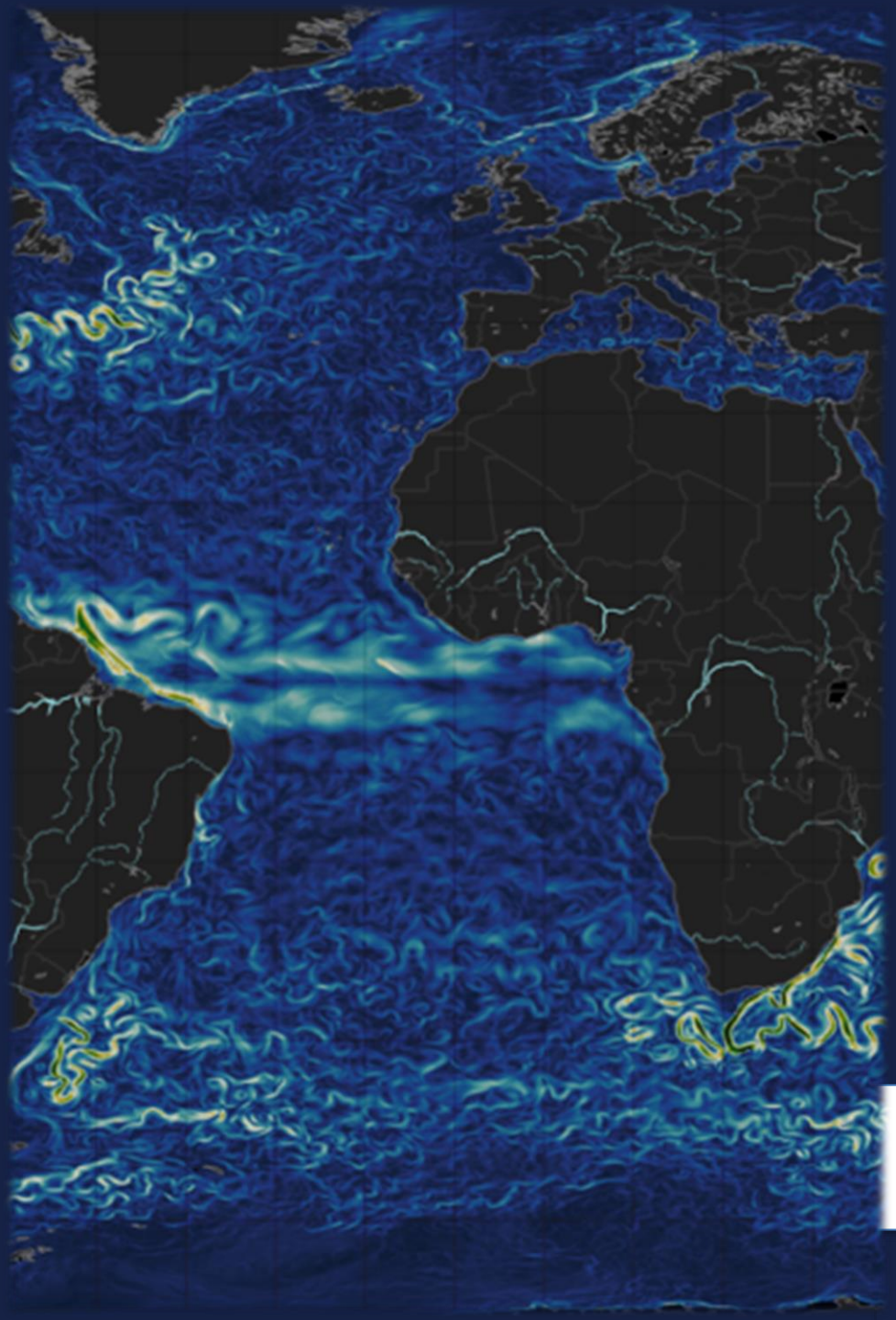
EuroGOOS
European Global Ocean Observing System

MERCATOR OCEAN INTERNATIONAL

NETWORK OF MEMBER STATES SERVICES

MoU

INTERGOVERNMENTAL ORGANIZATION



MERCATOR OCEAN INTERNATIONAL

Thank you

21 May 2024, Lisbon, EuroGOOS General Assembly

EuroGOOS
European Global Ocean Observing System

EU Digital Twin Ocean and related initiatives

Zoi Konstantinou
European Commission, DG MARE

EuroGOOS GA, 21-23 May 2024

EU MISSION

‘Restore our Ocean and Waters by 2030’

European Digital Twin of the Ocean (EU DTO)

Special Session, EuroGOOS GA
21/05/2024

#MissionOcean #EUDTO #HorizonEU

EU DTO: the EC Vision

EU MISSIONS

RESTORE OUR OCEAN AND WATERS

PROTECT AND RESTORE MARINE AND FRESHWATERS ECOSYSTEMS AND BIODIVERSITY

PREVENT AND ELIMINATE POLLUTION OF OUR OCEANS, SEAS AND WATERS

MAKE THE BLUE ECONOMY CARBON-NEUTRAL AND CIRCULAR

Cross-cutting enablers for the mission:

- Digital Ocean and Water knowledge system
- Public mobilisation and engagement

"Today, we know the ocean is vulnerable and is threatened by our misdeeds. Pollution, chemicals and the overexploitation of marine resources. The ocean is too large for any one of us, and yet so fragile that our individual actions matter. …
… Every problem is an opportunity for innovation. But we need a clear and ambitious objective. We need a mission, like the European Green Deal. ***That is why we have launched the 'Mission to restore our ocean and waters by 2030'*** *…*

… Finally, the ocean is still largely a great mystery for humankind. ***That is why Europe is building a digital twin of the ocean****.*
We are connecting our assets – like the Copernicus satellites, marine infrastructure like icebreakers, buoys and underwater drones, and high-performance computing. We will gather the raw data and turn it into real-time knowledge and longer-term predictions.

We are putting the power of the digital revolution at the service of our climate*. …"*

EU DTO: the EC Vision

EU MISSIONS

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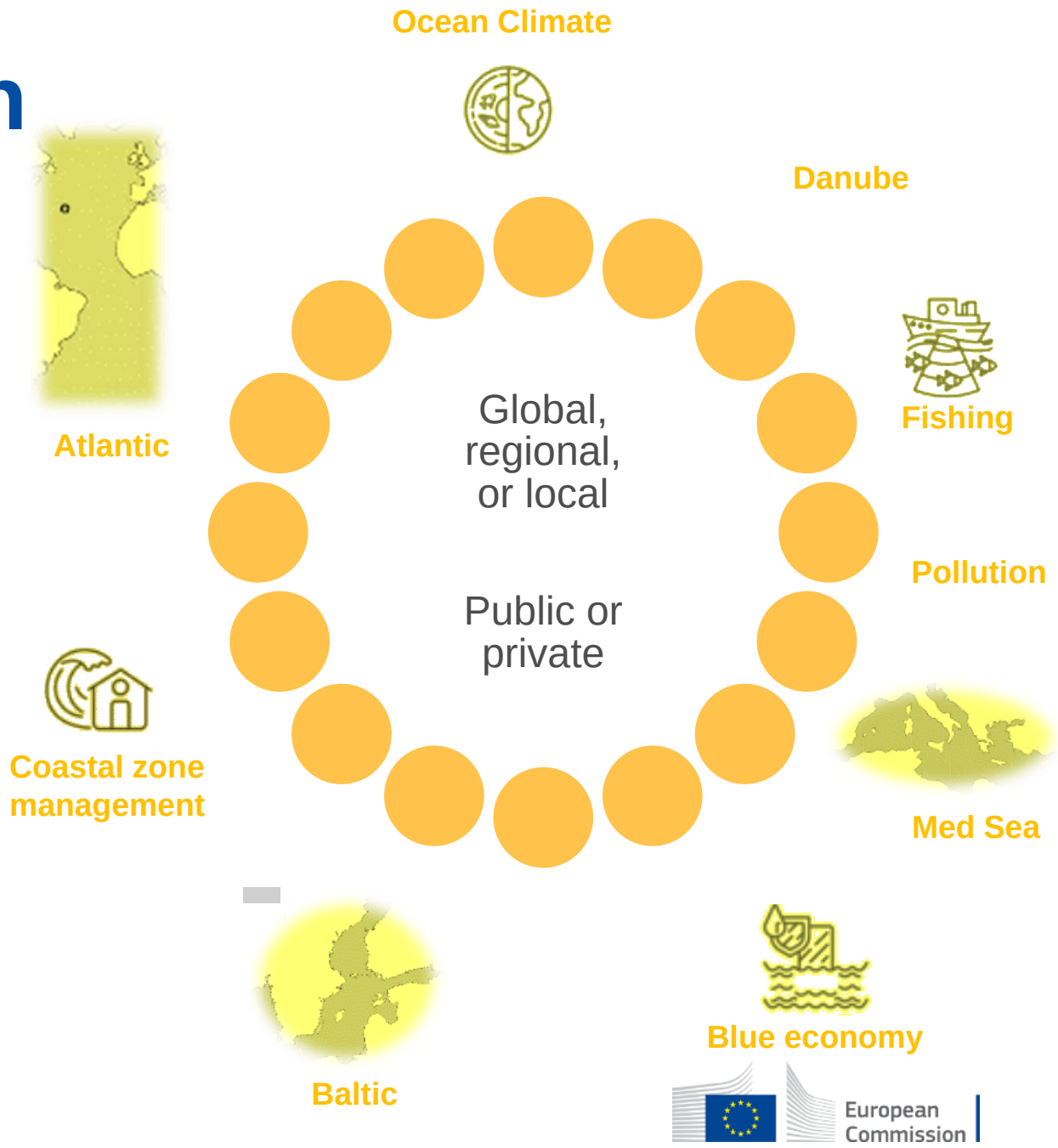

European Commission

Structuring & integrating the ocean knowledge value chain FOR ocean actors

TO:

- Support science-driven approaches to policies implementations by users: ecosystem-based management of marine habitats/green infrastructure, planning and management of marine areas, safeguard productivity and biodiversity of marine ecosystems, etc.
- Support industry to develop new business models, sustainable green services, and opportunities in ocean data and related services
- Increase citizen engagement & empowering citizens in innovative co-designed services and projects, enable the infusion of 'non-scientific data streams'

HOW:

- By Integrating and connecting wide range of data and models (from physics to socio-economics) with cloud infrastructures, HPC, AI
- by providing development kits, interfaces and visualization tools for "what-if" scenarios and decision support

« A core infrastructure, conceived as a public good »

European Commission

EU DTO: the EC Vision

EU MISSIONS

RESTORE OUR OCEAN AND WATERS

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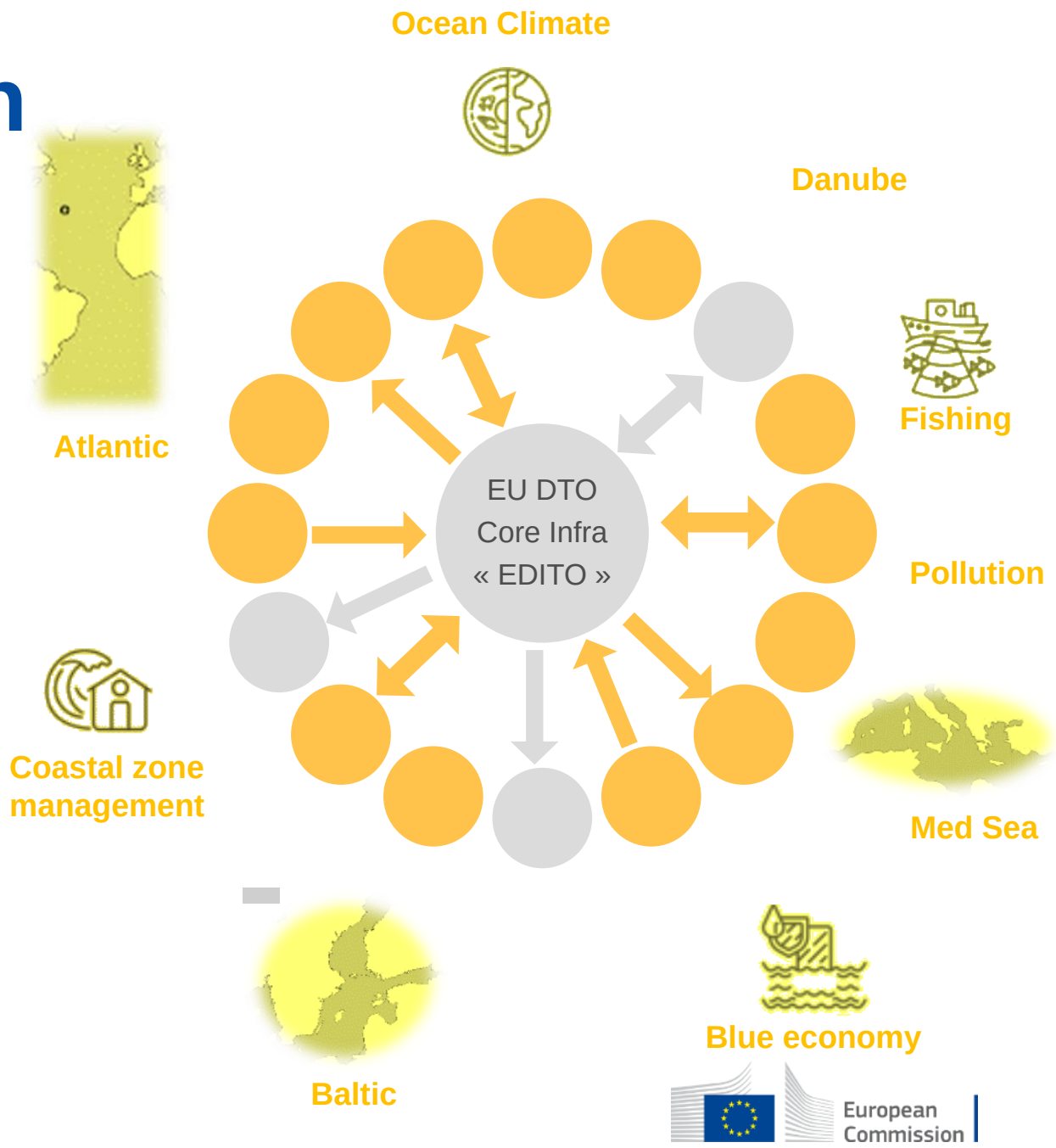


European Commission

EU DTO: the EC Vision

Harmonised data

EMODnet · Copernicus Marine Service · Marine RIs

Other sources of data

Research, citizen, private and other networks data

Models outputs

Models

Physics, Fisheries, biodiversity

Research → *to operations*

EDITO (Core DTO)

Ocean Data Space

DTO engine core models suite

Interactivity Co-working environment Local Twins Marketpace

LIGHTHOUSES

Ocean Climate

Biodiversity

Pollution

Med Sea

Atlantic

Blue economy

Baltic

Coastal zone management

Maritime Spatial Planning

Danube & Black Sea

EU DTO: 3 pillars of action

1. **Science-base**

   (Horizon Europe, national programmes …)

2. **EU Core Infrastructure**

   (Mission Ocean WP)

3. **EU DTO in the world**

2. DTO Core Infrastructure (EDITO) (Mission Ocean WP)

2021

Public Infrastructure for the European Digital Twin Ocean
IA, IBA - 3M€

EDITO-Infra - EU Public Infrastructure for the European DIgital Twin Ocean
Mercator Ocean Int (CMEMS) & VLIZ (EMODnet)

Underlying models for the European Digital Twin Ocean, IA - 7M€

EDITO-Model Lab - Underlying models for the European Digital Twin Ocean

2022

Integration of biodiversity monitoring data into the Digital Twin Ocean
IA - 10M€

DTO-BioFlow, - Integration of biodiversity monitoring data into the DTO
DIGI4ECO - DT-sustained 4D ecological monitoring of restoration in fishery depleted areas

Towards a European e-DNA library of marine and freshwater species
CSA - 2M€

eDNAqua-plan - A Plan towards an eDNA reference library and data repository for Aquatic Organisms, navigating Europe towards the next generation biodiversity monitoring

2023

Integration of socio-ecological models into the Digital Twin Ocean, RIA, 13M€

GAP in finalisation – 4 RIAs

Roadmap towards the integration of inland waters into the Digital Twin Ocean, CSA - 2M€

IDEATION - InlanD watErs in the digitAl TwIn OceaN

2024

EU DTO – Phase 2
IA, IBA – 14M€

Scaling up EU DTO core infrastructure (data sources, models and services) Integration of existing applications (local or sectoral DTOs); Development of new user-driven applications; Interoperability with similar digital initiatives; Stakeholder engagement (inclusivity)

EU DTO: inclusive and open

EDITO follows a co-design and co-development approach

The core EU DTO must:

- be co-developed in collaboration with willing projects and stakeholders
- foster the co-development of local or regional, application-specific, DTOs
- open to interoperability with other similar initiatives

You can ALL contribute

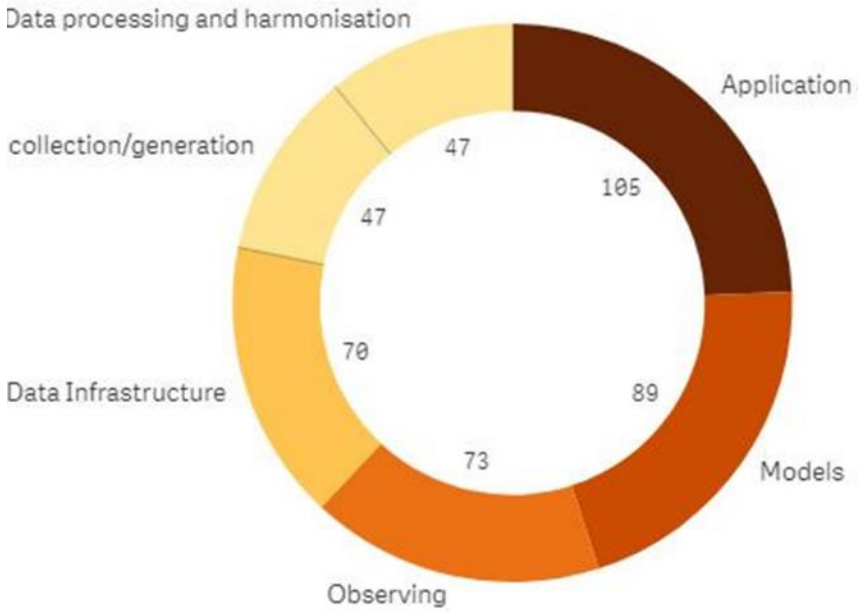
- What will you need from the EU DTO ?
- What can you bring to the EU DTO, and how?

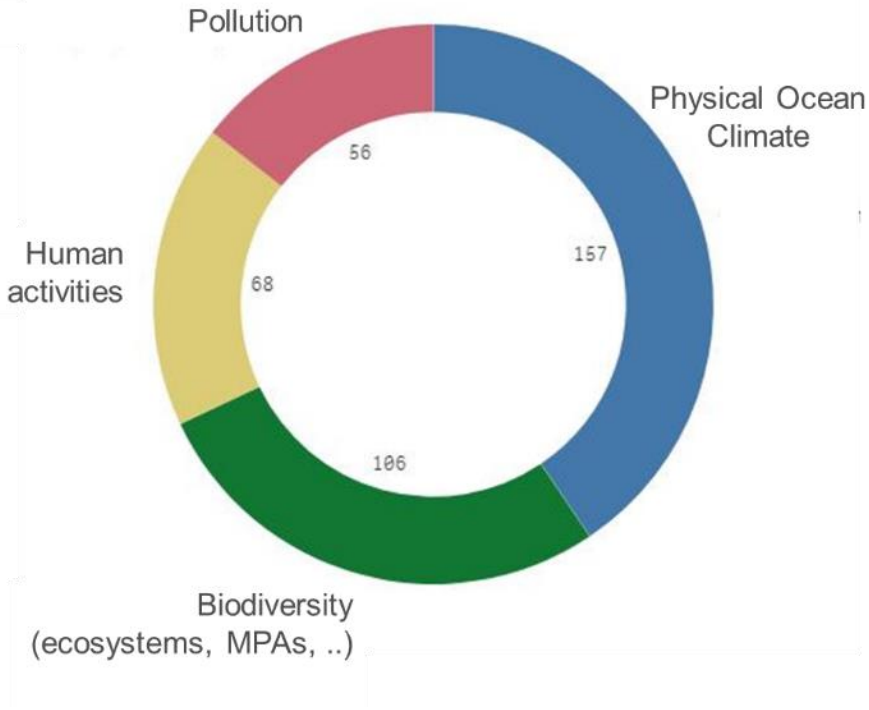
European Digital Ocean Forum

1. DTO Science Base

Sustainable Blue Economy Partnership

EU Programmes : 187 relevant projects (50+ running and linked)





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Digital Ocean Forum
14-15 June 2023, Brussels

3. EU DTO in the world

- EU 27 – linking with national initiatives
- UN Decade of Ocean Science for Sustainable Development

Digital Twins of the Ocean

Ocean Decade Coordination Office

Ocean Data Sharing

Ocean Prediction UN Decade Collaborative Centre

UN Decade Collaborative Centre for COASTAL RESILIENCE

...

- esa
- G7 FUTURE OF THE SEAS & OCEANS INITIATIVE
- All-Atlantic Ocean Research & Innovation Alliance

INVITATION

EU MISSIONS

RESTORE OUR OCEAN & WATERS

Digital Ocean Forum #3

Wednesday **12 June**, 12:30-18:00

Scientific and Technical Workshop *Brussels, Palais des Académies*

Thursday **13 June**, 10:00-16:30

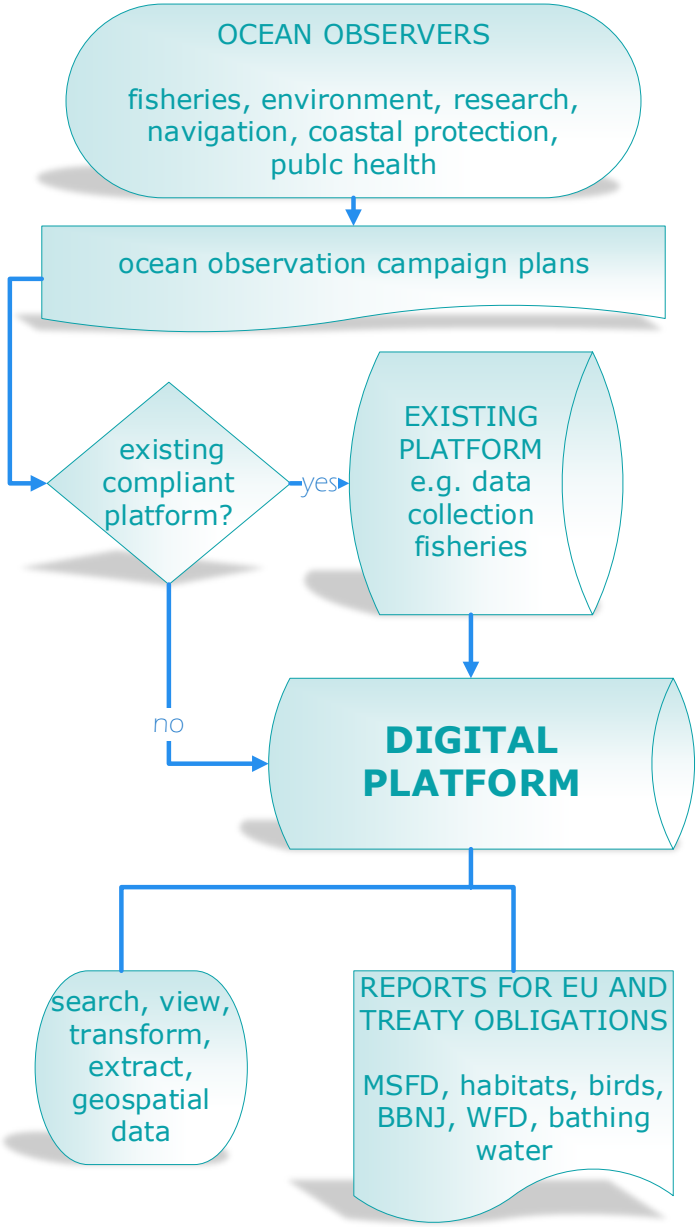
High-Level event *Brussels, Palais des Académies*

in cooperation with EDITO | MERCATOR OCEAN INTERNATIONAL | VLIZ | be EU belgium24.eu

Next Steps in Ocean Observation

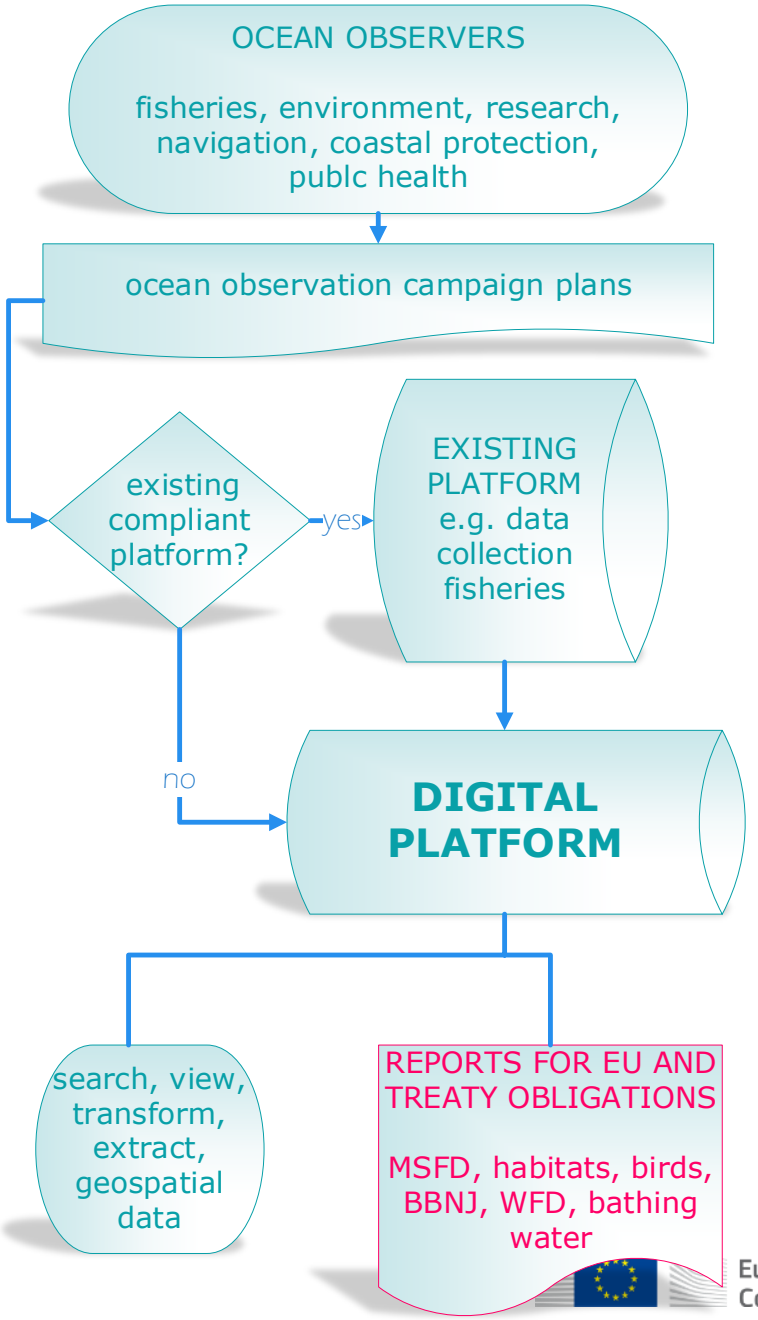
DIGITAL PLATFORM

- Call for tender
  - June 2024
- Sign contract
  - December 2024
- Operational
  - mid 2026



European Commission

Towards "*report once, use for many purposes*"



Member State Expert Group

Research

Coastal protection

Navigation

Licensing

Ecosystem monitoring

Fisheries management

Public Health

Appointed by Member States
subgroup of Member State Expert Group
for Maritime Policy

needs

progress

progress

advice

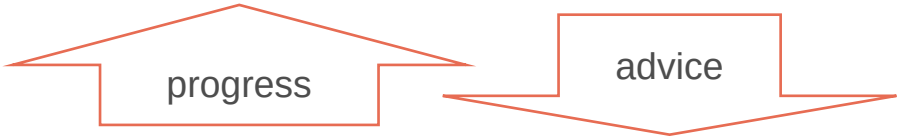
European Commission

MARITIME AFFAIRS AND FISHERIES

European Commission

Member State Expert Group

Appointed by Member States
subgroup of Member State Expert Group
for Maritime Policy



European Commission
MARITIME AFFAIRS AND FISHERIES

Experts' ideal profile

- Knowledge and understanding of ocean observation landscape in their Member State including the actors and stakeholders involved;
- Knowledge and understanding of the requirements of public bodies under the responsibility of different government departments who need the data derived from the observations, including those obliged by EU legislation;
- Expert knowledge on the objectives and functioning of the different reporting systems and requirements, to provide input on a) streamlining the reporting; b) identifying opportunities for simplification, coordination and synergies and c) defining a working methodology to reach these objectives.

European Commission

FIRST MEETING 25 JUNE, 2024

- Invitations sent
- Agenda
  - MARE
    - outcome of studies
    - digital platform
    - legislation
  - Experts
    - feedback
    - needs and ideas for reducing administration and increasing competitiveness

Thank you for your attention

Contact Points for the EU DTO

EU-MISSION-OCEAN-AND-WATERS@ec.europa.eu
Zoi.KONSTANTINOU@ec.europa.eu (DG MARE) and Nicolas.SEGEBARTH@ec.europa.eu (DG RTD)

Contact Points for the DG MARE Ocean Observation initiative

Remy.DENOS@ec.europa.eu and Zoi.KONSTANTINOU@ec.europa.eu

European Commission

Introduction: EuroGOOS role as Decade Implementing Partner

Dina Eparkhina
EuroGOOS

EuroGOOS GA, 21-23 May 2024

The Science we need for the Ocean we want

EuroGOOS
European Global Ocean Observing System

7 Societal Outcomes

A clean ocean

where sources of pollution are identified and reduced or removed.

A healthy and resilient ocean

where marine ecosystems are understood, protected, restored and managed.

A productive ocean

supporting sustainable food supply and a sustainable ocean economy.

A predicted ocean

where society understands and can respond to changing ocean conditions.

A safe ocean

where life and livelihoods are protected from ocean-related hazards.

An accessible ocean

with open and equitable access to data, information and technology and innovation.

An inspiring and engaging ocean

where society understands and values the ocean in relation to human wellbeing and sustainable development.

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Unlock innovative ocean science solutions - global effort building on achievements in ocean science

EuroGOOS
European Global Ocean Observing System

10 Challenges

Challenge 1 - Understand and beat marine **pollution**

Challenge 2 - Protect and restore **ecosystems** and **biodiversity**

Challenge 3 - Sustainably **feed** the global population

Challenge 4 - Develop a sustainable and equitable **ocean economy**

Challenge 5 - Unlock ocean-based solutions to **climate change**

Challenge 6 - Increase community resilience to **ocean hazards**

Challenge 7 - Expand the **Global Ocean Observing System**

Challenge 8 - Create a **digital** representation of the **ocean**

Challenge 9 - **Skills, knowledge and technology** for all

Challenge 10 - Change humanity's **relationship** with the ocean

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

EuroGOOS engagement in the Decade

EuroGOOS
European Global Ocean Observing System

- EuroGOOS has helped establish
  - Decade programmes **CoastPredict**, **SciNMeet** and others
  - **DCC on Ocean Prediction** (three of the Regional Teams are supported by EuroGOOS members)
  - **DCC on Coastal Resilience**
- Within the CoastPredict Programme, EuroGOOS is principal partner of **PredictOnTime** on coastal observing and prediction systems for extreme events
- EuroGOOS is coordinating the **Decade project** 'Scientists for Ocean Literacy'
- EuroGOOS has conducted several **Decade-endorsed events**, e.g. **EOOS** Technology Forums in 2022 and 2024, 10th EuroGOOS International **Conference** in 2023, and contributed to several Decade activities on **Ocean Literacy**.

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

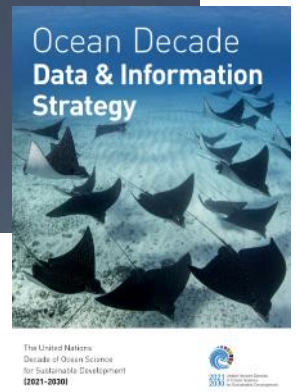
Global Ocean Decade Coordination

EuroGOOS
European Global Ocean Observing System

- **IOC Secretariat** – overall coordination
- **Decade Coordination Unit** (at IOC) – central hub and day-to-day management
- **Decade Advisory Board** – fifteen members - strategic technical advice
- **Ocean Decade Alliance** – high-level group - catalyze large-scale resource commitments
- **Decade Coordination Offices and Decade Collaborative Centres**– regional or thematic level
- **Decade Implementing Partners** – non-UN organizations - support DCU and DCOs and DCCs
- **Informal Working Groups** – Ocean Decade Corporate Data Group (Fugro-IOC) – unlock privately owned marine data

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Main components of the ocean digital ecosystem and associated Ocean Decade coordination bodies



2021 2030 United Nations Decade of Ocean Science for Sustainable Development

https://**oceandatasharing-dco**.org

https://www.**unoceanprediction**.org

Image credit: Vision 2030 White Paper on Challenge 8, v.1

EuroGOOS – new Decade Implementing Partner

EuroGOOS
European Global Ocean Observing System

Help meet all 10 Challenges

- **Connection** with DCOs for Ocean **Observation** and for **Data** Sharing and DCCs for Ocean **Prediction** and for Coastal **Resilience**, as well as the **CoastPredict** Programme

- Help harness the potential of the **European** ocean observing community and **transfer** its **knowledge** and **best practices** to those who need them

- EuroGOOS community **engagement and communication** (workshops, bulletins and updates, webinars, outreach)

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

EuroGOOS
European Global Ocean Observing System

10th EuroGOOS Conference – Ocean Decade event

Key messages:

- Holistic Earth system approach
- Importance of observations for services & products
- EuroGOOS for UN Ocean Decade
- Co-design with users and stakeholders, including policymakers
- Importance of people
- Demonstrate the value

Recommendations on:

- Observations
- Modelling, forecasting, DTOs, and data
- Engagement and ocean literacy

11th EuroGOOS International Conference in 2026, hosted by CMMI in Cyprus (EU Presidency)

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

- 1,500 participants from 124 countries and over 3,000 online viewers
- 120 Satellite Events (8-12 April)
- Review of the Vision papers on how to tangibly address Decade Challenges
- Main outcome - Barcelona Statement with priority areas for action

UN Ocean Decade Conference
April 2024, Barcelona

EuroGOOS
European Global Ocean Observing System

TOWARDS THE ARCTIC OCEAN WE WANT

11 April, 13.15-14.45 On Site: Pacific Ocean

Towards the integrated Ocean Science we need for the Arctic Ocean we want

Panel discussion with: *Adrian Lema, National Ocean Decade Committee of Denmark, Greenland, Faroe Island, Heidi Marie Kassens, IASC Marine Working Group, Joseph Nolan, EuroGOOS, Arctic ROOS, Larry Mayer, National Ocean Decade Committee of US, Enooyaq Sudlovenick, University of Prince Edward Island, Arild Sundfjord, National Ocean Decade Committee of Norway and moderator Siri Carson.*

Introductions by:

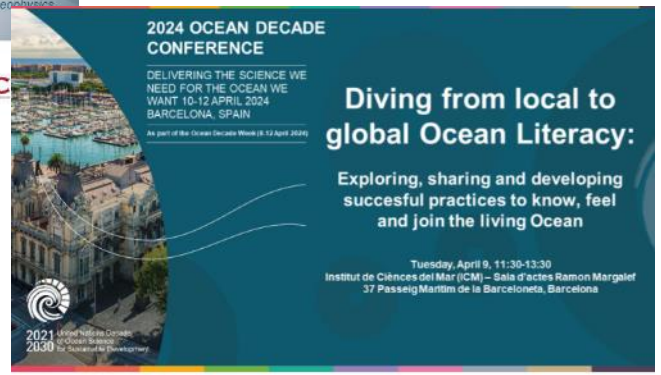
Kevin Brosseau
Associate Deputy Minister, *Fisheries and Oceans Canada*

Cecilie Myrseth
Minister of Fisheries and Ocean Policy, Norway

Vidar Helgesen
Executive Secretary, IOC of UNESCO

ArcticROOS EuroGOOS EUROPEAN POLAR BOARD IASC The Research Council of Norway

The National Ocean Decade Committees of: Canada, Denmark, Greenland and Faroe Islands and Norway



PANEL: Ocean Literacy in Science

Moderated by Josep Lluis Pelegri Llopart
ICM-CSIC

Ocean science is often viewed as a difficult topic that is accessible only to researchers that hold complex concepts and use specialized techniques, following the so-called scientific method. **Is "Ocean science" really inaccessible to the general public? Or may we endorse the simple yet powerful idea that any creative approximation to Nature is "scientific"?** In this session we will debate with four marine and social scientists that will explore these questions by sharing their experiences on how to integrate natural and traditional knowledge, and on how to promote ocean literacy not only for the general public but also among scientists, stakeholders and funding agencies.

Dina Eparkhina
EuroGOOS

Carmen Garcia
IEO-CSIC

Donata Canu
OGS

Silvia Gomez
UAB

CSIC PREP4BLUE EuroGOOS IMC

EuroGOOS
European Global Ocean Observing System

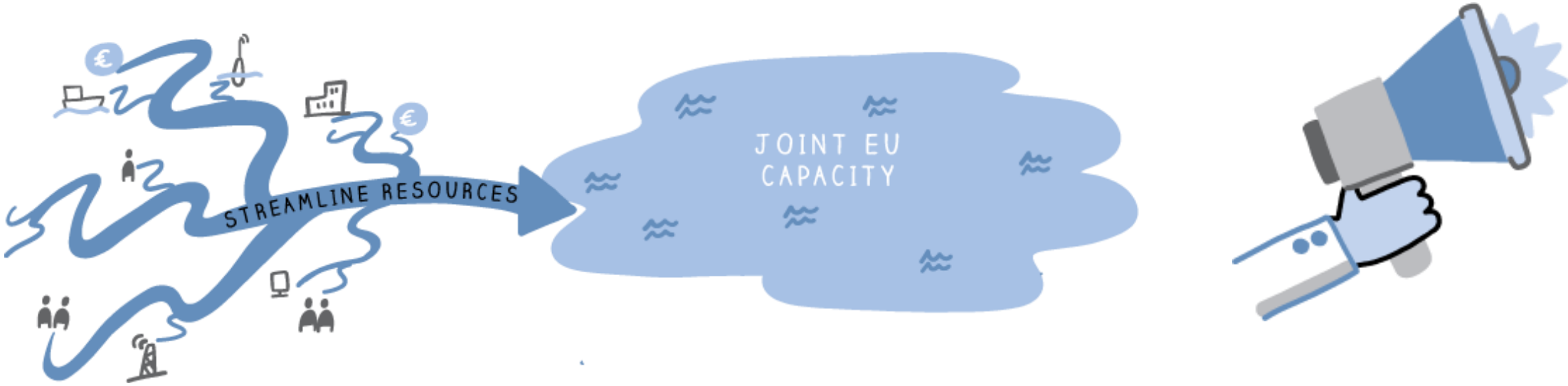
MARITIME ACTIVITIES

WEATHER FORECASTS

SEARCH AND RESCUE OPERATIONS

CLIMATE MODELLING

BLUE ECONOMY



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Coordination of Decade activities on ocean observing & forecasting

Terence McConnell
DCO Ocean Observations

EuroGOOS GA, 21-23 May 2024

Ocean Decade Coordination Office
Ocean Observing

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Decade Coordinating Office
Ocean Observing

EuroGOOS General Assembly
May 21, 2024

Terry McConnell
Lead

Ocean Observing | Ocean Decade Coordination Office

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

The Global Ocean Observing System GOOS

DCO – Ocean Observing

- **Progammes & Projects Overview**
- **Vision & Strategy**

Ocean Observing | Ocean Decade Coordination Office

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

The Global Ocean Observing System GOOS

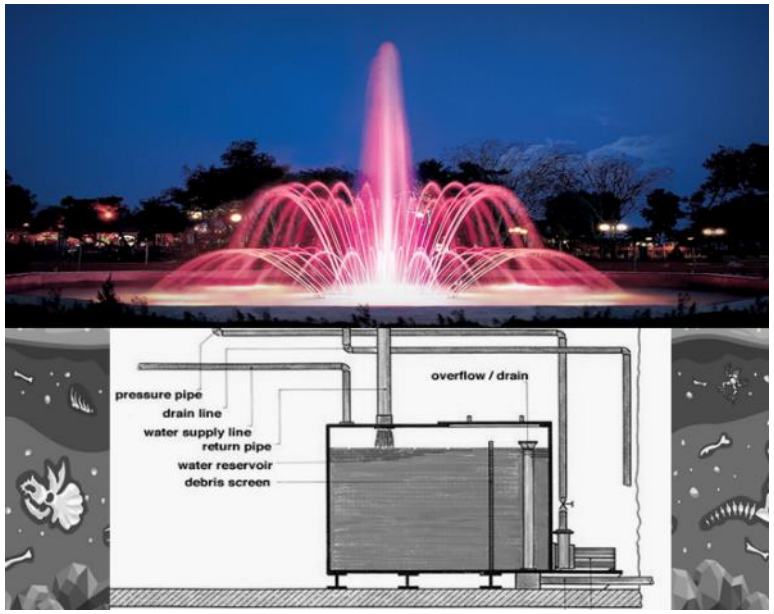
DCO – Ocean Observing

Vision & Strategy

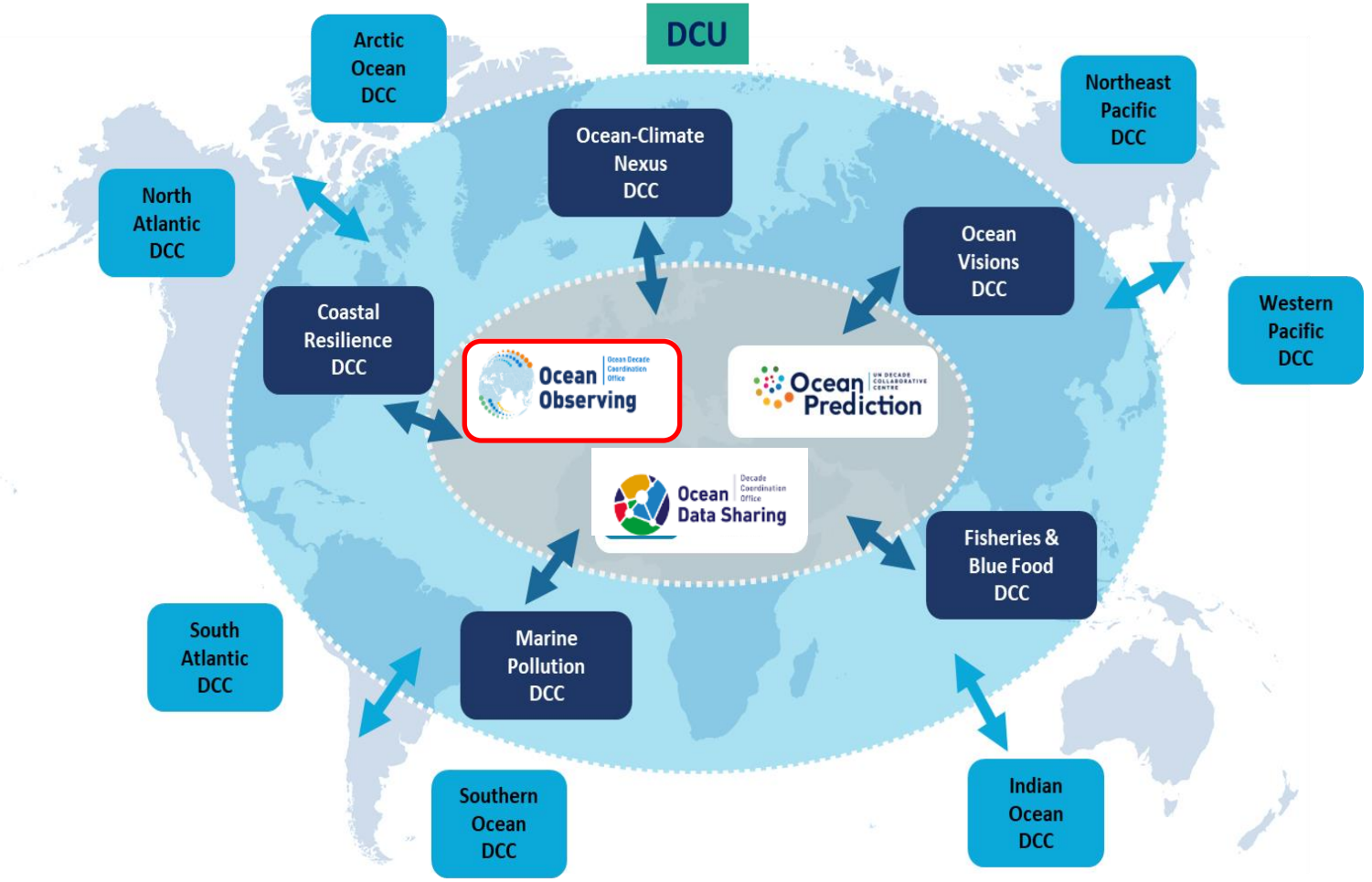
Key Messages

The Ocean Observing system of today was designed to answer the questions we had about the ocean yesterday

Sparkly fountains require robust plumbing systems



DCO – Ocean Observing within the Decade



The DCO-Ocean Observing Community

11 OCEAN OBSERVING PROGRAMMES and 91 PROJECTS
(31% of Decade Actions)

Name	Description	Lead Institution
OneDeepOcean	Ocean network for **deep observation**	Ifremer, France
CoastPredict	Observing and predicting the **global coastal ocean**	Alma Mater Studiorum University of Bologna, Italy
Seabed 2030 Project	**Bathymetric** map of the entire ocean by 2030	Nippon Foundation-GEBCO, Monaco
ODRP-MAE	Research on the maritime **acoustic environment**	Interagency Working Group for Ocean Sound and Marine Life, US
Marine Life 2030	Global integrated **marine biodiversity information management and forecasting** system.	Marine Biodiversity Observation Network (MBON).
OBON	Ocean **biomolecular observing** network	POGO, US
OASIS	Observing **air-sea interactions** strategy	SCOR Working Group, US
DOOS	**Deep ocean** observing strategy	DOOS Working Group, US
Ocean Observing Co-Design	**Evolving ocean observing through co-design** to deliver the information nations need	GOOS, UNESCO IOC
Observing Together	Meeting stakeholder needs and **making every observation count**	GOOS, UNESCO IOC
Challenger 150	A decade to study **deep ocean sea life**	DOSI, UK

DCO – Ocean Observing Vision

Institutional strategy: Cohesive, coordinated and interoperable ocean observing systems; global, regional and national

Community Engagement: Private sector and societal participants in the Blue Economy and a healthy Ocean

Sustained Ocean financing: Innovative, long-term finance for a sustainable Global Ocean Observing system

Prioritization of societally relevant observing requirements: Geographic & Thematic.

Standardization around universally agreed EOVs, ECVs and measurement & data management best practice.

Capacity Development: Ensure equitable access to observational data and technology for all stakeholders

Technology Development: Autonomous & low-cost sensors. Complementary use of remotely sensed & in-situ data

Ocean Decade Coordination Office
Ocean Observing

A global ocean observing system responsive to the needs of end users; enabling a healthy, resilient ocean and sustainable blue economies.

END-USER APPLICATIONS

Ocean Prediction
UN Decade Collaborative Centre

Ocean Data Sharing
Decade Coordination Office

Ocean Data Digital Eco-system

Knowledge Delivery
Web GIS, Visualisation, Digital Twin

Data Analytics & Insight
Value added, Data Science, Modelling

Data Management
Manipulation, Management, Access Control

Data Acquisition
Spatial, Temporal, Historical, Knowledge

Ocean Decade Data & Information Strategy

The Ocean Decade's Data & Information Strategy recognizes three key underpinning components that need to be well coordinated and interconnected to create a productive Digital Ecosystem:

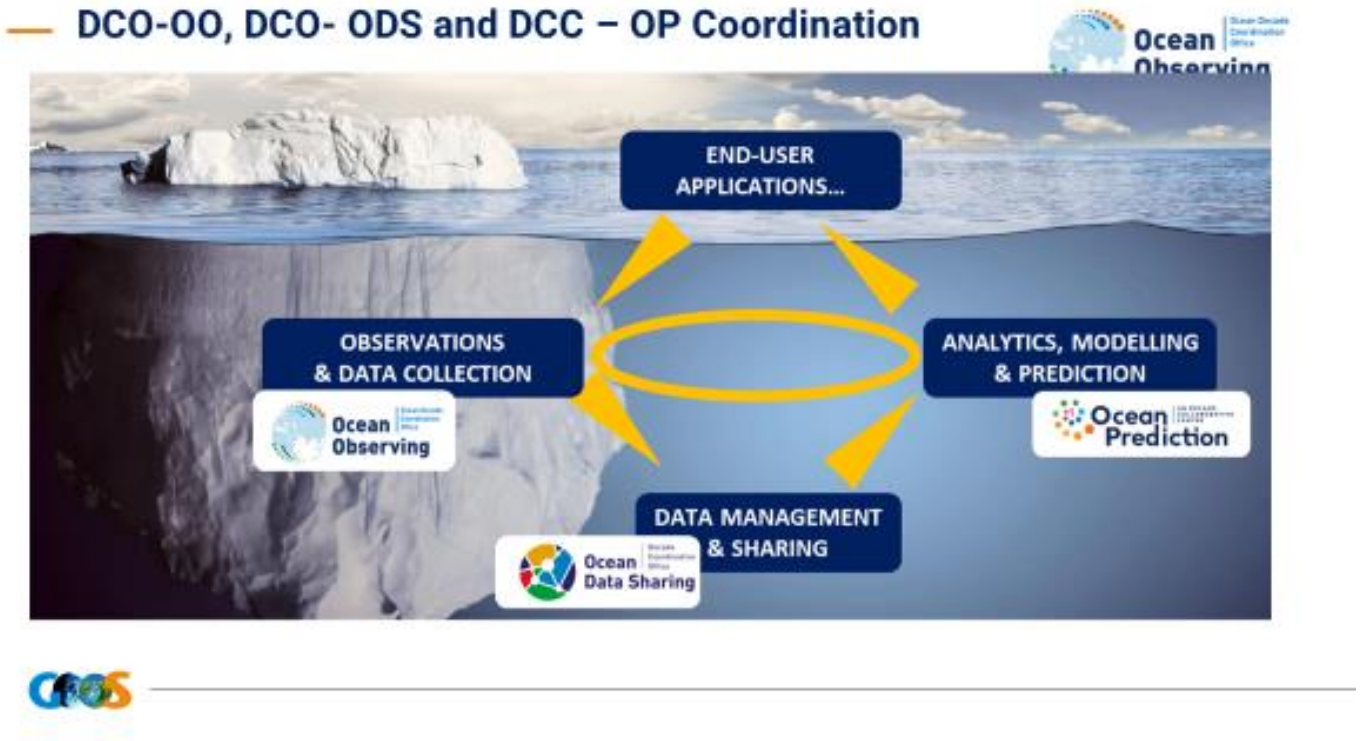
- ❑ Observations and data collection,
- ❑ Data management and sharing, and
- ❑ Analytics modelling and prediction.

DCO – Ocean Observing

Digital Ocean Data Eco-system

- The DCO – Ocean Observing will work jointly with the DCO – Ocean Data Sharing and the DCC – Ocean Predictioon towards the implementation of a FAIR ocean data digital eco-system

  - ✓ Enable scientists to find and access data
  - ✓ Support for decision makers to make informed choices
  - ✓ Empower the “Blue Economy”



DCO – Ocean Observing

The Vision

A truly global ocean observing system

responsive to the needs of end users;

enabling a healthy, resilient ocean and

A sustainable Blue Economy.

DCO – Ocean Observing

What is needed

Prioritization of societally relevant observing requirements: Geographic & Thematic.

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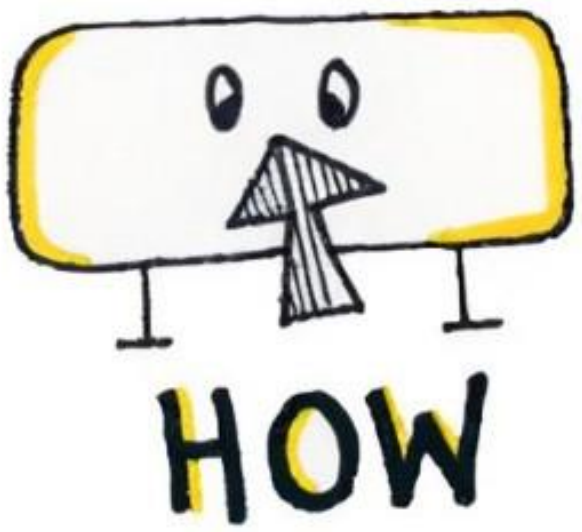
Capacity Development: Ensure equitable access to observational data and technology for all stakeholders

Technology Development: Autonomous & low-cost sensors. Complementary use of remotely sensed & in-situ data

DCO – Ocean Observing

How we achieve this vision



Institutional strategy:

Cohesive, coordinated and interoperable ocean observing systems; global, regional and national

Community Engagement:

Private sector and societal participants in the Blue Economy and a healthy Ocean

Sustained Ocean financing:

Innovative, long-term finance for a sustainable Global Ocean Observing system

GOOS: At the heart of the Decade

Ocean Decade Coordination Office
Ocean Observing

GOOS | At the heart of the Ocean Decade

GOOS is the global home of ocean observing expertise.

Challenge 7: Expand the 'Global Ocean Observing System' aims to ensure a sustainable ocean observing system endures well past the year 2030.

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Key Messages

The Ocean Observing system of today was designed to answer the questions we had about the ocean yesterday

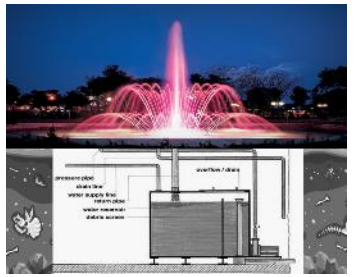
Requests:

- Design the next generation ocean observing system with the end in mind: Co-design
- Facilitate GOOS 2.0

Sparkly fountains require robust plumbing systems

Request:

- Participate in the development of an Operational Readiness Level Index for ocean data



Ocean Observing | Ocean Decade Coordination Office

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

The Global Ocean Observing System GOOS

Discussion

EuroGOOS regional collaboration through ROOS

Vanessa Cardin
Chair, MonGOOS

EuroGOOS GA, 21-23 May 2024

EuroGOOS
European Global Ocean Observing System

Regional Observing Systems:

ArticROOS
BOOS
NOOS
IBIROOS
MonGOOS

- ❑ Ocean Decade Regional collaboration
- ❑ Regional Cooperation

Ocean Decade Regional collaboration

EuroGOOS
European Global Ocean Observing System

Ocean Prediction Program

- ✓ Feedback from forecast providers and users collected
- ✓ Populating OP-DCC ***Arctic*** and ***Mediterranean & Black*** Seas regional team expert roles
- ✓ Joint workshops:
  - ➢ ArticROOS (Ocean and sea ice modelling and forecasting)
  - ➢ MonGOOS (Ocean forecasting and its applications)

MonGOOS

ArcticROOS
EuroGOOS Arctic Regional Ocean Observing System

- OP-DCC Arctic regional leader tightly connected to Arctic ROOS Steering Group

- Regional node for the Mediterranean & Black Seas
- Atlas Survey together with Mercator on forecasting modelling systems in the Mediterranean Sea

BOOS
EuroGOOS Baltic Regional Operational Oceanographic System

Ocean Decade Regional collaboration

EuroGOOS
European Global Ocean Observing System

BOOS involvement in UN Decade projects/programme *(not exclusive)*

Ocean Prediction
UN DECADE COLLABORATIVE CENTRE

GOOS | CoastPredict
with The Global Ocean Observing System

National UN Decade Committe

EMODnet
European Marine Observation and Data Network

EMODnet for Ocean Decade
Coordination and Implementation Group (**E4OD**)

BOOS MEMBERS
BSH
DMI
AU
GEOMETOC
HEREON
FMI
SYKE
SMHI
KLU

Regional implementation tool of UN Decade of Ocean Science in the Baltic Sea

UN Decade Societal goals	BOOS WGs	Non-WG Joint R&D
1. A clean Baltic Sea	MarinePlastic WG, coastal modelling WG, RS WG	Marine pollution R&D (AU, DMI, TalTech, SYKE, IMWM, IOPAN SMHI…)
2. A healthy and resilient Baltic Sea	Coastal modelling WG, RS WG Argo/glider WG	Marine ecosystem R&D (BALMFC, AU, HEREON, SYKE, KLU, UT)
3. A productive Baltic Sea		High trophic level/Aquaculture R&D (HEREON, AU, KLU, …)
4. A predictive Baltic Sea	DAWG, MME WG, Cal/val WG, NEMO WG, AI WG	Joint R&D on marine climate service
5. A safe Baltic Sea	Coastal modelling WG, AI/ML WG, NEMO WG, DAWG	Joint R&D on operational forecasting
6. An accessible Baltic Sea	Data exchange WG, DA WG, MME WG, NRT Ship data delivery WG, AI WG	Joint R&D on ocean observing and data management, DTO
7. An inspiring and engaging Baltic Sea		BOOS cooperation on Green transition R&D

Ocean Decade Regional Collaborations

20 Organizations promoting the co-design of SciNMEET

Monaco Explores within the Missions Mediterranee, program endorsed by the United Nations Decade of Ocean Science for the sustainable development 2020-2030

- Monitoring and evaluation of marine protected areas
- Scientific support in the field
- Collecting data for research

THEMATIC LEVEL			
OCEAN OBSERVATION & PREDICTION	DATA SHARING	KNOWLEDGE TRANSFER	MARINE HAZARDS

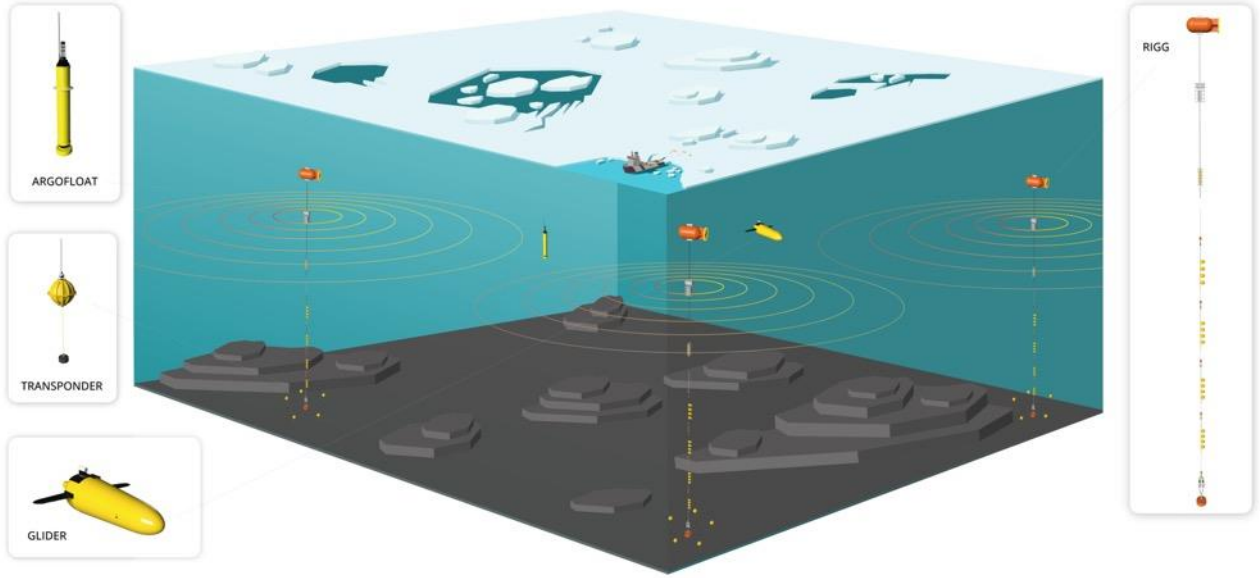
CROSS-CUTTING LEVEL			
CLIMATE CHANGE	MARINE POLLUTION	OCEAN LITERACY	CAPACITY BUILDING

Regional Collaborations

INTAROS: Integrated Arctic Observations System 2016-2022

The main objective was to develop, improve and extend Arctic observing systems for atmosphere, ocean, cryosphere, terrestrial sciences and local communities with focus on in situ systems

More than 400 scientists from 49 organisations in 20 countries were involved in the project

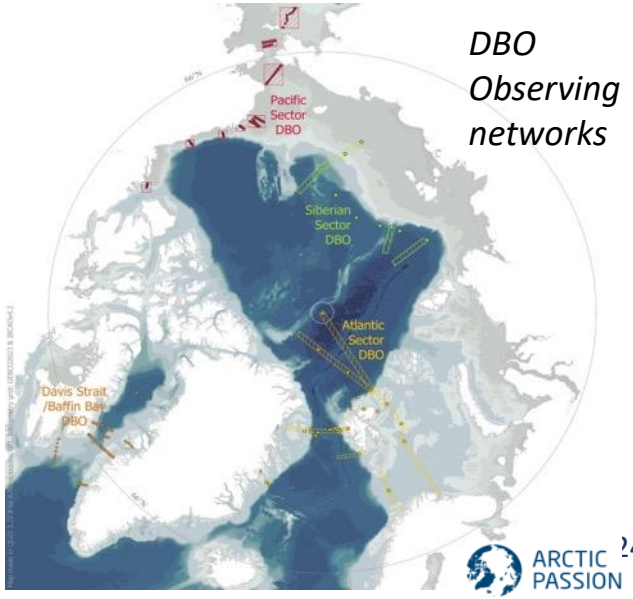


INTAROS Follow-up project: High Arctic Ocean Observation System (HiAOOS) 2023-2027

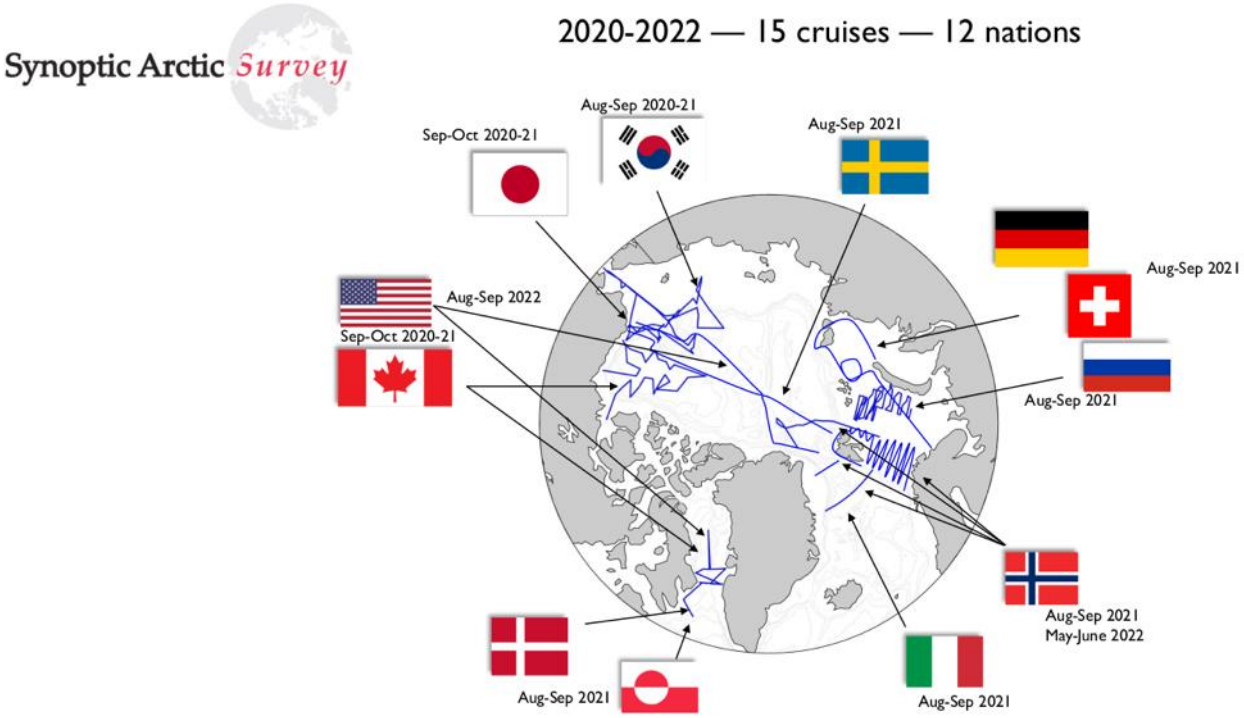
Towards a pan-Arctic regional alliance

International initiative on designing a framework for a pan-Arctic regional alliance

- Improve the coordination and collaboration across the pan-Arctic region
- Formally endorsed by GOOS Steering Committee and SAON
- Support pan-Arctic initiatives, such as Distributed Biological Observatories (DBOs) and Synoptic Arctic Survey (SAS)



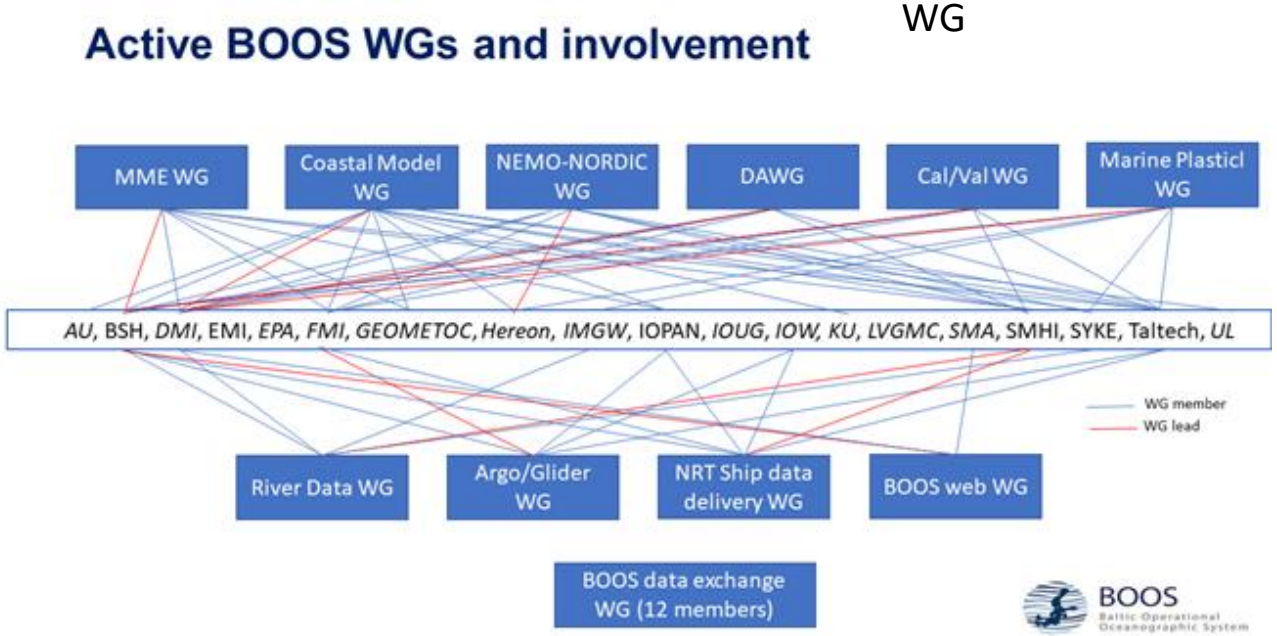
DBO Observing networks



On-going BOOS collaboration

- **BOOS Work Groups** (13)
- **Joint research projects**, e.g.,
  - **CMEMS**: BALMFC, INSTAC, SST TAC, SI TAC, OCTA
  - **JERICO**: Joint RI on coastal Observations
  - **EDITO Model Lab:** DTO underline models
  - **OLAMUR:** Baltic-North Sea Lighthouse project
  - **NECCTON**: Copenicus ecological model, BSH
  - **FOCCUS:** Copernicus coastal service
  - **BlueMissionBANOS:** Supporting Lighthouse
  - **4DBalDynam:** AI for DTO
- **Other cooperation**: HELCOM, CMEMS, EMODnet, EuroArgo, ICES…

Two new WGs in 2023:
- Remote sensing WG
- Machine Learning WG



MME: Multi-model Ensemble
DA: Data Assimilation
Cal/Val: Calibration/validation

Development of coastal marine services for tackling coastal risks in the Atlantic Area : the value of **regional cooperation**

Co-developed relocatable standardised tools for tackling coastal risks demonstrated along the Atlantic Area

- **STIMULATE** communities of practices:
  - RECOPESCA -> Collecting in situ profiles from ships of opportunity (fisheris vessels),
  - HF RADAR network,
  - HAB early Warning

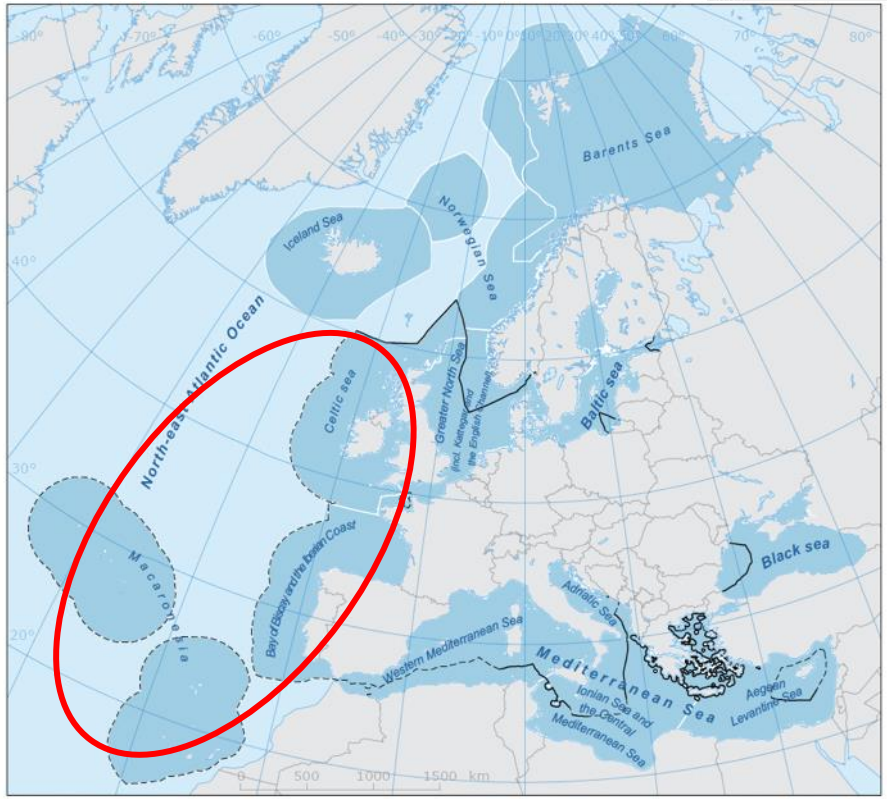
- **ADVOCATE** for coordinated and integrated EU observing and operational system
- **PROMOTE** sustainability across the value chain of operational oceanography and ocean observing

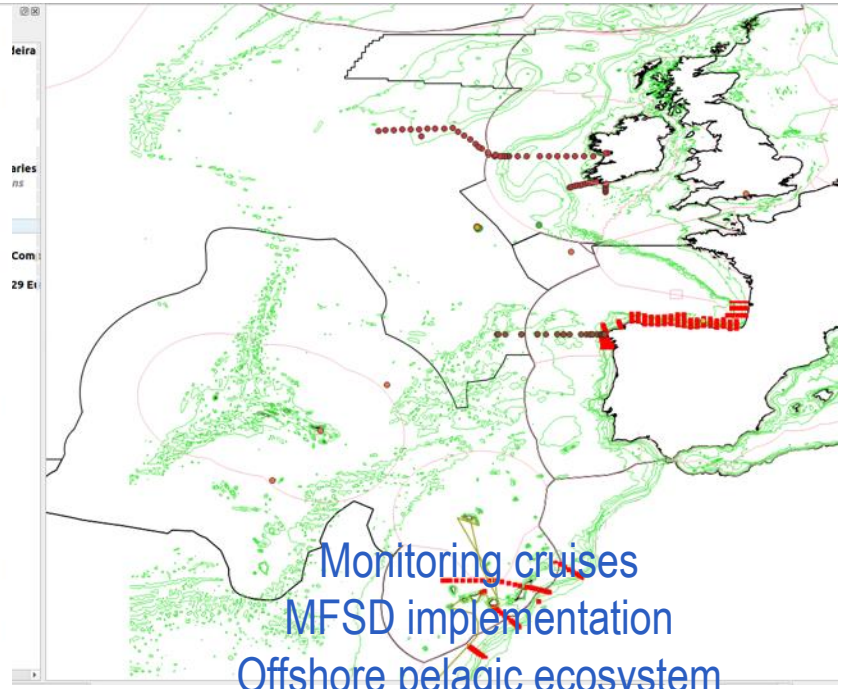
IBI-ROOS
EuroGOOS Ireland-Biscay-Iberia Regional Operational Oceanographic System

Regional Collaborations

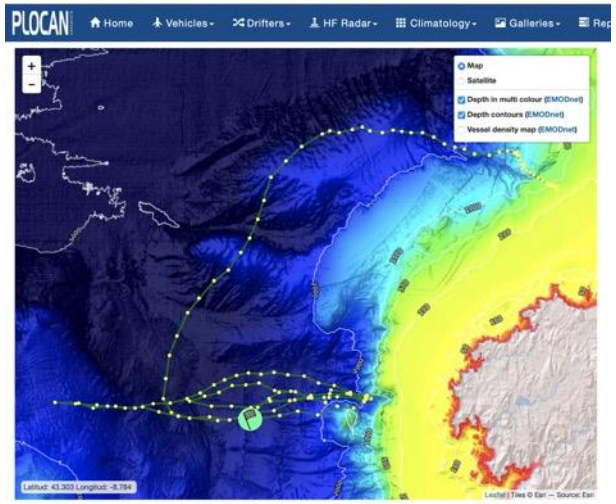
EuroGOOS
European Global Ocean Observing System

ADVOCATE for coordinated and integrated EU observing and operational system

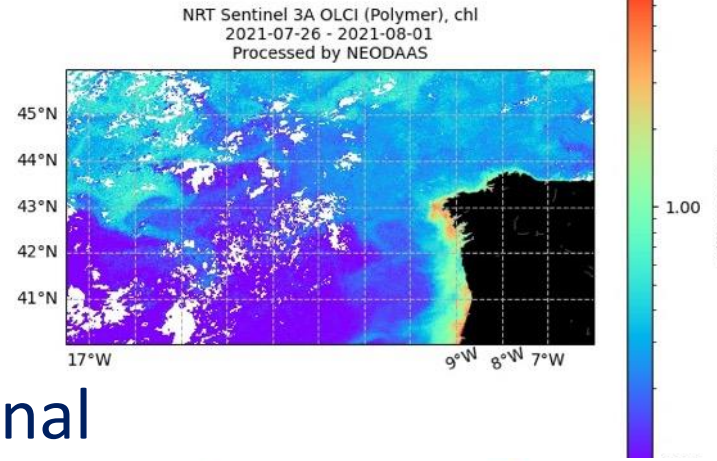




Monitoring cruises
MFSD implementation
Offshore pelagic ecosystem
Novel methodologies, SOPs
https://www.ifado.eu/



Gliders
Summer 2022: AA capitalization call



PROMOTE sustainability across the value chain of operational oceanography and ocean observing

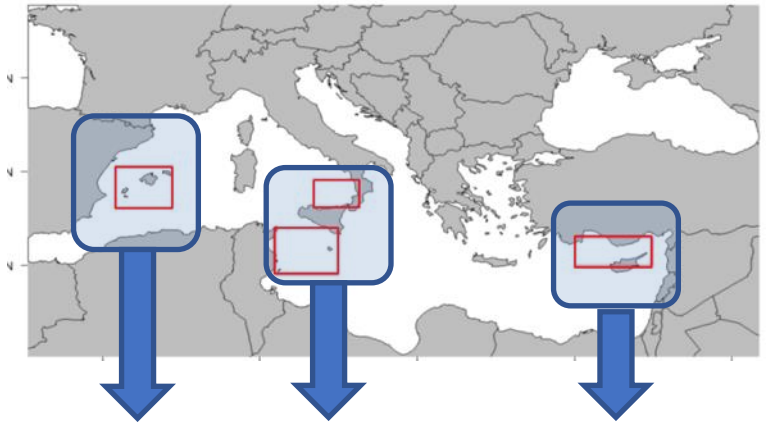
Interreg Atlantic Area
European Regional Development Fund
EUROPEAN UNION
iFADO

The Mediterranean Tuna Habitat Observatory

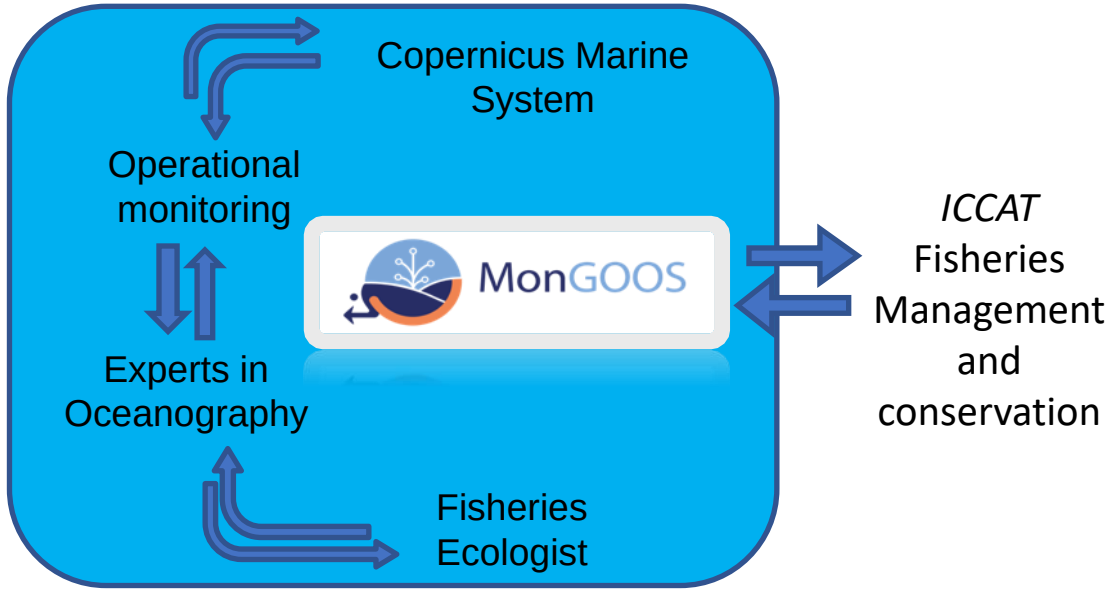
An initiative for advancing towards climate informed tuna assessment and management

MonGOOS roles:
1- Ensure synergies among different communities
2-Improve operational products in tuna key ecological areas

3- Connect local experts in oceanography and improve indicators of environmental variability



Example of observatory specific outputs



Link MonGOOS strategies

- ICCAT connections for Climate change and fisheries (i.e. MedTunaHabitatObs)
- FAO connection: Participation in the GFCM network of experts on climate change

Other initiatives…

Ocean Acidification Mediterranean Hub

The OA Med-Hub network of scientists aim to better understand the effects of ocean acidification in the Mediterranean Sea, and collaborate to improve the resilience of ecosystems and coastal communities.

EuroGO-SHIP
Enhancing ocean observations

Euro GO-SHIP
the Mediterranean component of GO-SHIP

Strengthen European capacity for world-class oceanographic science, which is crucial for:

- ❑ fisheries management,
- ❑ improving food security
- ❑ and better weather forecasting,
- ❑ enhancing our collective ability to predict and manage climate change

EuroGOOS
European Global Ocean Observing System

ArcticROOS
EuroGOOS Arctic Regional Ocean Observing System

NOOS
EuroGOOS North West European Shelf Operational Oceanographic System

IBIROOS
EuroGOOS Ireland Biscay Iberia Regional Operational Oceanographic System

BOOS
EuroGOOS Baltic Regional Operational Oceanographic System

MonGOOS

Thank you!

Observing the Ocean in collaboration with industry

Paul Holthus
Founding President and CEO
World Ocean Council

EuroGOOS GA, 21-23 May 2024

WORLD OCEAN COUNCIL

The International Business Alliance for Corporate Ocean Responsibility

SMART Ocean – SMART Industries:

Ocean, Weather and Climate Data from Commercial Vessels and Platforms

Paul Holthus, CEO

World Ocean Council

paul.holthus@oceancouncil.org

www.oceancouncil.org

WORLD OCEAN COUNCIL

The International Business Alliance for Corporate Ocean Responsibility

Sustainable Ocean Summit
(SOS 2024)
Dates/Location TBD

Global Blue Finance Summit
(BlueFIN 2024)
Dates/Location TBD

WOC Global Headquarters: BARCELONA - WORLD-LEADING INTERNATIONAL BLUE ECONOMY HUB

WOC – the Global "Blue Economy" Business and Investment Organization

World Ocean Council (WOC)

WORLD OCEAN COUNCIL
The International Business Alliance for Corporate Ocean Responsibility

International, Cross-Sectoral Business Leadership Alliance, with Barcelona HQ

- **Bringing together the global ocean private sector**, e.g. shipping, tourism, fisheries, aquaculture, offshore energy, ports, legal, insurance, investment, etc.
- **Catalyzing leadership, collaboration and action for "Corporate Ocean Responsibility"**
  Formal recognition by UN and business entities, e.g. UNESCO IOC, WMO, IHO, ISA, ICC
- **35,000+ in global network, 75+ members globally; 100's of actively engaged companies**
- **Sustainable Ocean Summit (SOS)** - Only annual global, multi-industry gathering developed by and for the business community, focused on sustainable development
- **Global Blue Finance Summit (BlueFIN) -** Bringing industry, investors and innovators together

Goal: *A healthy, productive global ocean and its sustainable use and stewardship by responsible ocean private sector community*

Creating business value for responsible companies

- Access and social license for responsible ocean use
- Synergies and economies of scale in addressing challenges and opportunities
- Stability and predictability in ocean operations

WOC – the Global "Blue Economy" Business and Investment Organization

Global Ocean Industry Leadership:

SMART Ocean - SMART Industries

WORLD OCEAN COUNCIL
The International Business Alliance for Corporate Ocean Responsibility

Ensure a **wide range of industry vessels and platforms** are:

- **Providing routine, sustained, standardized information** on the ocean and atmosphere
- Contributing to describing the **status, trends and variability** of oceanographic and atmospheric conditions
- **Improving the understanding, modeling and forecasting** of oceanic ecosystems, resources, weather, climate variability and climate change

Establish a program to:

- **Expand the number of vessels and platforms** that collect standardized ocean, weather and climate data
- **Improve the coordination and efficiency of data sharing** and input to national/international systems
- Build on existing “ships/platforms of opportunity” programs

Opportunities of Ships

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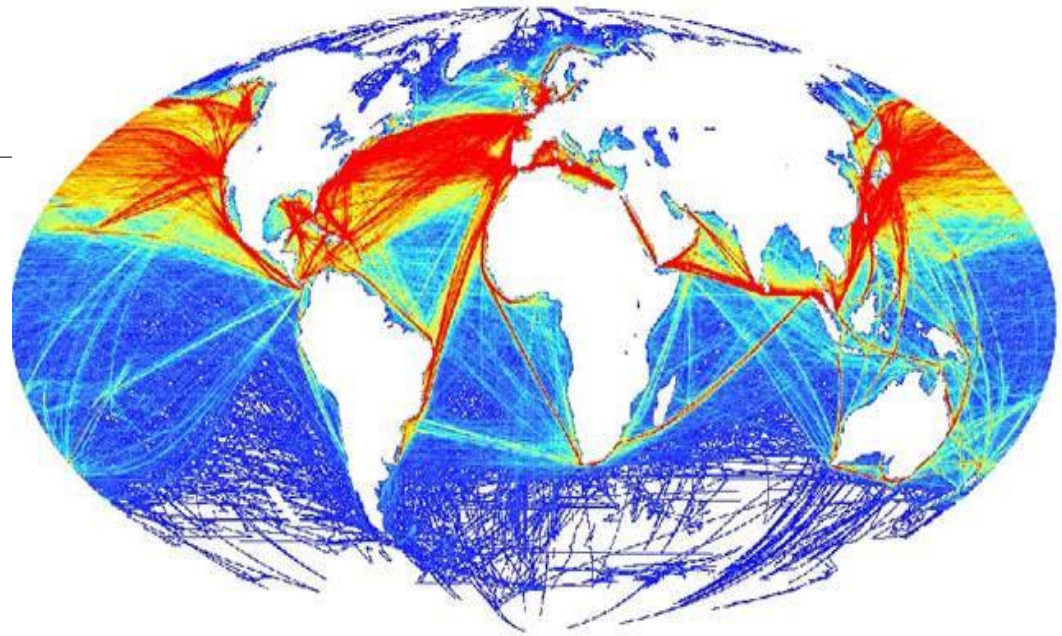
The International Business Alliance for Corporate Ocean Responsibility

Approximately 100,000 merchant ships:

- Tankers
- Bulk Carriers
- Container ships
- Passenger ships

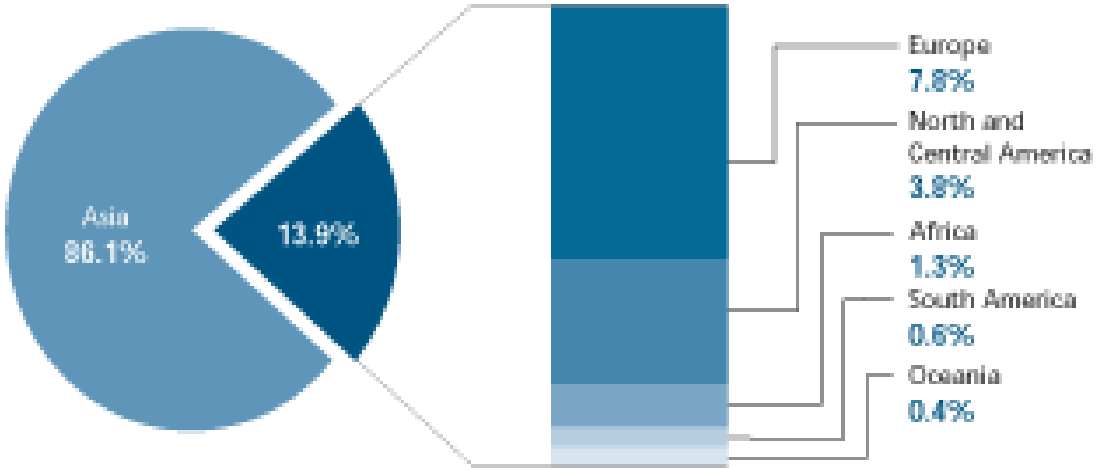


Opportunities of Fishing Vessels

WORLD OCEAN COUNCIL
The International Business Alliance for Corporate Ocean Responsibility

- 3-4 million vessels
- Many operating in less well know ocean areas, e.g. Southern Ocean
- Over 85% of world fishing fleet is in Asia

Distribution of decked fishing vessels by continent



Opportunities of Submarine Cables

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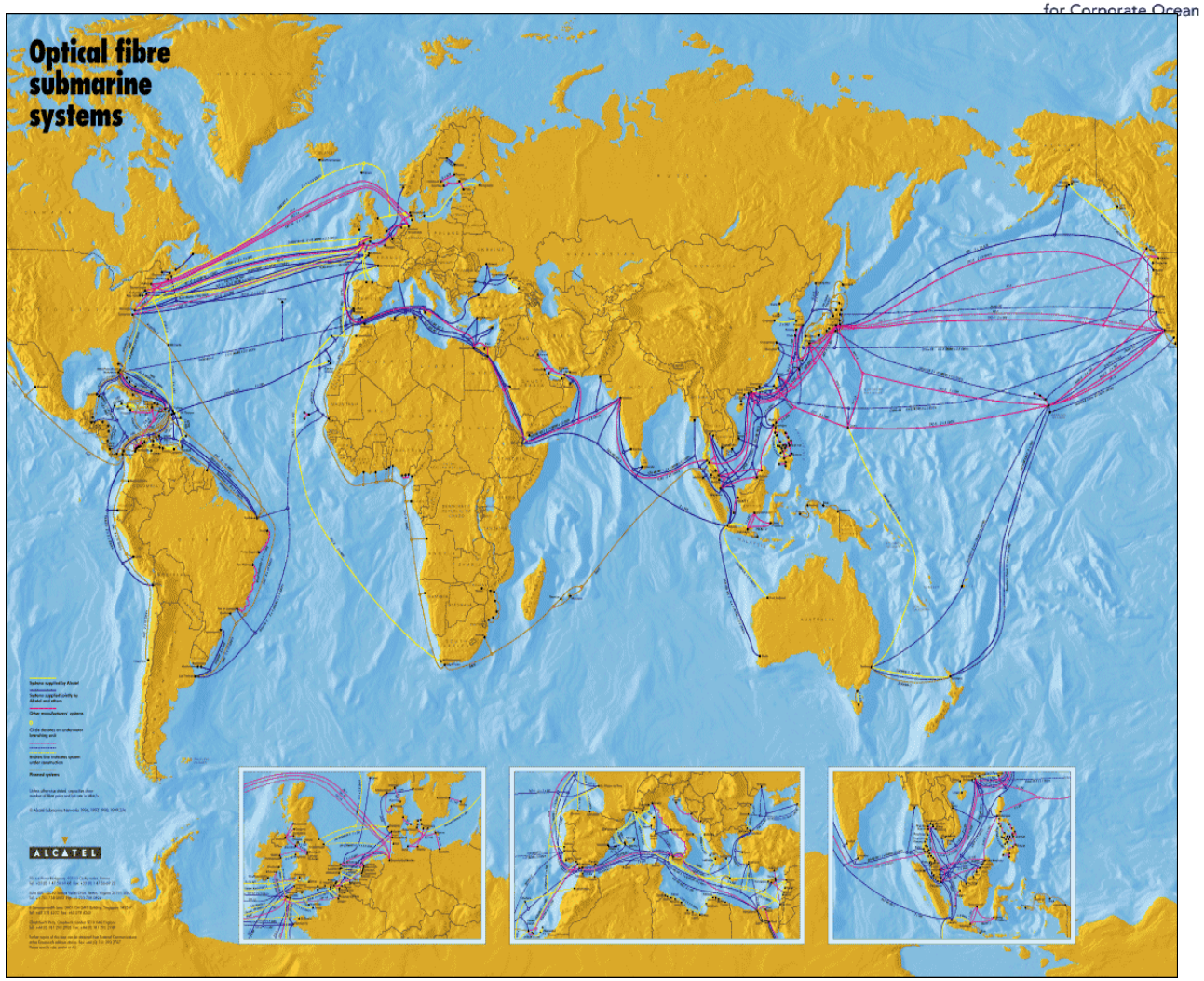
The International Business Alliance for Corporate Ocean Responsibility

- More than 1 million km of telecom cables
- Subsea power cables increasing for grids, platforms and renewables



Other Ship and Platform Opportunities

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The International Business Alliance for Corporate Ocean Responsibility

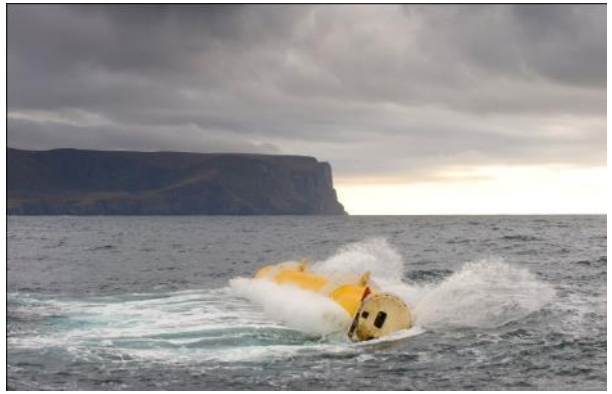
Oil and gas

Aquaculture

Ferries

Offshore wind energy

Wave/tidal energy



International Ship/Platform Data Collection

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The International Business Alliance for Corporate Ocean Responsibility

Comprehensive

- Incorporates needs and opportunities from different industries
- Addresses ocean, weather and climate data needs

Scaleable

- Within industries
- Across industries
- Upgradeable over time

Entry Options

- Retrofit – existing vessels and platforms
- New builds

Cost-Efficient

- Synergies – within and between industries
- Economies of scale

SMART Ocean-SMART Industries: How it works

WORLD OCEAN COUNCIL
The International Business Alliance for Corporate Ocean Responsibility

- WOC engages scientific institutions to identify:
  - Priority data collection needs and areas and appropriate technology
- WOC identifies and recruits companies:
  - With vessels/platforms operating in the priority areas
  - Interested/capable of hosting/deploying instruments or hosting scientists
- WOC engages with the technology developers/providers to:
  - Verify the appropriate technology, costs, deployment considerations, etc.
  - Identify technology/business development opportunities
- WOC instigates and facilitates working relationship between the company, the scientific institution and the technology provider
- WOC monitors, coordinates and supports interaction among the parties
- WOC ensures industry data collection efforts are efficient, cost effective and contribute to national and international public science programs

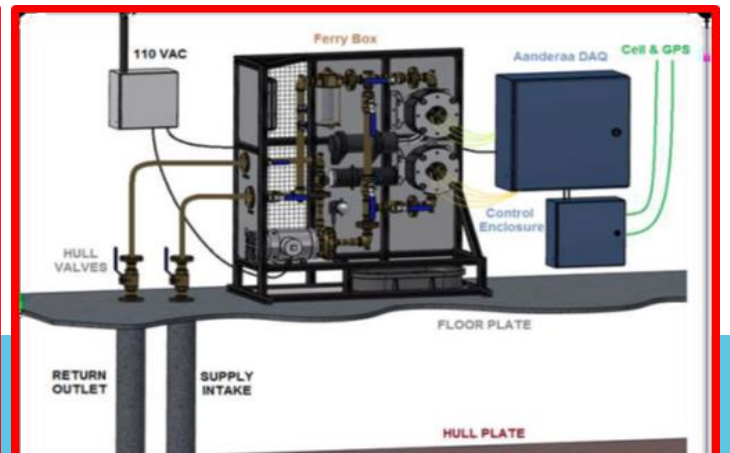
How Companies can Participate

WORLD OCEAN COUNCIL
The International Business Alliance for Corporate Ocean Responsibility

- **Engage in the WOC SMART Ocean-SMART Industries program**
- **Evaluate the information collecting/sharing that would be a good fit for the company**, e.g. ocean, weather or climate data

There are options to participate, e.g.:

- Deploying instruments
- Hosting sensors on vessels
- Installing instruments to test water from engine intake
- Storing and sharing bathymetric data
- Sharing data from previous studies, EIAs, permits, etc.

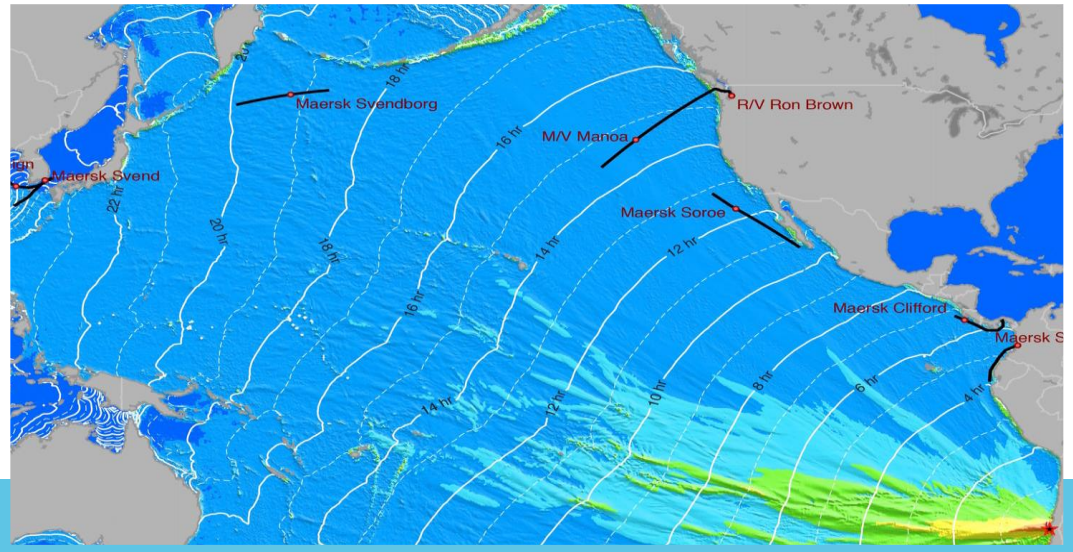


SMART Ocean-SMART Industries example

WORLD OCEAN COUNCIL
The International Business Alliance for Corporate Ocean Responsibility

Project: Installing Tsunami Detection Instruments on Ships Traversing Pacific

- University of Hawaii scientists approach WOC SO-SI program for help
- WOC reaches out to shipping industry with information and call to assist
- Within weeks, Maersk and Matson volunteer 8 ships for an initial 2 year project
- Within a few months, ships are equipped with prototype real-time geodetic GPS systems and satellite communications links
- Data begins streaming via satellite to a land-based data center for processing and analysis for tsunami signals in a ground-breaking, far-reaching pilot project



SMART Ocean-SMART Industries: Priorities (1)

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The International Business Alliance for Corporate Ocean Responsibility

Continue engaging leadership companies

- **Facilitate company's making a commitment to:**
  - SDG 14.a – "Increase ocean knowledge"
  - U.N. Decade of Ocean Science for Sustainable Development
- **Identify startup level participation**, e.g. on one vessel, less complicated data types
- **Evaluate fleet level potential to participate in data collection**

Develop pilot projects to put "SMART Industries" to work with companies

- Key parameters, e.g. ocean pH, bathymetry, microplastics, ocean CO2 removal
- Extreme weather or ocean events, e.g. tsunamis
- Regional scaling up, e.g. Caribbean, Arctic

Continue to build overall SMART Ocean-SMART Industries program

- Inventory existing ships / platforms of opportunity programs
- Define the "menu of options" for voluntary observations
- Develop principles, practice and platform for industry data sharing

SMART Ocean-SMART Industries: Priorities (2)

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Develop technology packages and options

- Make is easy for companies to get involved ('plug and play')
- Create more standardized instrumentation to facilitate scaling up within a company fleet and among companies and sectors
- Improve the instrumentation's efficiency in energy use, data transmission, space requirements, maintenance needs, etc.

Continue to build overall SMART Ocean-SMART Industries program

- Inventory existing ships / platforms of opportunity programs
- Define the "menu of options" for voluntary observations
- Develop principles, practice and platform for industry data sharing

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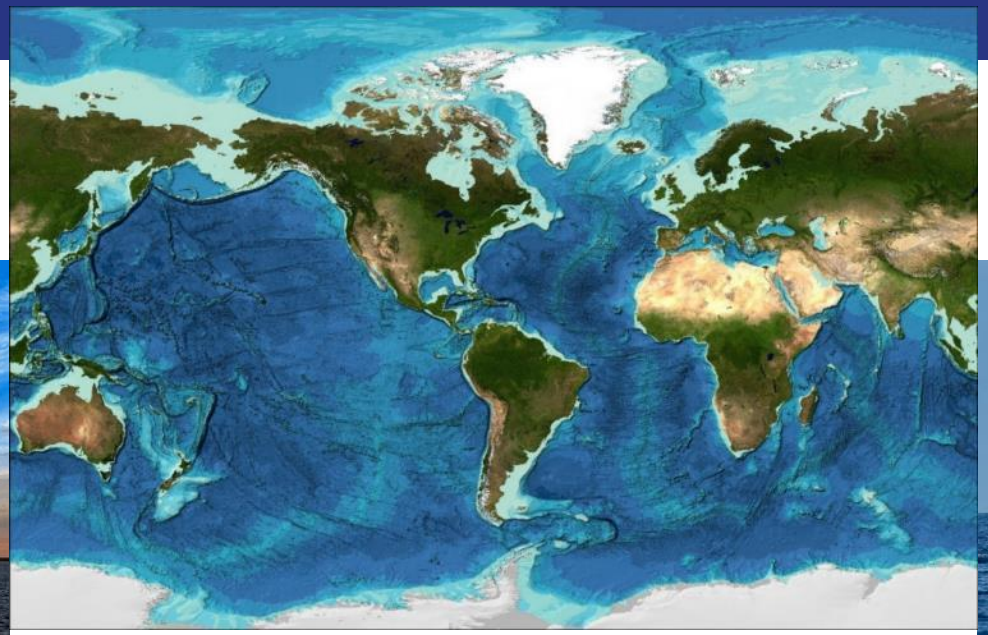

Thank You !

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WORLD OCEAN COUNCIL

The International Business Alliance for Corporate Ocean Responsibility

Sustainable Ocean Summit
(SOS 2024)
Dates/Location TBD

Global Blue Finance Summit
(BlueFIN 2024)
Dates/Location TBD

WOC Global Headquarters: BARCELONA - WORLD-LEADING INTERNATIONAL BLUE ECONOMY HUB

WOC – the Global "Blue Economy" Business and Investment Organization