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2021 2030 United Nations Decade of Ocean Science for Sustainable Development

The Decade Coordination Office (DCO) for Data Sharing

IOC-UNESCO
Jan-Bart Calewaert
31-1-2024

Working alongside other Coordinating Offices across disciplines

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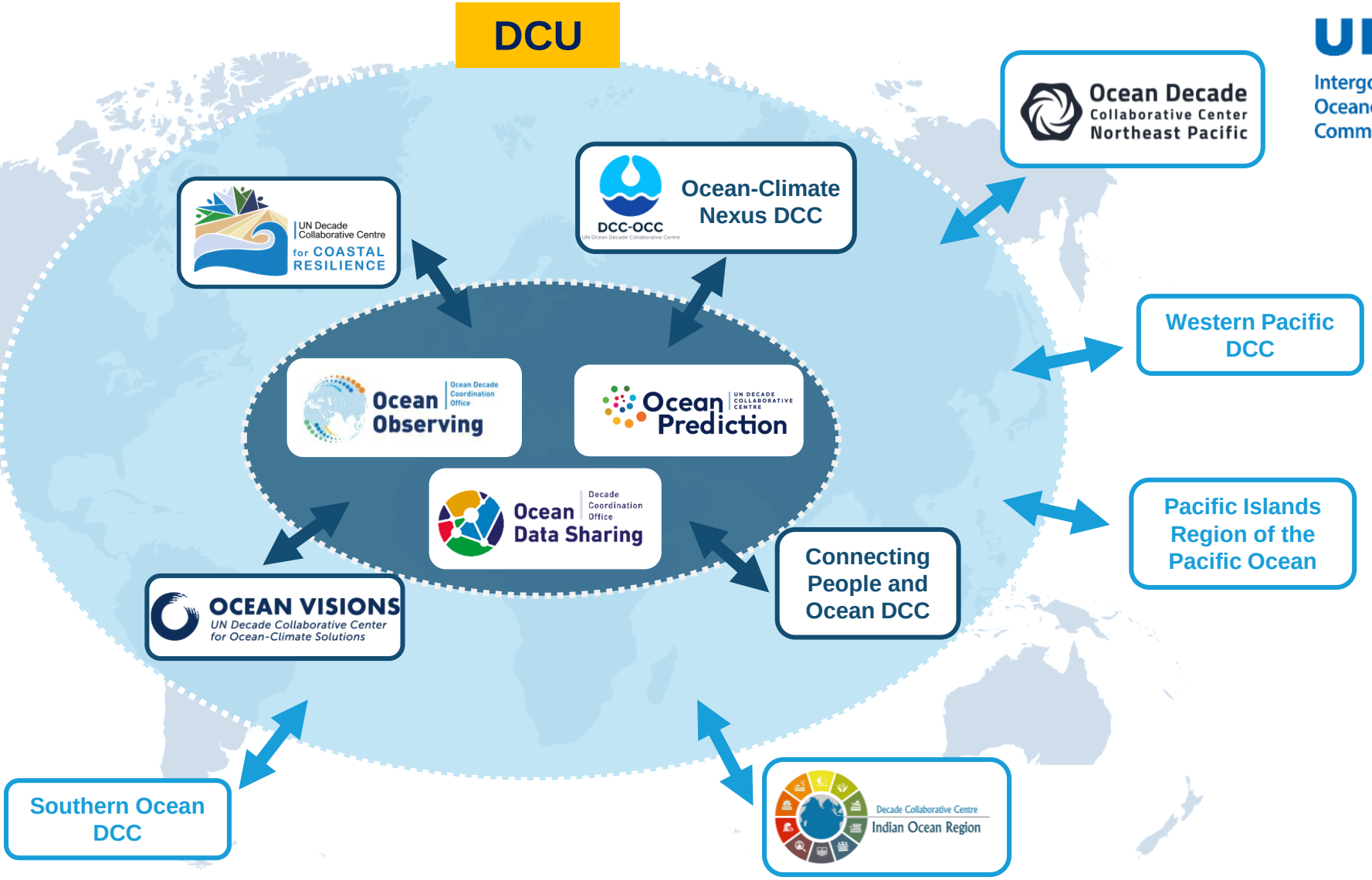
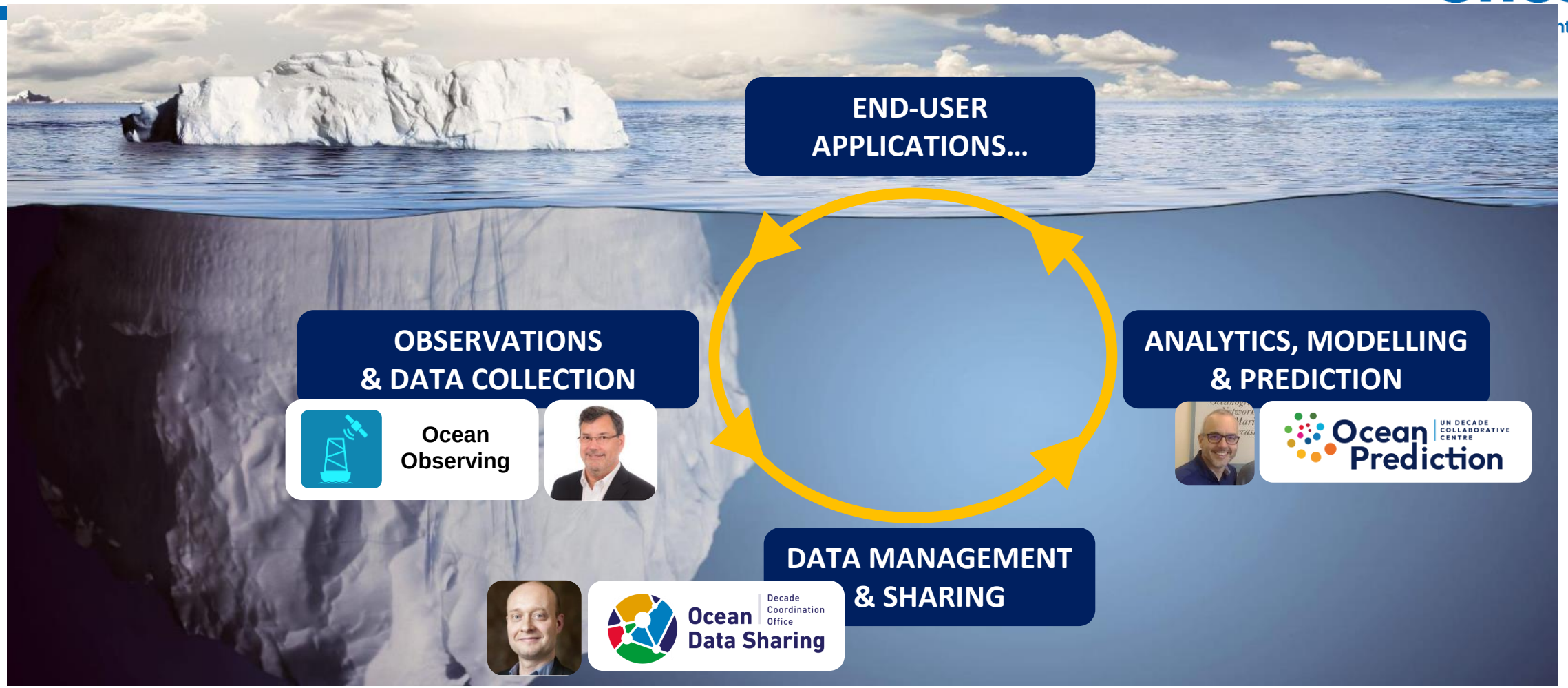


Lifting up the critical components of the global digital ecosystem, from observation to the end-users



What will the Coordinating Offices do?

- **Coordination, facilitation and engagement of stakeholder communities**
  - Support links with other value chain components & maintain information flow // Avoid duplication of effort
  - Foster cross-disciplinary co-design
- **Coordination and support of Decade Actions**
  - Provide strategic advice re new and existing calls (fill gaps) / actions (align/connect) + link needs with expertise/capacities
  - Encourage development of technical & scientific capacities
  - Assist in addressing data gaps and infrastructure needs
- **Communications, public awareness & mobilisation of resources**
  - Raise awareness of data collection, sharing & data literacy
  - Develop partnerships // Communicate successes

Photo: Kongsberg

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DCO for Ocean Data Sharing

Ocean Data Sharing — Decade Coordination Office

IODE — International Oceanographic Data and Information Exchange

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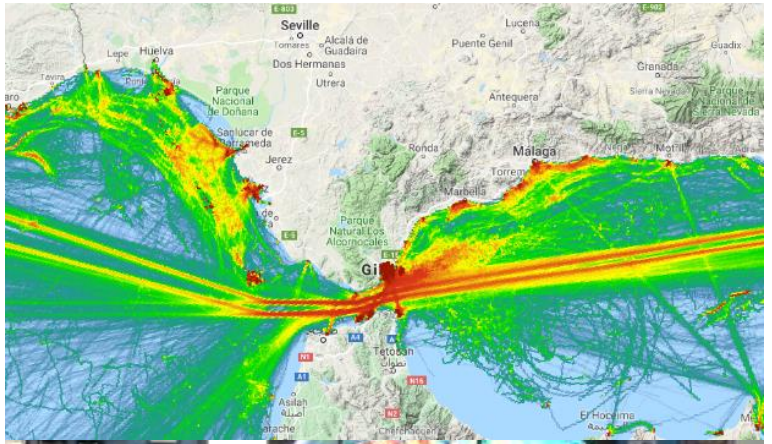
- **Coordinate & interconnect the data-sharing component of the digital ecosystem** for the Ocean Decade → Help **implement the Decade's Data and Information Strategy**
- **Assist Decade collaborators with data sharing guidance** to achieve the highest possible data quality and adherence to FAIR and CARE principles.
- Facilitate and support efforts to **address Challenge 8 – Creating a digital representation of the Ocean**
- **Promote data literacy and capacity equitably**
- Help identify and address **data gaps and infrastructure needs**



Ocean Data Sharing DCO – Core relationships

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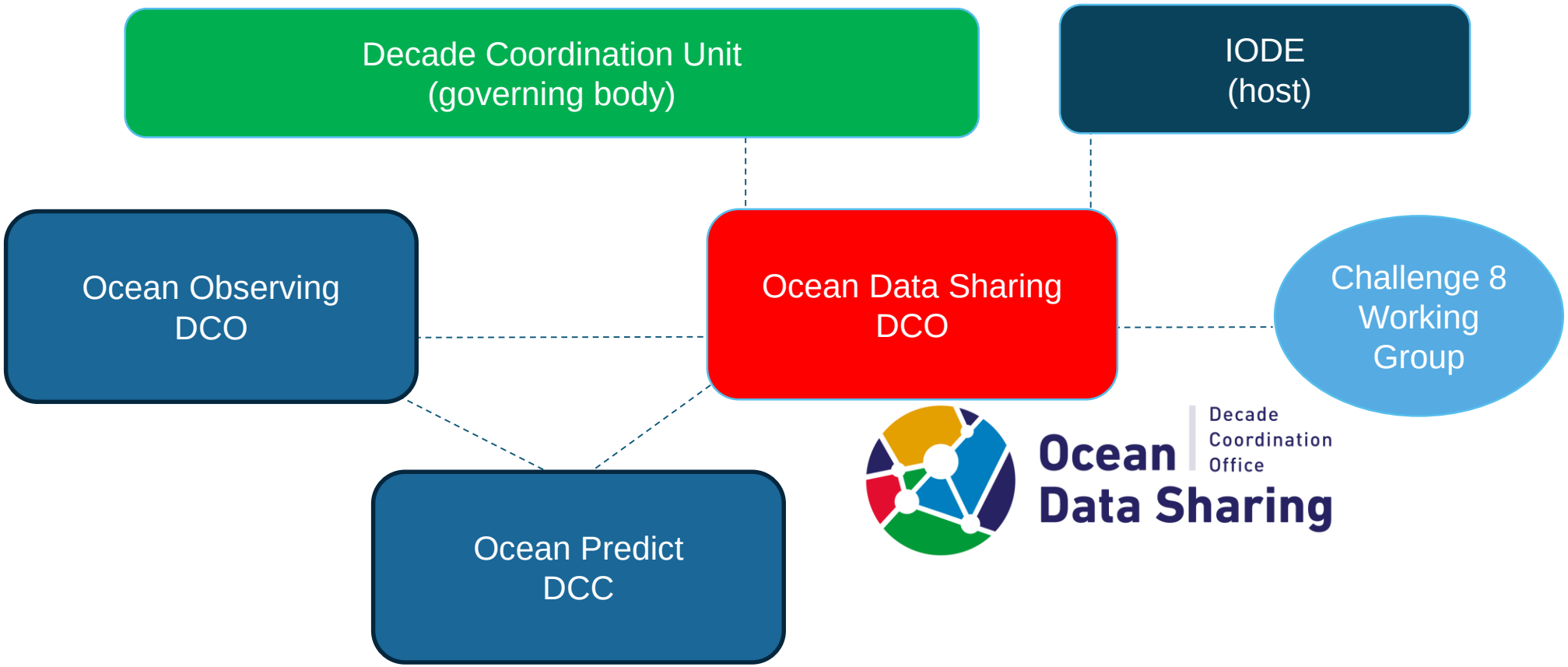


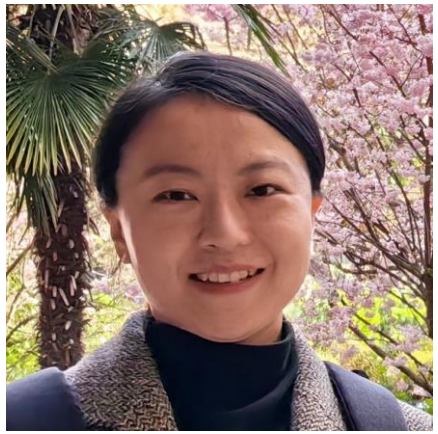
Ocean Data Sharing DCO Secretariat

DCO Ocean Data Sharing

Jan-Bart Calewaert
DCO Ocean Data Sharing Lead

Oonagh McMeel
DCO Ocean Data Sharing Support Officer

Support from Decade Implementing Partners



Miao Sun,
Secondment/Voluntary Support from NMDIS

Debbie Tsang,
Support from EMODnet Secretariat as DIP

Ocean Data Sharing | Decade Coordination Office

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Year 1 Priorities

1. **Establish the DCO for Ocean Data Sharing** (work plan, staff, reporting)
2. **Stakeholder engagement at three levels**:
   - Decade coordination bodies: to ↑ synergies & ↓ duplication of efforts
   - **Decade Actions** to: support data-sharing and promote best practices
   - Wider stakeholders: year 1 prioritise potential funders
3. **Support and facilitate the Challenge 8 Expert Working Group** in the Vision 2030 process
4. Raise visibility and awareness of the DCO for Ocean Data Sharing
5. **Mobilise resources for continuation beyond 2024**

Year 2-3 Focus

- *Expand Secretariat*
- *Further develop Website*
- *Guidance – Data Toolkit*
- *Capacity B Trainings*
- *Virtual Data Helpdesk*

➔ Implementing the Data & Information Strategy

➔ Addressing Challange 8

Status Update

Ocean Data Sharing — Decade Coordination Office

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2. Stakeholder engagement: Support Decade Actions

- Mapping Decade actions to identify data-relevant Actions
- Compiling a suite of data management resources
  - *Develop **Data Resources Guidance/Toolkit***
- Provide support to Decade actions with data management resources
  - *Set up a **(virtual) data helpdesk***
- **Connected to 4 Primary Attached Programmes and Contributions**
  - ***Ocean Data 2030** (Programme, Lead: IODE)*
  - ***Digital innovation** Hand-in-Hand with **fisheries and ecosystems scientific monitoring** (Programme, Lead: FAO)*
  - ***World Ocean Database Programme** (WODP): (Contribution, Lead: NOAA)*
  - ***GEOTRACES** (Contribution, Lead: U.S. National Science Foundation on behalf of international GEOTRACES partners)*
- **Connected to 1 National Decade Committee (Belgium) and 3 Decade Implementing Partners** *(EurOcean, EMODnet, Chinese National Marine Data and Information Service NMDIS)*

DCO-ODS associated Programmes

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OceanData 2030

IODE International Oceanographic Data and Information Exchange

IH Ocean InfoHub

Development of an open-source data and information system that will link existing ocean information systems around the world, and enable more efficient discovery of data, information and knowledge products.

GEOTRACES

GEOTRACES
An International Study of the Marine Biogeochemical Cycles of Trace Elements and their Isotopes

International Science Council
SCOR
Scientific Committee on Oceanic Research

GEOTRACES is an international program designed to coordinate efforts and data regarding marine biogeochemical cycles of trace elements and their isotopes (TEIs).

World Ocean Database Programme (WODP)

NOAA National Centers for Environmental Information
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

WOD is the world largest unrestricted, uniformly formatted, quality-controlled, digital ocean profile database available with data from 1778 to present.

Digital innovation Hand-in-Hand with fisheries and ecosystems scientific monitoring

FAO Food and Agriculture Organization of the United Nations

SUSTAINABLE DEVELOPMENT GOALS

The Fisheries and Environmental Atlas will use Open Data and Open Science to support fisheries and ecosystems scientific monitoring.

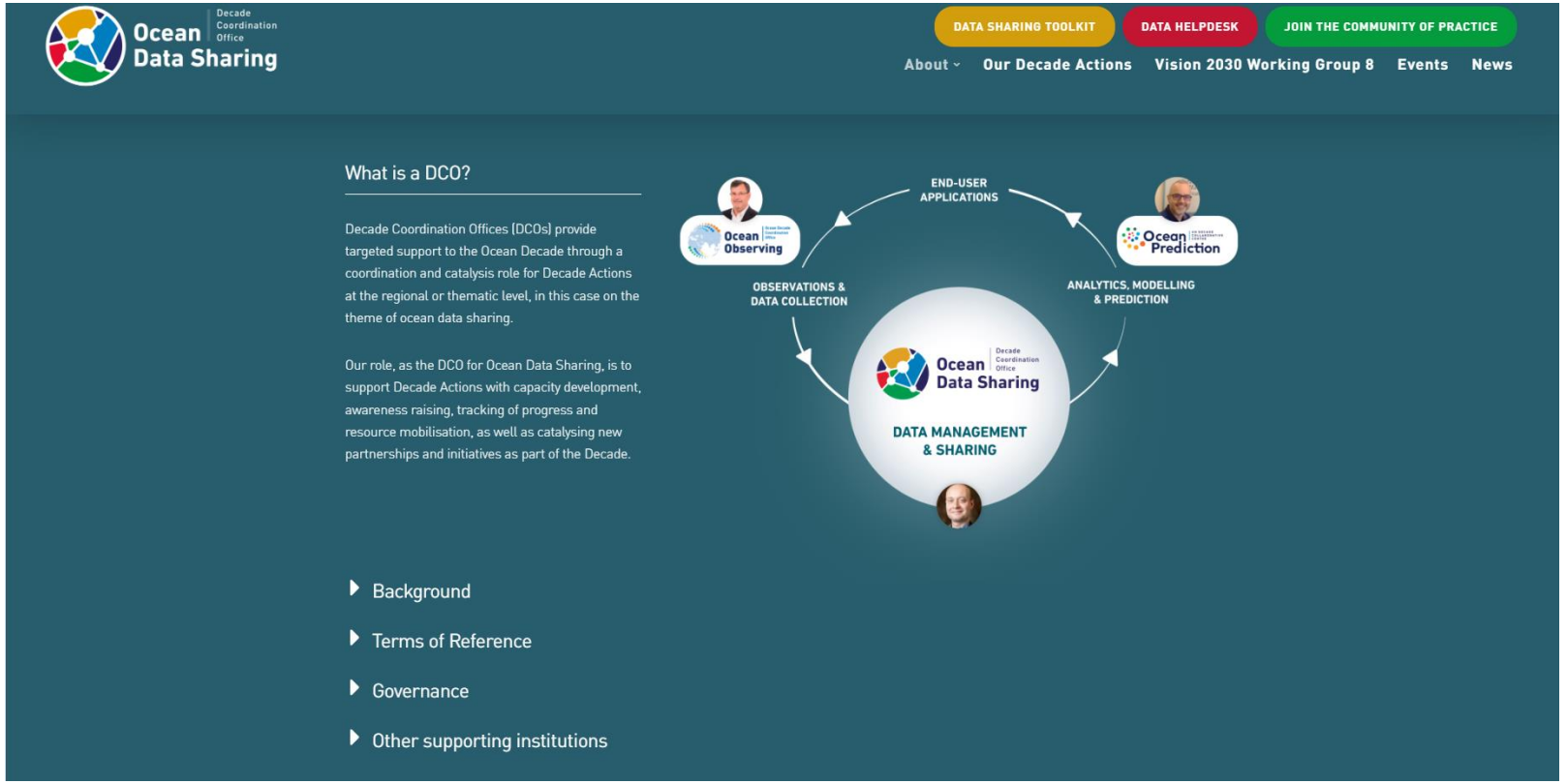
New DCO-ODS Website now available

https://oceandatasharing-dco.org/

Includes information on the essential components that serve as the foundation for shaping and advancing the Decade's Digital Ecosystem, to help drive the Community of Practice on Data Sharing and underpin the support to Decade Actions;

Featuring online resources developed by the DCO-ODS:

- ***Data Resource toolkit***
- ***Online Data Help Desk***



Decade Data Resources and Guidance - toolkit

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Ocean Decade Data Resources Toolkit

Data and Information in the Decade	Data management guidance	Policies and Principles
How (and where) to share my data?	Training & Courses	Case studies / Examples
Where to find the data I need	Contact us / Online Help desk	FAQ (?)

- **Draft version 1 available via the CoP files section**
- Added into the website as one built-in page
- Any suggestions, ideas, comments and/or questions can be provided to the Decade Coordination Office for Ocean Data Sharing (DCO-ODS) using - **oceandatasharing@unesco.org**.

Box I – Data and information in the Ocean Decade?

Data and Information are key enablers to achieve the Ocean Decade outcomes. The Decade Implementation Plan recognises that "*Digitizing, accessing, managing and, most importantly, using ocean-related data, information and knowledge will be cornerstones of the success of the Ocean Decade.*" To facilitate this, a Decade Data and Information Strategy was developed in 2023.

➢ **The Ocean Decade's Data and Information Strategy**

To deliver on the Decade's ambitions, the Data and Information Strategy was formulated with the vision to build a trusted, inclusive and interconnected ocean data and information ecosystem that is actively used for decision making to support sustainable ocean management. The Strategy aims to catalyse a solution-oriented, global digital transformation for the digital ecosystem we need to overcome the Decade Challenges.

The five strategic objectives are:

i. Develop an ocean digital ecosystem that encourages the sharing and equitable access of multidisciplinary data, information and knowledge by all;
ii. Improve data discovery and usability across the ocean digital ecosystem;
iii. Build trust in data and information shared across the ocean digital ecosystem;
iv. Prioritise digital solutions that support decisions for sustainable ocean management;
v. Expand, empower, and mobilise global communities to advance and maintain the ocean digital ecosystem.

The Decade's Data and Information Strategy starts from the understanding that despite the multiplication of data from diverse sources, **it is still very difficult for users to find, retrieve and use the data and information they need**, and we still have major data gaps to fill. Equally, many Decade actors who are generating data face **challenges in sharing this data in a way that is findable, accessible and interoperable** for the community of users.

There are some key steps that can ensure that data collected by decade actors is made visible and usable, and to help all actors find and use the data they need. These include:

- Having or following a good data policy (see box III)
- Developing a sound data management plan (see box II)
- Creating good and complete metadata associated with all datasets (see box II)
- Using/developing and agreeing on common standards (see box II)
- Reporting data effectively (see Box II)
- Storing data in a suitable repository making the data Findable, Accessible, Interoperable and Reusable (FAIR) (see box IV)

In the following sections you can find some useful resources, tools and templates that will help to guide you in each of these steps.

Read full report:

Ocean Decade data & Information Strategy: The United Nations Decade of Ocean Science for Sustainable Development (2021-2030) https://unesdoc.unesco.org/ark:/48223/pf0000385542

BOX II - Data management guidance

Data Management Plans

Developing a good data management plan is a crucial first step in robust data stewardship. A good data management plan outlines how data will be managed during the life cycle of any project. It will cover everything from data collection processes, quality assurance/ quality control, creation of metadata, data storage and submission to a suitable repository.

The **IODE Guidelines for Data Management Plans** - are an extremely useful resource to check if a data management plan (developed or to be developed) is adequate in relation to sharing "information on the management and sharing of data, information and resulting knowledge" of a project or programme. See below, also, under "tools and templates", some templates for developing DMPs.

- https://unesdoc.unesco.org/ark:/48223/pf0000256544

Guidelines and best practices:

Below are some guidelines and best practices where you can find more information on how to publish your data and or information as well as how to develop relevant plans and adopt FAIR data principles.

- Guidelines for **data publishing** – including *in situ* physical/chemical data, glider data, biological observation data, model/ gridded data, geospatial data—and **Metadata** requirements. https://ioos.noaa.gov/data/data-standards/data-publishing/
- Manuals, guidelines, standards and best practices collected in the IOC Ocean Data and Information System (ODIS) 'Catalogue of Sources' https://catalogue.odis.org/search/type=14
- AquaDocs (https://aquadocs.org/pages/About) has recently been proposed/promoted as recommended **repository for storing/sharing publications** coming as outputs from Decade Actions
- **Ocean Best Practices** is a repository of best practices related to ocean science. It contains generic **best practices on data management and data collection**, as well on thematic areas (e.g. sensor types, thematic focus, environment, etc...) https://www.oceanbestpractices.org/

Standards

Using, and/or developing and agreeing on common standards is the first step in making data interoperable. Below are some high-level examples,

- Open Geospatial Consortium (OGC) standards to improve access to geospatial, or location information – the glue to geospatial information interoperability - https://www.ogc.org/standards/
- The International Organization for Standardization (ISO) 19115 Geographic Metadata Standard (ISO 19115) www.earthdata.nasa.gov/esdis/esco/standards-and-practices/iso-19115
- The European INSPIRE Directive specifies common data models, code lists, map layers and additional metadata on the interoperability to be used when exchanging spatial datasets. https://inspire.ec.europa.eu/data-specifications/2892

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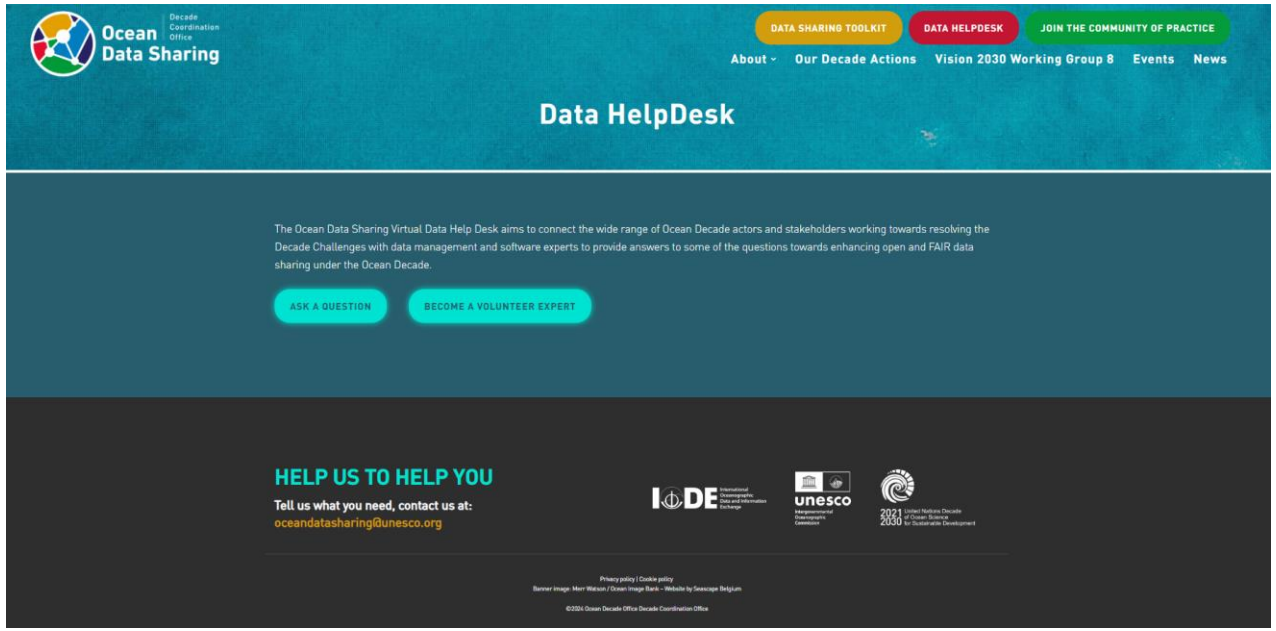
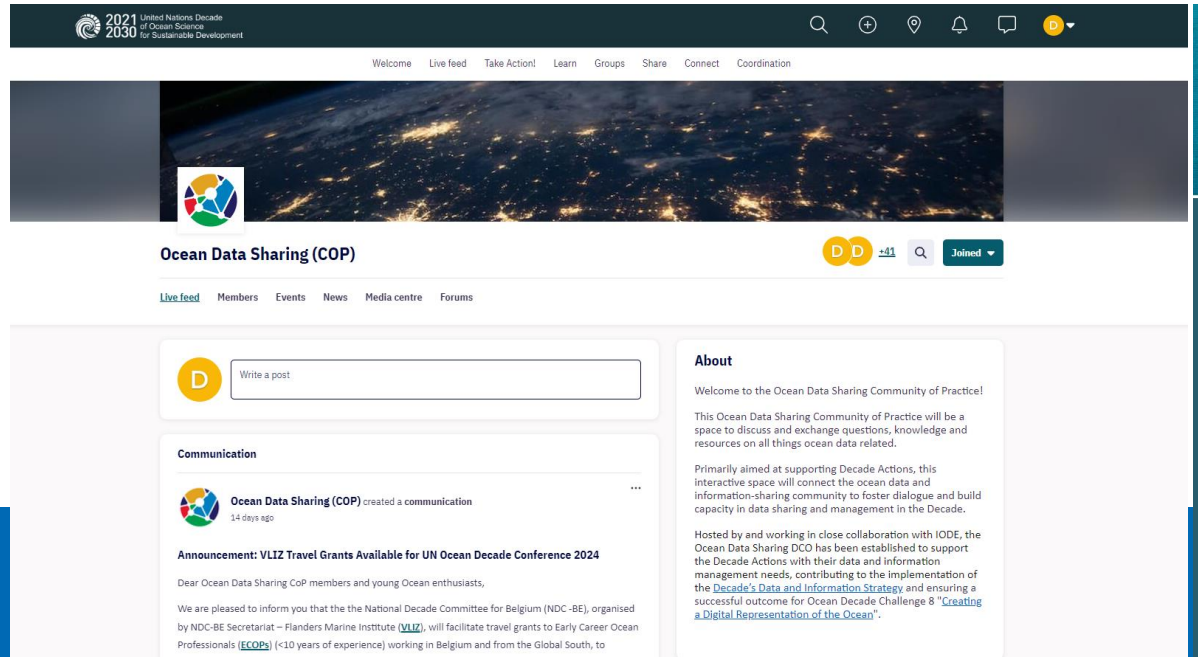
Online Data Helpdesk

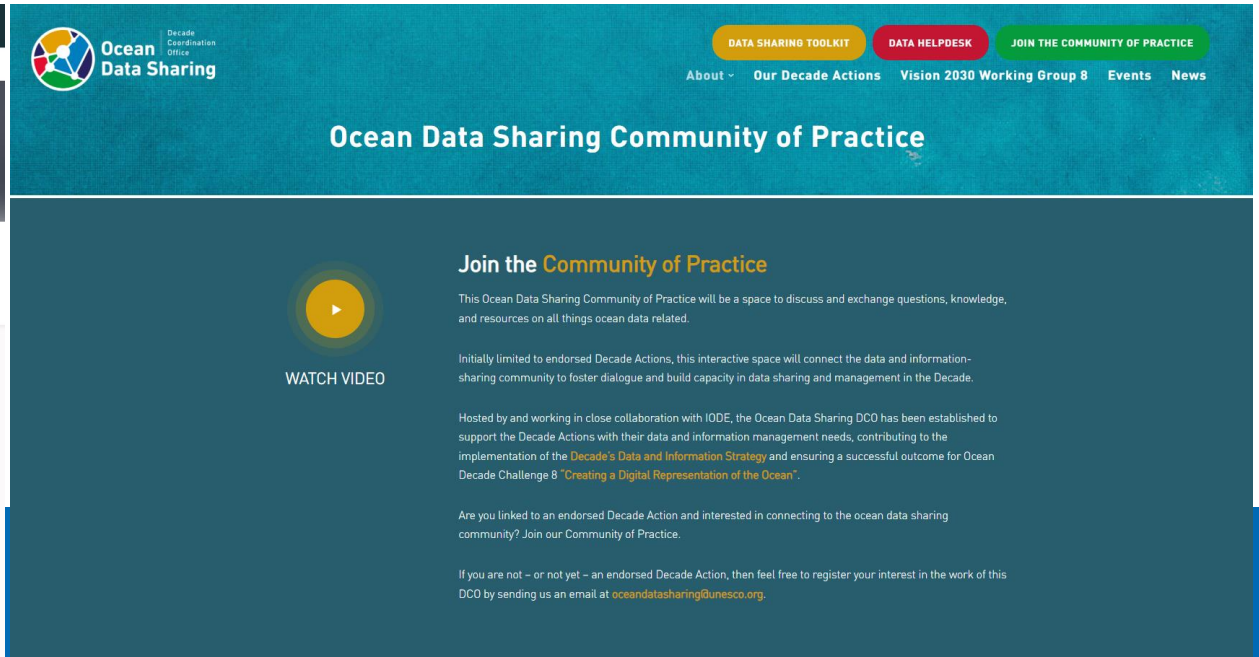
- Provides a **user-friendly platform where end users can seek answers to specific questions** related to their data needs.
- Behind the scenes, **a dedicated team of data experts** is ready to respond to users' inquiries, ensuring a prompt and efficient resolution.
- A **collaborative platform** that reflects DCO-ODS's commitment in promoting accessibility, transparency and proficiency in data sharing in the public domain.
- The questions submitted to the Data Help Desk shall provide valuable analytics, allowing the DCO-ODS to **understand the most common data concerns** encountered by end-users, enabling continuous enhancement of the support services and better address the evolving needs of the ocean data sharing community.



DCO-ODS Community of Practice

- **What?** An interactive forum, for Decade Actions to connect, exchange, and share knowledge related to Ocean Data Sharing.
- **Why?** Data and information are cornerstones of the Decade, there is a need to build capacity in data and information sharing.
- **How?** The DCO for Ocean Data Sharing will facilitate but this is a community where you (Actions) can exchange expertise, experiences and help each other.
- As of today, the CoP has 43 members.
- Are you linked to an endorsed Decade Action and interested in connecting to the ocean data sharing community? Join our Community of Practice.
- If you are not – or not yet – an endorsed Decade Action, then feel free to register your interest in the work of this DCO by sending us an email at **oceandatasharing@unesco.org**





Survey on Ocean Data Sharing – To endorsed OD Actions

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- The survey focuses on **gathering insights from** stakeholders involved in **Ocean Decade Actions**.

- Objectives
  - to **better understand the challenges** faced by the endorsed Decade Actions in the realm of Ocean Data Sharing
  - to **identify where and how the DCO for Ocean Data Sharing can provide support** to enhance data sharing practices and collaboration within the global Ocean science community.

- The scope **encompasses several aspects** of Ocean Data Sharing, including data collection and sharing, accessibility, interoperability, and the utilisation of data.

Ocean Data Sharing | Decade Coordination Office

Status Update

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3. Support and facilitate the Challenge 8 Expert Working Group in the Vision 2030 process

https://oceandecade.org/vision-2030/

A strategic ambition-setting process to identify what success looks like for Challenge 8:"***Create a digital representation of the ocean***"

- Co-chairs appointed (JBC & PS) and members invited in June 2023
- Organised and facilitated several WG8 meetings (July, August & Sept) and two drafting group sessions (Sept)
- Developed a background document for the White Paper
- Towards presenting the Draft White Paper at the UN Ocean Decade Conference in Barcelona, April 2023

Vision 2030 - Decade Strategic Ambition Setting

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

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https://oceandecade.org/vision-2030/

- Strong demand from Decade community to **shape a common vision** for the next 8 years & enhance collective impact
- Unique window of opportunity to **deliberately design the 'science we need'** and avoid dispersion of Decade Actions
- Growing need to **measure & document impact** of the Ocean Decade

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

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Vision 2030

10 Working Groups for **10 Challenges**

~50 Countries

21 ECOPs

20 Co-Chairs

~40 Actions

~150 Experts

26 Supporting Staff

58% of women

Visit the page:

White Papers & Milestones

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White Paper Layout

01 EXECUTIVE SUMMARY (1 PAGE)

02 INTRODUCTION (1 PAGE)

03 STRATEGIC AMBITION SETTING (4 PAGES)

04 MILESTONES AND INDICATORS (1 PAGE)

Public review process (Jan-Feb 2024)

Finalization

White Papers and **Synthesis Report** to be presented and discussed at the 2nd International Ocean Decade Conference in April 2024

Consolidation of White Papers and development of the Operational Plan to implement and operationalize the Strategic Ambitions for each Challenge

Un Ocean Decade Vision 2030 Working Group 8

Challenge 8: Create a digital representation of the Ocean

THE CO-CHAIRS

Jan-Bart **Calewaert**

Paula Cristina **Sierra-correa**

*Through multi-stakeholder collaboration, develop a **comprehensive digital representation of the ocean**, including a **dynamic ocean map**, which provides free and open access to explore, discover and visualize data and information on the past, current, and future state of the ocean.*

THE EXPERT MEMBERS

Ann-Christine **Zinkann**

Dick M.A. **Schaap**

Gerben J. **de Boer**

Toru **Suzuki**

Gustav **Kågesten**

Iain **Shepherd**

Tanya **Haddad**

Véronique **Jégat**

Kate **Crosman**

Marc **Taconet**

Martin **Visbeck**

Mike **Smit**

Ren **Xingyuan**

Peter Teye **Busumprah**

Steve **Hall**

Alain **Arnaud**

Working Group 8 – Digital Ocean

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Process towards a Strategic Ambition Setting for Challenge 8 White Paper

WHO ARE OUR USERS

Everyone - diverse in expertise & area, leave no one behind

- professional (hands on)
- professional (not hands on)
- non-professional/public
- **other 9 challenges are proxy users** defining data & info needs (both content & services)

WHAT DO THEY NEED?

- easy access to ocean data & information (multidisciplinary)
- tools/services for accessing and sharing data, information and knowledge

DIGITAL CONTENT NEEDS

All data types relevant

Focus on **priority data products & underpinning data**

Data-layers as drivers to pull in data

- Address data-gaps, agree on standards & improve interoperability
- Leverage existing communities
- Must be societally relevant (other challenges)
- Must be co-developed in a transparent process

Global layers must be **complemented with local case studies** (priority: global south)

DIGITAL SERVICES NEEDS

1. Global Ocean **Data Discovery and Access Service**
2. Online user-friendly **Digital Atlas of the Ocean**
3. **Marine Knowledge exchange** mechanisms
4. **Help Desk** Service
5. **Capacity Development** / Sharing and **Training** facility

NEXT STEPS

- Agree on globally relevant data products: e.g., marine litter/pollution, MPAs, blue carbon,
- Elaborate service ideas, build on what exists / identify existing best practices
- Synergies with other WGs
- Incorporate feedback on strategic ambition
- Involve relevant Actions
- Review and finalise White Paper

Delivering the Strategic Ambition

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The Strategic Ambition for Ocean Decade Challenge 8 is to have in place by 2030:

- the enabling environment (data, products, tools and services) for the creation of and access to an increasing number of digital representations and twin applications of the Ocean,
- delivering at minimum 10 societally relevant global base-layers (digital representations) accessible via a dynamic Digital Atlas,
- contextualized by a minimum of 10 local use cases (prioritizing the global South) to stress test the inclusiveness of the interoperable sharing environment and address challenges along the marine knowledge value chain.

The following **tools and services** to be developed and in place by 2030:

i. A global Ocean Data Discovery and Access Service with a dynamic map viewer;
ii. A global user-friendly Digital Atlas of the Ocean;
iii. An inclusive series of platforms, mechanisms and tools to share and exchange Marine Knowledge;
iv. An Ocean Data Help Desk and Data Ingestion Service;
v. Facilities and resources for Capacity Development and training to improve digital literacy;
vi. A transparent process guiding the development of global consensus base layers

➢ The architecture of the data and information-sharing platforms/tools/services that will be created (or further developed based on existing concepts/tools), should be compatible with the architecture of other core service and/or decision support tools and applications proposed or currently under development

Ocean Decade Vision 2030 Process
Have your say!

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Ocean Data Sharing

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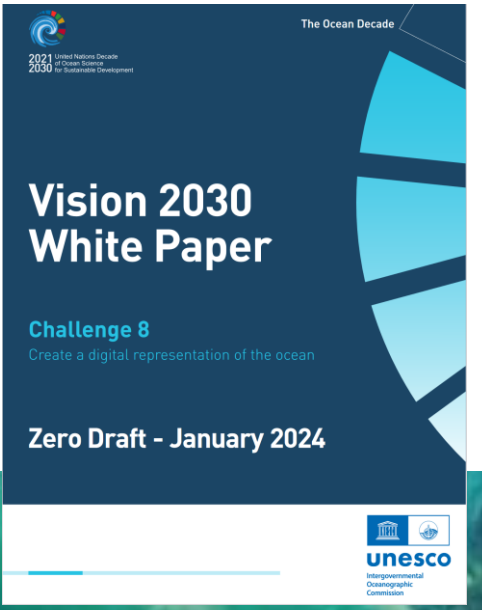
- The Global Community is invited to feedback on the 10 Draft White Papers
- **White Papers are open for review from 22 January – 22 February**
- How to contribute:
  - Download the Draft White Papers https://oceanexpert.org/document/33599
  - Participate in the survey https://www.surveymonkey.com/r/WP_vision_2030
  - **Join the public webinars "** ***Session 3:*** *Science and Solutions for a Safe and Predicted Ocean: Challenges 6, 7 and 8 - Observations, Data and Forecasting / Early Warning Systems*". **Wednesday 14 February from 19.00 to 20.30 CET**
  - **For more information visit: https://oceandecade.org/vision-2030/**

Access the survey!



How can you support & contribute?

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Contribute to key DCO-ODS objectives and activities

- Suggest or nominate experts to contribute to the Ocean Data Sharing virtual helpdesk
- Contribute to the Data Guidance and Resources toolkit / Trainings
- Contribute to implementation of the Decade Data and Information Strategy Objectives
- Actively participate in the Data Sharing Commiunity of Practice (ODN)
- Contribute to implementing the recommendations of the Vision 2030 Challenge 8 Working Group, i.e. To Create a comprehensive digital representation of the Ocean

Contribute in kind to the Decade Coordination Offices and Implementation Actions

- The **DCO-OO and DCO-ODS themselves are** still seeking resources to expand the teams & impement their ToRs
- The **Ocean Data 2030 Programme** – by supporting the development of Ocean Infohub and Ocean Data and Information System
- Provide support to develop **the Global Digital Atlas of the Seas and Ocean** and its content as envisaged by the Vision 2030 WG for Challange 8

DCO-ODS future events

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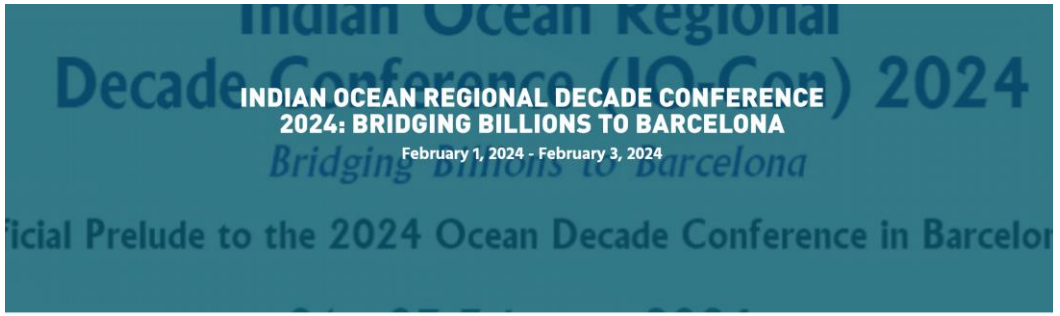
DCO-ODS at IO-CON 2024



DCO-ODS at the Ocean Decade Conference, Barcelona (April 2024)

- **Register, Join and Find us at the Conference Data Helpdesk Booth**

Requirements for data management/sharing under the Decade

Drawn from the call for actions text Call for Decade Actions - No. 06/2023

Endorsement Criteria for Decade Actions shall consider:

→ **Ensure that all data and resulting knowledge are provided in an open access, shared, discoverable manner…**, and are appropriately deposited in recognized data repositories consistent with the IOC Oceanographic Data Exchange Policy1 (https://www.iode.org/index.php?option=com_content&view=article&id=51:ioc-oceanographic-data-exchange-policy&catid=24&Itemid=100040) or the relevant UN subordinate body data policy.

→ ***Encourage best practice in managing data and knowledge.***

→ *Last call - We would be interested in projects related to data frameworks and data systems, following the FAIR and CARE principles for data; projects that are developing capacity for biomolecular observations, e.g. through training, citizen science/education, technology transfer and/or sharing of protocols, systems or other materials developed by the project, with a particular focus on supporting LDCs and SIDS, or indigenous people*

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Thank you