



Ocean Data & Information System

Data for the Global Ocean

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6th Session of the IOC Group of Experts on Capacity
Development

20-24 October 2024



Background and history



The First Session of the IOC Group of Experts on Capacity Development was held in Paris between 21-23 March 2018. The **Task Team on the implementation of a TMT/CHM "portal" and related activities** was convened and held its first meeting in March 2019.

The meeting discussed the results of a survey (on CD needs assessment and on the clearing house mechanism) which had been launched on 5 October 2018 until 14 February 2019.

It focused on the three regional sub-commissions (IOCAFRICA, IOCARIBE, WESTPAC) and regional committee IOCIDIO, including SIDS.



Background and history



All regions reported that such a mechanism would be instrumental to the further development of ocean science capacity in the countries.

All regions expressed preference for an online central portal integrating the data and information harvested from regional/sectoral CHM portals.

The respondents identified the need for a **series of nodes** rather than one global central node but using technology that allows **interoperability** between the nodes.

The majority of respondents had recommended a “A hybrid model: online central portal with deep-links to regional/sectoral CHM portals”.

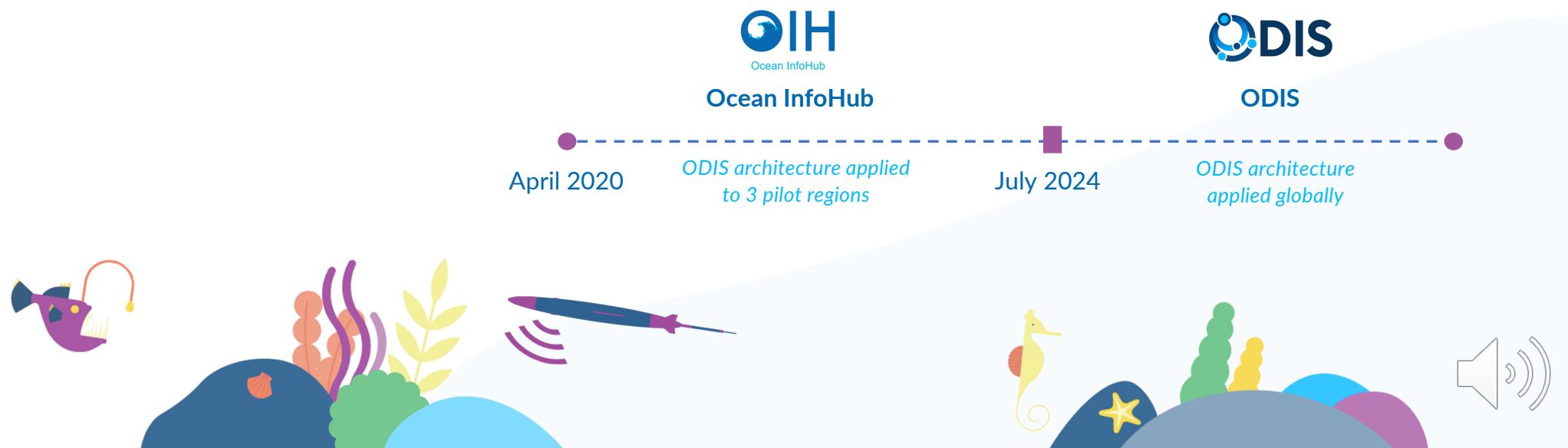


Background and history



From these and several other preparatory activities, the Ocean InfoHub (OIH) Project was designed and approved and was implemented, starting in April 2020, funded by the Government of Flanders (Kingdom of Belgium).

The OIH Project developed the ODIS-architecture and proof of concept for ODIS, which has since been adopted as a Programme Component of IODE, with long term support.



The Ocean Data & Information System (ODIS)



ODIS is a federation of independent systems that uses common conventions to share and exchange their (meta)data over the Web.

ODIS is a global initiative supported by the IOC/UNESCO to:

- **Improve access** to marine and coastal data and information
- Provide an **openly accessible online platform** to **network** stakeholders and **facilitate the exchange** of Ocean data and knowledge



ODIS objectives



- Harness the proliferation and diversity of **Ocean data, online data systems and other digital resources**;
- Connect **global and local digital systems and infrastructures** using Web architecture;
- Support IOC member states and institutions;
- **Raise awareness of global data and information resources** among local users;
- Overcome **challenges of trust through socio-technical innovation** in some regions and communities.



Three pilot regions

Three pilot regions have taken a lead in building or testing **interoperability** between existing information hubs.



Latin America
and the Caribbean



Africa



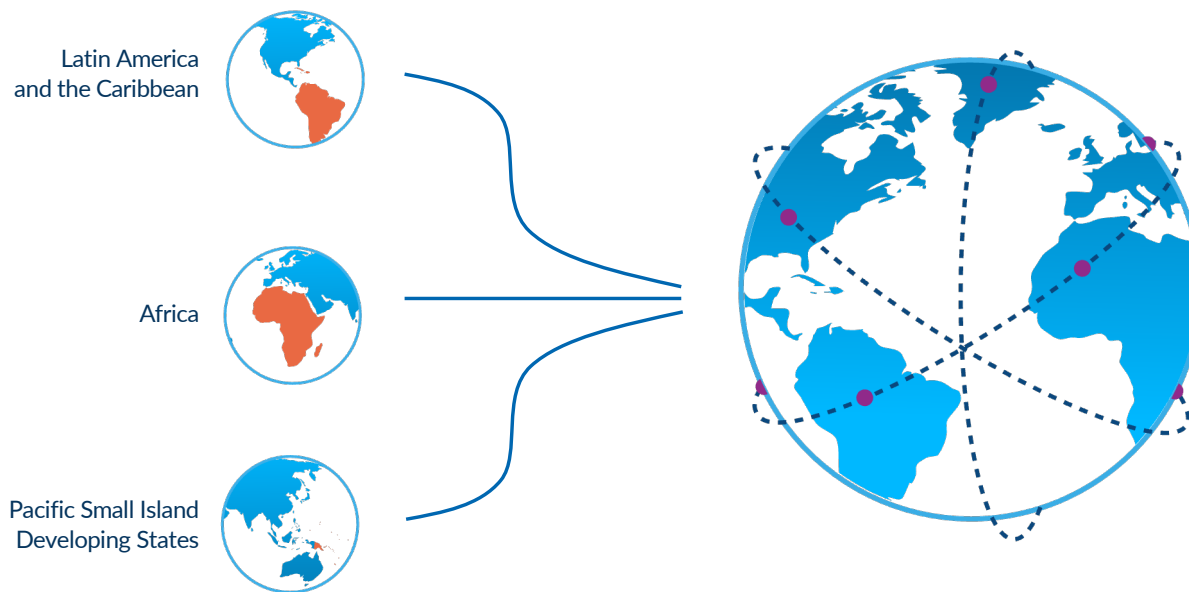
Pacific Small Island
Developing States



Three pilot regions to a global network

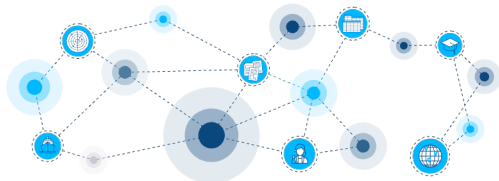


The Ocean Data & Information System (ODIS) is now a global infrastructure that can help any organisation or individual to share their ocean (meta) data with the Web, as well as to access a growing ecosystem of Ocean data.



A partner network

- Composed of **ODIS Nodes**, through which data providers and partners can communicate, discover and share data, and connect;
- With **high scalability**: gains richness and efficiency with growing number of nodes.
- Currently links **50 data sources from 42 partner organisations**

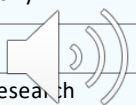


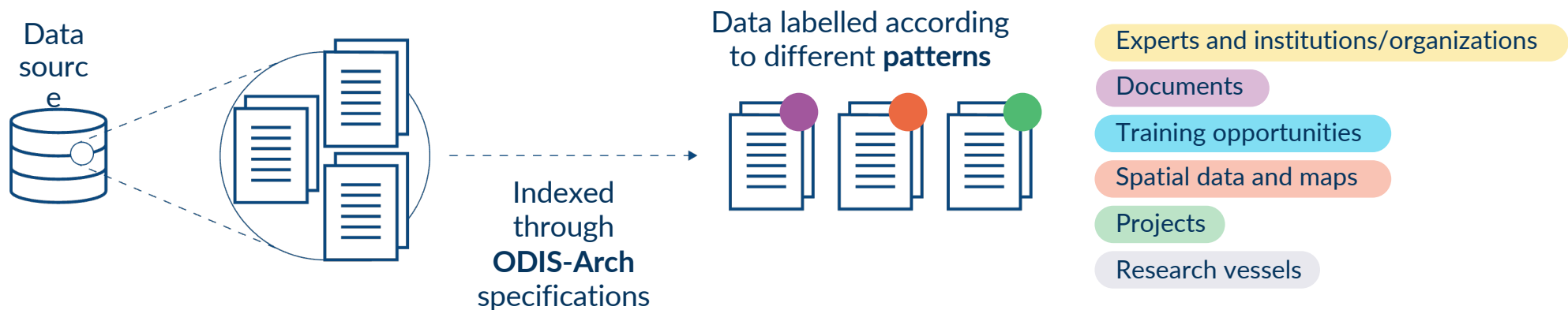
African Coastal and Marine Atlas catalogue (ACMA)
IOC Africa Data Portal
AquaDocs
Argovis ARGO Collection
Better Biomolecular Ocean Practices (BeBOP) as part of Ocean Biomolecular Observing Network (OBON)
Benguela Current Convention (BCC)
GeoData Portal
Belgian Marine Data Centre (BMDC)
British Oceanographic Data Centre (BODC)
Caribbean Marine Atlas catalogue
CLIVAR and Carbon Hydrographic Data Office (CCHDO)
Canary Current Large Marine Ecosystem (CCLME)

Canadian Integrated Ocean Observing System (CIOOS)
European Directory of Marine Environmental Research Projects (EDMERP) SeaDataNet
European Directory of Marine Organisations (EDMO) SeaDataNet
European Marine Observation and Data Network (EMODnet)
EurOcean Organizations
EurOcean Projects
EurOcean Vessels
Global Biodiversity Information Facility (GBIF)
Indian National Centre for Ocean Information Services (INCOIS)
Latin America and the Caribbean Region (LAC) Documents
Latin America and the Caribbean Region (LAC) Experts

Latin America and the Caribbean Region (LAC) Geospatial
Latin America and the Caribbean Region (LAC) Institutions
Latin America and the Caribbean Region (LAC) Training
Latin America and the Caribbean Region (LAC) Vessels
MARine COastal BiODiversity Long-term Observations (MARCO-BOLO)
Marine Institute Data Catalogue (Ireland)
Marine Training EU
Marine Spatial Atlas for the Western Indian Ocean (MASPAWIO)
Marine Environmental Data and Information Network (MEDIN)
Research Coordination Network for Marine Ecological Time Series (METS-RCN)
Marine Information Management System (MIMS)
NCEI Marine Microplastics Catalogue

National Marine Data and Information Service (NMDIS)
Ocean Biodiversity Information System (OBIS)
Ocean Best Practices System (OBPS)
OceanExpert UNESCO/IOC Project Office for IODE
Oceanscape Project
ODIS Catalogue (ODISCat)
Aquatic Sciences and Fisheries Abstracts (OpenASFA)
Observing System Monitoring Center (OSMC)
Pacific Data Hub (PDH)
Pacific Environment Data Portal (PEDP)
Rolling Deck to Repository (R2R)
Research Data Australia (RDA)
UNEP Data Catalogue
WIO (Western Indian Ocean) Symphony
World Ocean Database (WOD)
Leibniz Center for Tropical Marine Research (ZMT)





- Partners do not change internal workflows or existing (meta)data systems: A common Web interface through JSON-LD/schema.org and LOD paradigms is the key to common FAIR implementation
- Specifications are lightweight, easy to implement, and resilient to gain/loss of parts.

Partners aligned to ODIS are also discoverable by Google Dataset search and others.

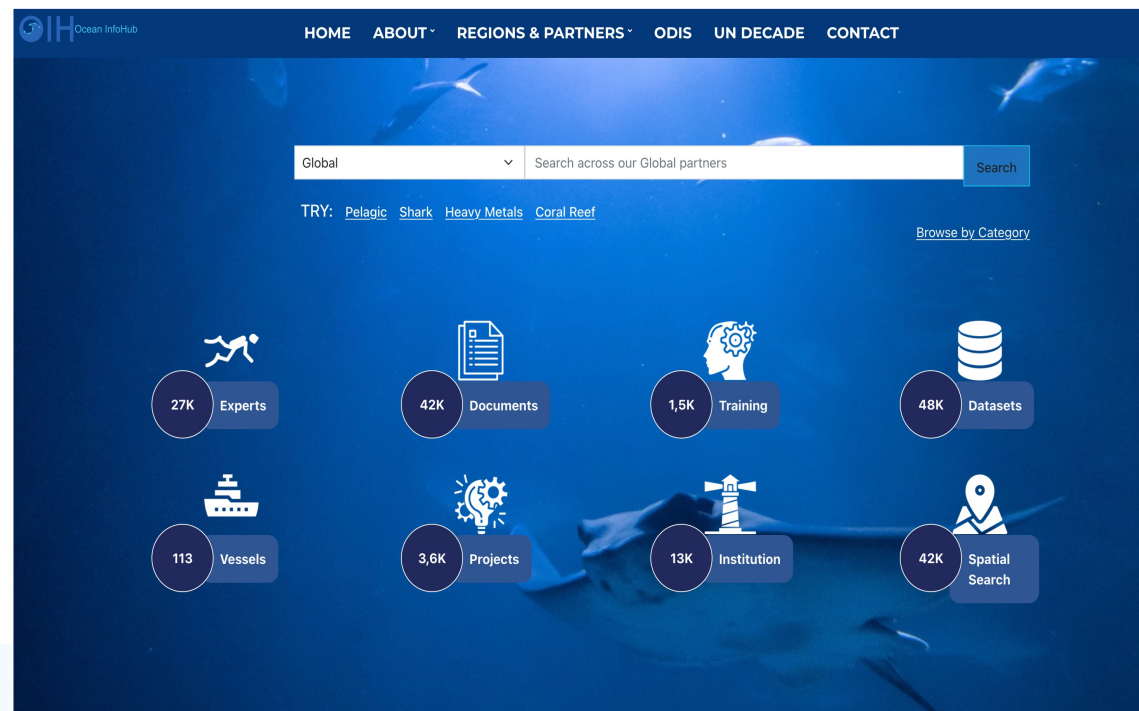
- Partners **retain their own data** and complete control over what they share through their node or nodes. Essential for CARE compliance and interfaces with sensitive data in corporate or other realms.
- All documentation is online, free and open <https://book.oceaninfohub.org/index.html>



Global Search Portal



A Global Search portal has been developed as a demonstration of ODIS (<https://oceaninfohub.org>). The portal currently contains over 130,000 content items in seven content categories: (i) Experts (27,000); (ii) Institutions (13,000); (iii) Documents (42,000); (iv) Training (1,500); (v) Vessels (113); (vi) Projects (3,600); and (vii) Datasets (48,000).



Benefits of linking to ODIS

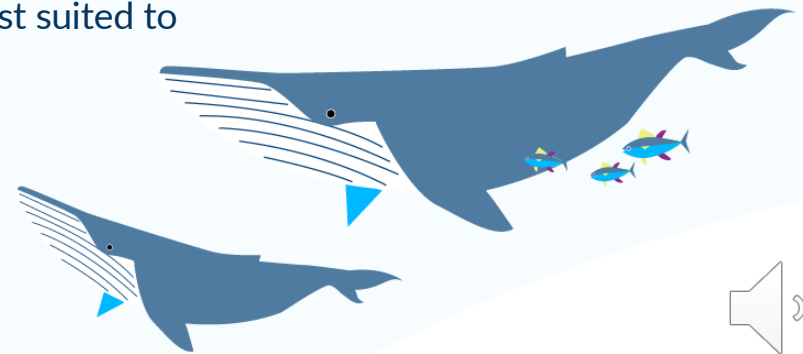


For data providers

- Share (meta) data only once;
- Retain ownership and control;
- Change visibility of your data as you choose;
- Increase visibility of your data and information to the world.

For data users

- Find data and information more easily from numerous sources;
- Easily see which are trusted sources (IODE accreditation);
- Access the same data set through the portal or resource best suited to you.



Benefits of linking to ODIS

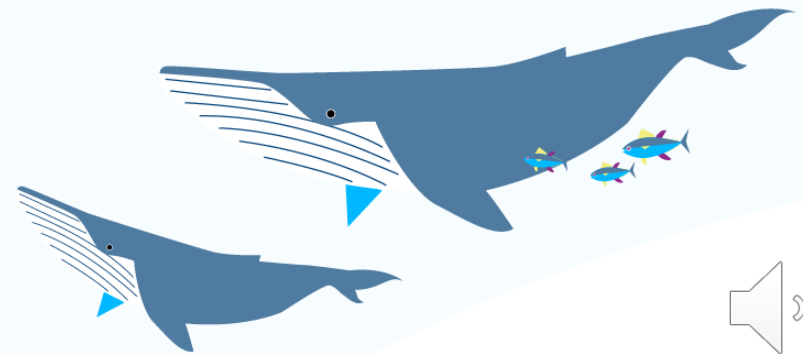
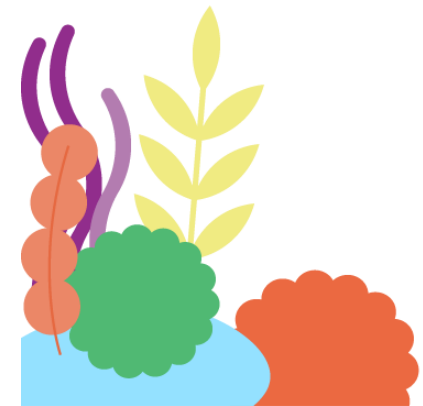


For existing global portals

- Access the ODIS knowledge graph and **130,000 content items** from partners;
- Every record always links to the original source;
- One can be a contributor as well as a user.

For existing regional portals (example)

- Regional Seas organization serves the needs of member states in the Pacific;
- SPREP links to ODIS to increase access to global data useful to member states and for State of the Environment Reporting.
- SPREP facilitates member states / institutions to share their metadata for global discovery.



Contributes to international frameworks

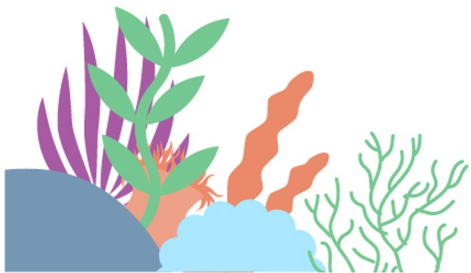


Capacity development activities (OIH & ODIS)



Underpinning all these activities, are our capacity development activities, contributing also to the IOC's Capacity Development strategy.

- ODIS is needs driven, with investment in tools that have been requested by regions
- It will optimise the exchange of knowledge, information and learning
- ODIS takes into account cultural and geographic diversity (respects ownership of data, CARE principles, regional identity of hubs)
- ODIS builds on and strengthens existing resources
- ODIS facilitates equitable access to Ocean metadata.
- The low barriers to joining enable the inclusion of very simple, to highly complex systems.



Capacity development activities (OIH & ODIS)



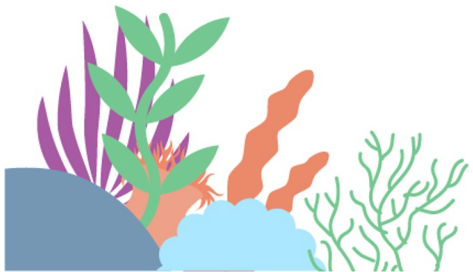
Our partnership with OTGA is very important. We do undertake bilateral and in-person learning and training, but we need OTGA's online learning platform to complement this.

The IOC/OTGA/OIH Training course: **Implementing the Ocean Data and Information System (ODIS) architecture** was held in 2021 in English and then in 2023 in four languages.

It was held online over a week-long period, and then made available as a self-paced course. [9 courses in total]

2021: 59 in English

2023/4: 104 across English, Spanish, Portuguese, French



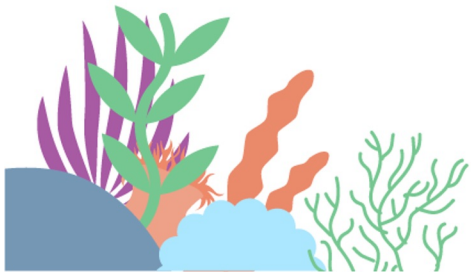
Capacity development activities (OIH & ODIS)



We have worked closely with the International Coastal Atlas Network (ICAN), to support **GeoNode** training in association with the activities supporting the African Coastal and Marine Atlas (2021).

The IOC/OTGA/IOCAFRICA/RTC Kenya/ICAN/Seabed2030/CODATA course Training on the **Implementation of FAIR Principles to African Marine and Coastal Data** was recently held in Mombasa (September 2024).

We do bilateral co-design as we have a consultant on board who holds 1:1 meetings with partners to walk them through the joining process. This also has a two way feedback as they use the interactions to improve the documentation and the ODIS Getting Started manual.

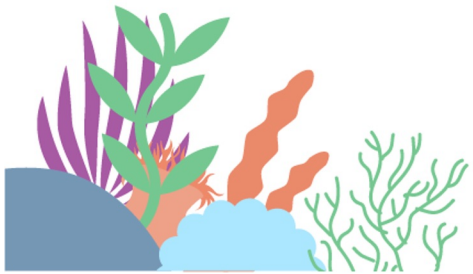


Capacity development activities (OIH & ODIS)



OIH/ODIS has supported the three pilot regions in the specific ways they wanted to link to ODIS.

- INVEMAR has a regional node, which links ODIS to datasets from 12 countries in the LAC region as well as regional partners that include CLME+ Training and Capacity Development Portal, The Sargassum Information Hub and the Caribbean Marine Atlas.
- Africa has developed three thematic portals that link to ODIS,
- The Pacific has linked its two existing regional portals to ODIS.
- The Ocean InfoHub Project and ODIS have succeeded in creating a self-sustaining network of partners, but there remains much work to do to widen the collaboration to other regions and nations, build capacity and digital equity in regions with low resourcing, and continually upgrade the capabilities of the network.



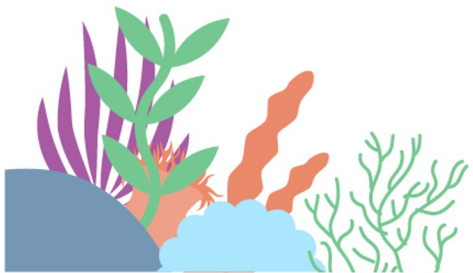
Linking to ODIS: Getting started <https://book.odis.org/gettingStarted.html>



ODIS offers a **long-term solution for any organisation, including NODCs and ADUs and new partners** to keep ownership and complete control over their data holdings, while choosing which (meta)data to share with a growing global ocean digital ecosystem

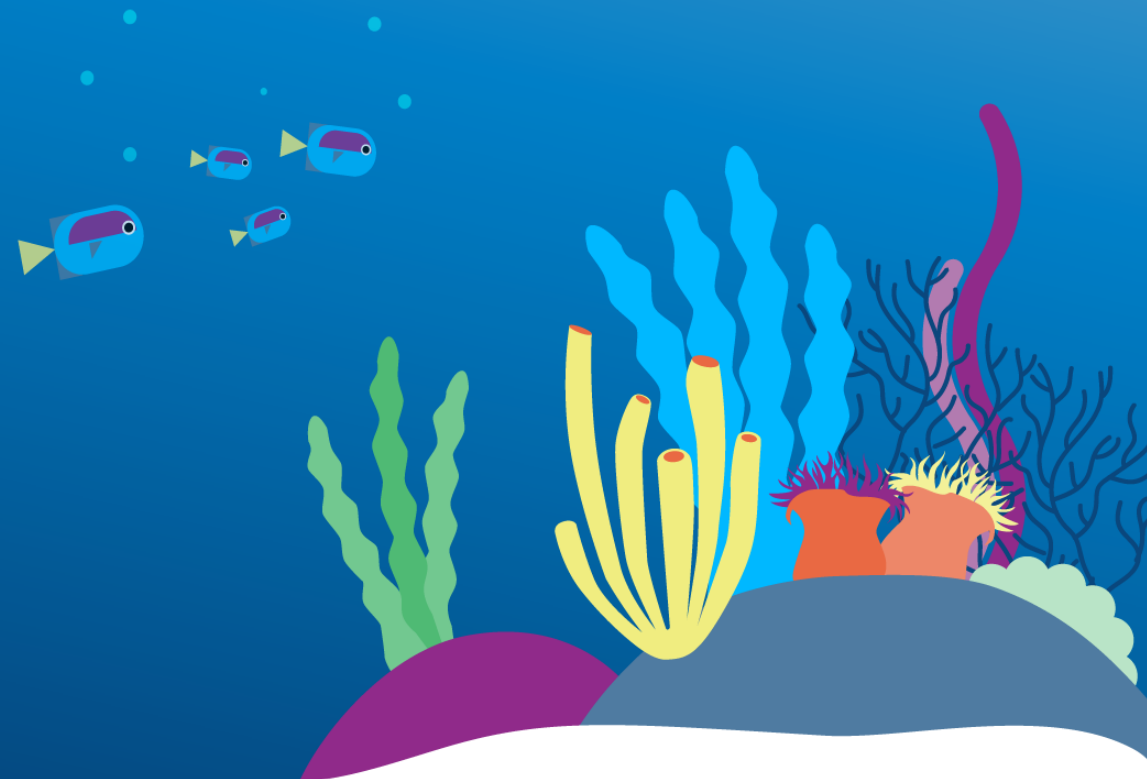
Quick Steps

1. Register your portal in ODIS Catalogue
 - make sure you (or someone in your organization) has an OceanExpertID ([jump](#) to that below)
 - add your entry into ODIS Catalogue ([jump](#) to that below)
2. Prepare your JSON-LD metadata ([jump](#) to that below)
3. Create your sitemap ([jump](#) to that below)
4. Register your sitemap in your ODIS Catalogue entry ([jump](#) to that below)
5. Review the FAQ ([jump](#) to that below)





<https://odis.org>



Join ODIS and build a truly shared Ocean

ODIS is leading OceanData-2030, a registered Programme of the UN Decade for Ocean Science for Sustainable Development

