New MSPglobal tools & training supporting data-driven MSP

MSPglobal 2.0 & 3.0 products

TEG on Data for MSP workshop
3 June 2026, Brussels

Annette Scheffer - MSPglobal Data Expert
Intergovernmental Oceanographic Commission of UNESCO (IOC)

Co-funded by the European Union

Joint initiatives by UNESCO-IOC and European Commission since 2017

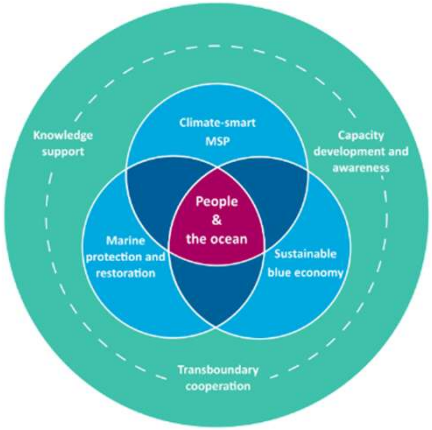
INTERNATIONAL CONFERENCE

2017 | 2022

FRAMEWORK

msp roadmap

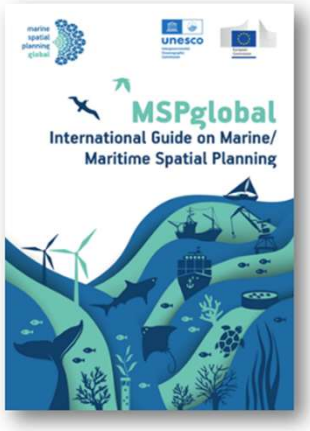
2017-2022 | **2022-2027**



PROGRAMME

msp global

Knowledge & Tools + Transboundary Pilots



COMMUNITY OF PRACTICE

msp forum

2018 | 2019 | 2019
2019 | 2022 | **2024**

MSPglobal Activities

At global level

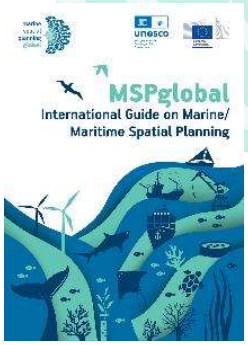
Develop new knowledge & tools

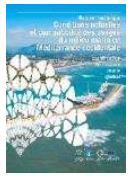
- Map experts, organisations and initiatives
- Co-develop guidance
- Develop and implement trainings

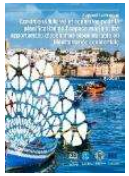
At regional and national level

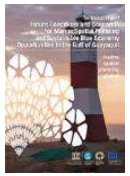
Implement pilot projects

- Southeast Pacific
- Western Mediterranean
- Gulf of Guinea / West Africa
- Western Pacific
- + other regions and countries together with other partners (e.g., Government of Sweden, GEF IW projects, GIZ, etc.)









New MSP data tools – MSPglobal 2.0 & 3.0

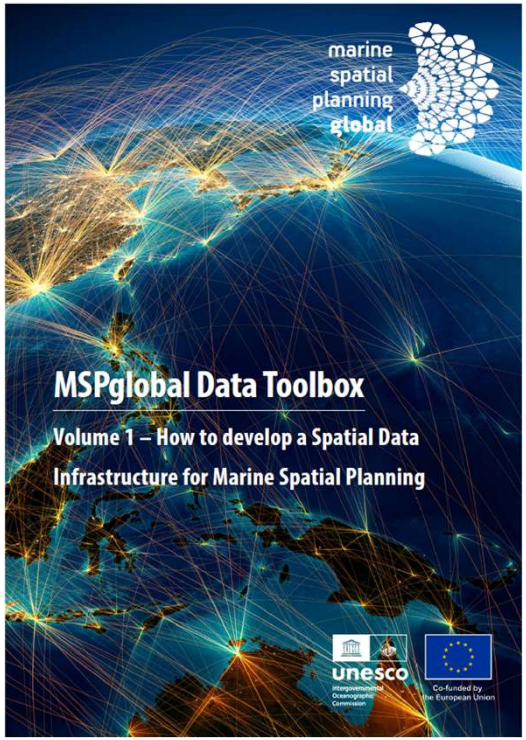
- **Data Toolboxes**
  - How to develop a Spatial Data Infrastructure for MSP
  - How to integrate Ocean Observations into MSP
  - How to use Cumulative Impact Assessment for MSP

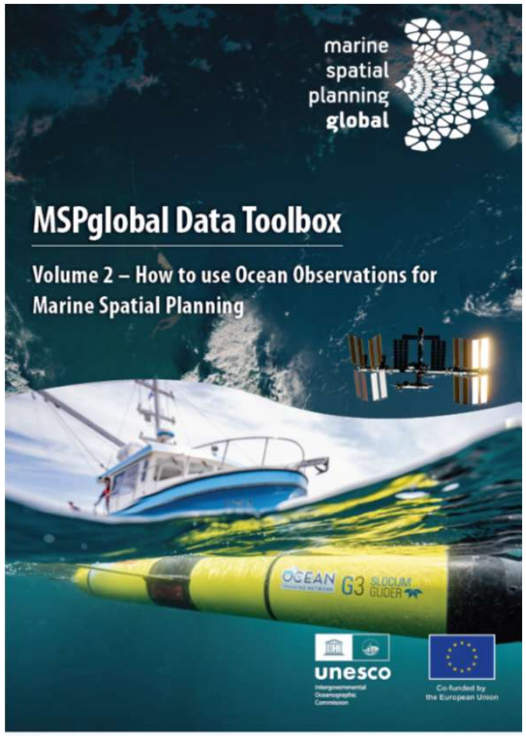
- **Training for MSP practitioners**
  - Online: OceanTeacher Global Academy
    → English, French, Spanish
  - In - person

reference

practice

Data Toolboxes





Coming soon

MSPglobal Data Toolbox

Volume 3 – How to use Cumulative Impact Assessment for MSP

Support MSP practitioners
with data management, integration & methods

Thanks to all the experts involved !

Data Toolboxes – Motivation, Process & Scope

- **Motivation:**

  SDI, OO data, CIA methods – key to support analyses about current & future conditions & impacts

  → Support practitioners to use SDI, OO & CIA for MSP

- **Process:**

  1 - Extensive global expert mapping → invitation to share experiences

  2 - Workshops → brainstorming & expert input

  3 - Development of Data Toolbox: writing & review

- **Goal for Data Toolboxes:**

  What do MSP practitioners need to keep in mind?

✓ **Easy to follow instructions & easy to understand explanations**

✗ Detailed technical cookbook about techniques & data

Data Toolboxes – Make data accessible

Cross-linking

marine spatial planning global

Text sections

Harmonisation of data format and visualisation symbols

Harmonisation of MSP data format and symbology facilitates datasets from multiple sources to be integrated and understood consistently across different systems and stakeholders. Establishing consistent standards for data types, encoding and visual representation supports seamless data exchange and comparison across various jurisdictions and platforms.

In MSP, two distinct challenges emerge: harmonising the format and graphical representation of both input and output data across borders. For example, plans from different countries are difficult to compare if they lack consistent structure and symbology.

Harmonisation of data formats

Achieving harmonised **input data** remains a significant challenge. Input data is often scattered across numerous sources and lacking consistency in format and structure. This inconsistency requires time-consuming harmonisation efforts by MSP practitioners before the data can be effectively utilised within MSP processes. Unfortunately, no universally agreed-upon standard exists yet for input data harmonisation at the international level. This lack of consensus can hinder initiatives aimed at standardising output data consistently facilitating easier comparison of plans across regions, fostering collaboration and knowledge exchange within the global MSP community.

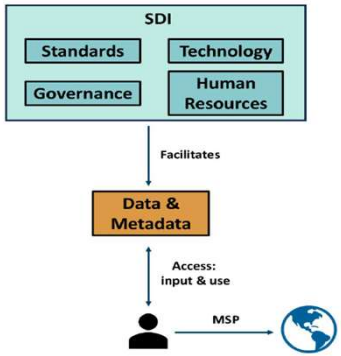
Harmonisation of symbology

Data representation in an MSP context focuses on accurately and consistently communicating spatial information to support analysis and decision-making among stakeholders. Effective data representation allows stakeholders to visualise, interact with, and better understand the data, making complex datasets more accessible, actionable, and easy to share.

Describing symbology standards for actual data representation involves specifying the visual and structural conventions used to convey information within maps or spatial data. This includes:

- Character Sets: Defining the symbols, letters, or icons used to represent different features, such as specific icons for ports, fishing zones, or protected areas. This promotes consistency and recognizability across different datasets and platforms.
- Semiotics: Establishing the meaning of symbols and colours (e.g., blue for water features, red for restricted areas), so that users intuitively

Illustrations



Tables & lists

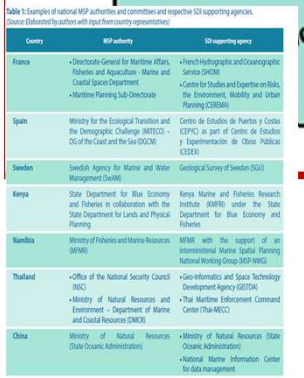
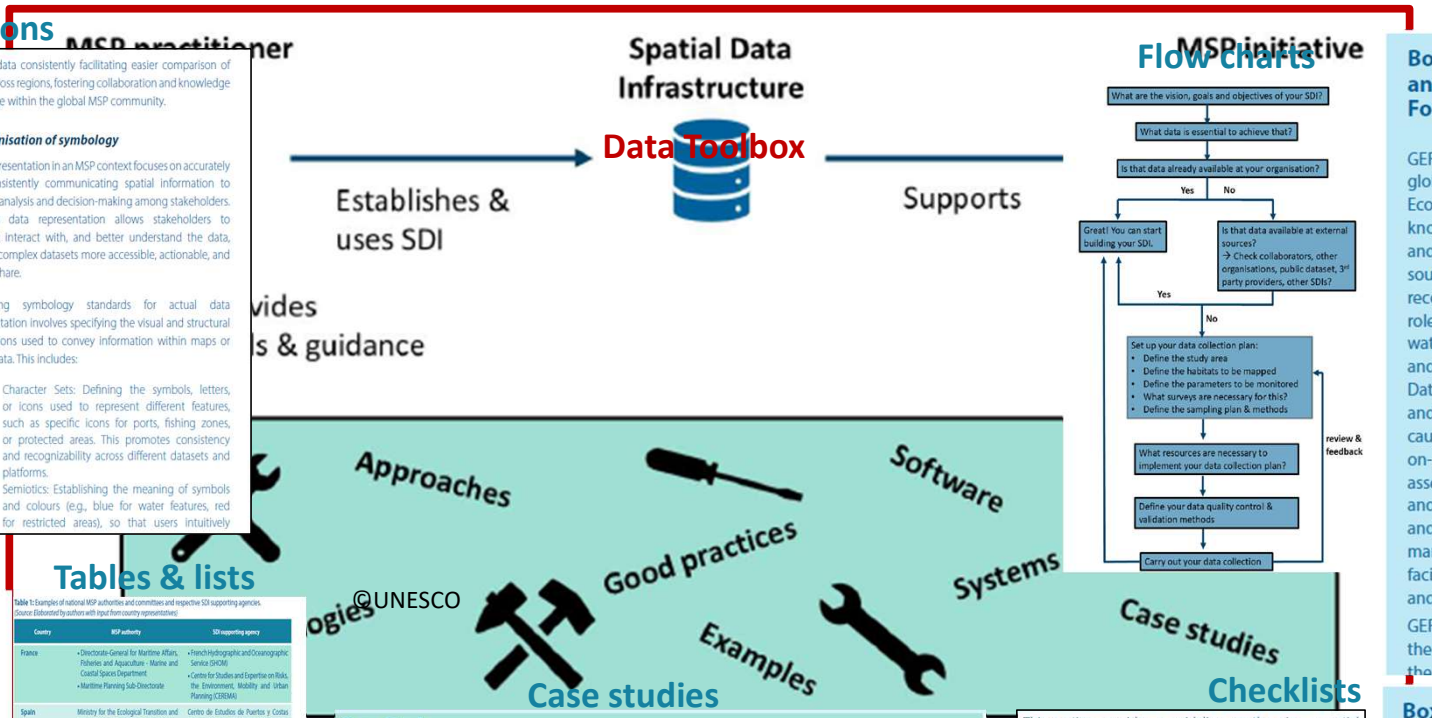


Table 1: Examples of national MSP authorities and committees and respective SDI supporting agencies.
Source: Elaborated by authors with input from country representatives)

Country	MSP authority	SDI supporting agency
France	• Directorate-General for Maritime Affairs, Fisheries and Aquaculture - Marine and Coastal Spaces Department • Maritime Planning Sub-Directorate	• French Hydrographic and Oceanographic Service (SHOM) • Centre for Studies and Expertise on Risks, the Environment, Mobility and Urban Planning (CEREMA)
Spain	Ministry for the Ecological Transition and the Demographic Challenge (MITECO) – DG of the Coast and the Sea (DGCM)	Centro de Estudios de Puertos y Costas (CEPYC) as part of Centro de Estudios y Experimentación de Obras Públicas (CEDEX)
Sweden	Swedish Agency for Marine and Water Management (SwAM)	Geological Survey of Sweden (SGU)
Kenya	State Department for Blue Economy and Fisheries in collaboration with the State Department for Lands and Physical Planning	Kenya Marine and Fisheries Research Institute (KMFRI) under the State Department for Blue Economy and Fisheries
Namibia	Ministry of Fisheries and Marine Resources (MFMR)	MFMR with the support of an interministerial Marine Spatial Planning National Working Group (MSP-NWG)
Thailand	• Office of the National Security Council (NSC) • Ministry of Natural Resources and Environment – Department of Marine and Coastal Resources (DMCR)	• Geo-Informatics and Space Technology Development Agency (GISTDA) • Thai Maritime Enforcement Command Center (Thai-MECC)
China	Ministry of Natural Resources (State Oceanic Administration)	• Ministry of Natural Resources (State Oceanic Administration) • National Marine Information Center for data management



Flow charts

Case studies

Case Study

Box 19: The need for reliable, accessible, and interoperable spatial data for effective MSP in Pacific Island countries

Contributed by Sally Bailey, Kishan Kumar and Hans Wendt

The MSP projects led by The Pacific Community (SPC) support Pacific Island countries to sustainably manage ocean spaces by balancing ecological, social, cultural, and economic priorities. Working with regional and national partners, the projects help governments to develop integrated ocean management (IOM) through participatory planning, spatial data analysis, and capacity development. It focuses on data sharing, governance and enhancing access to spatial data via platforms like the Pacific Data Hub (PDH) and applying decision-support tools (DST). The project ultimately aims to support resilient, inclusive, and science-based ocean governance aligned with national priorities, regional ocean strategies and global commitments.

Checklists

This section provides a guideline on the nine essential **tasks required to establish an SDI** (**Figure 7**), which are:

- **Task 1:** Identify the SDI supporting agency and set up working groups
- **Task 2:** Identify stakeholders and right-holders
- **Task 3:** Assess user needs
- **Task 4:** Define vision, goals, objectives
- **Task 5:** Define the SDI framework
- **Task 6:** Identify boundaries for data assessments
- **Task 7:** Identify data and data collection plan
- **Task 8:** Identify SDI connectivity
- **Task 9:** Set up the SDI documentation plan

Highlight boxes

Box 17: GEF IW:LEARN5 and the Data and Information Management Task Force (DIM TF)

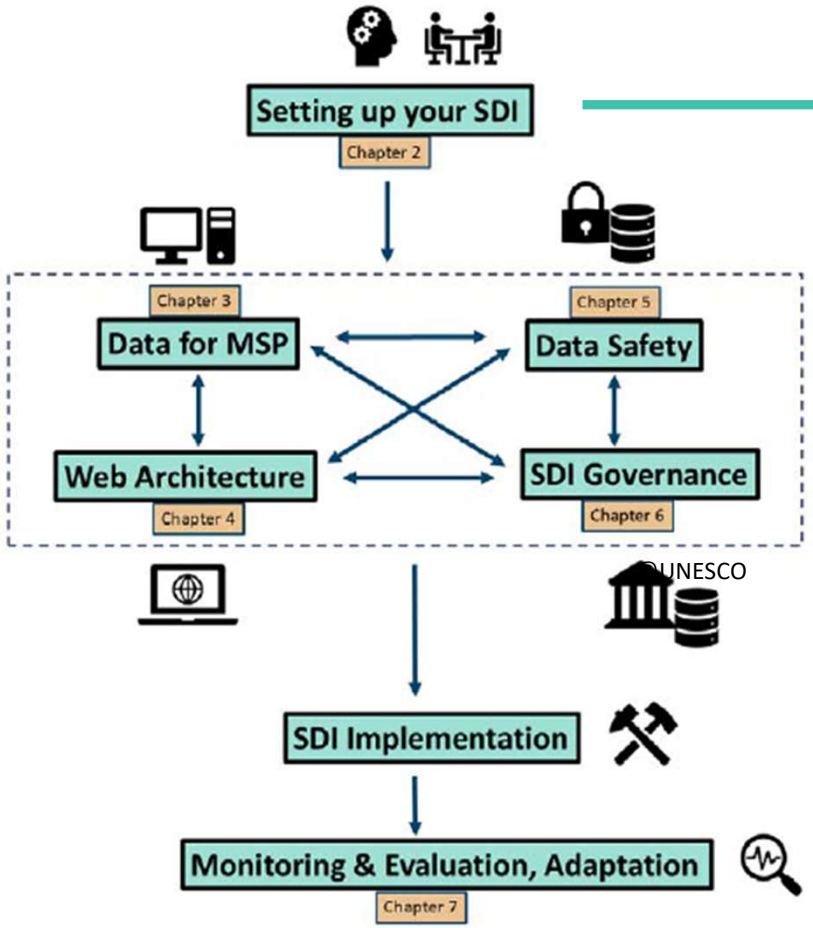
GEF LME:LEARN was a project designed to improve global ecosystem-based governance of Large Marine Ecosystems (LMEs)[54] and their coasts by generating knowledge, building capacity, harnessing public and private partners and supporting south-to-south and north-to-south learning. LME:LEARN recognized data and information to play a crucial role in all phases of the policy cycle in international waters, from decision-making via implementation and monitoring, to analysis and recommendations. Data and information support an understanding and greater awareness of environmental issues, causes, sources and impacts; it functions as an on-going component of the development and assessment of management policies, strategies and interventions; it promotes new legislative and policy initiatives for sustainable resource management and pollution prevention; and it facilitates improved enforcement, decision-making and individual action.

GEF IW:LEARN5 is the current project building on the achievements of LME:LEARN. It is supported by the Global Environment Facility (GEF)[55], the United

Box 16: Checklist - is my data FAIR?

- Does the SDI generate and manage **unique identifiers** for both data and metadata? Are its identifiers permanent and dereferenceable?
- Does the SDI rely on **free and open community standards**?
  - **a.** For enabling communication with standard protocols such as HTTP/HTTPS and standard APIs like OGC Web Services?
  - **b.** Regarding community standards, such as DCAT for metadata, and standards for data models that improve syntactic and

Volume 1: SDI for MSP



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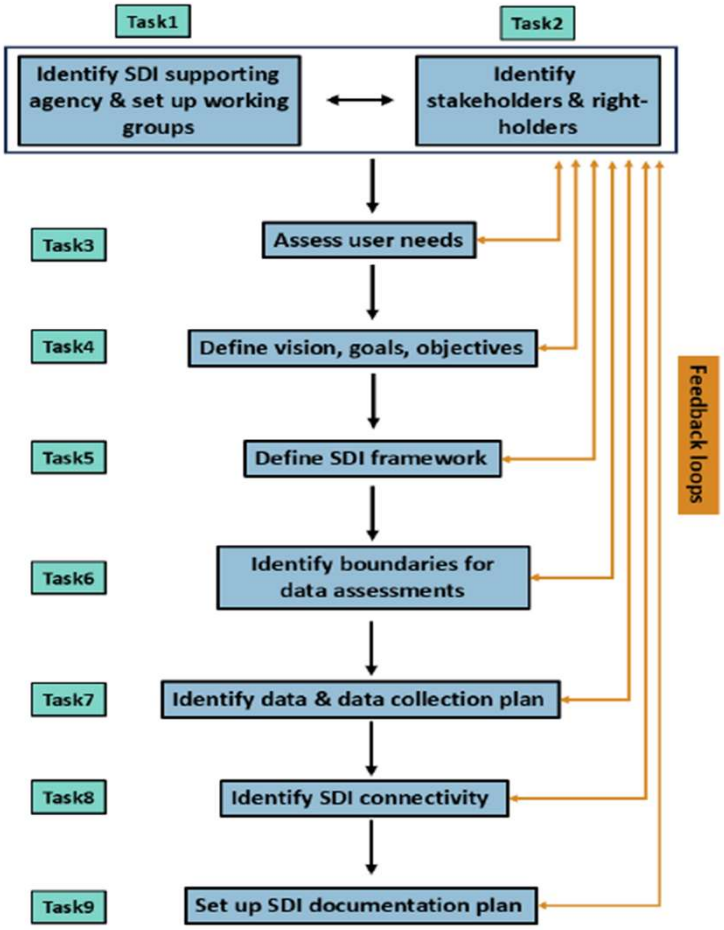

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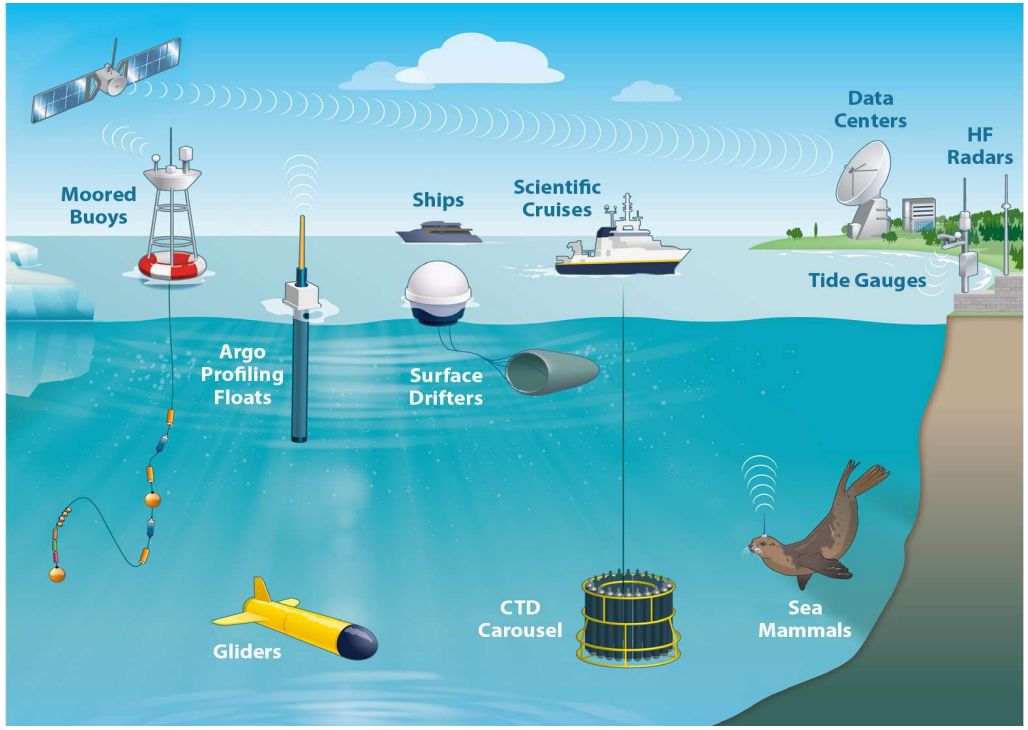
Volume 2: Ocean Observations for MSP

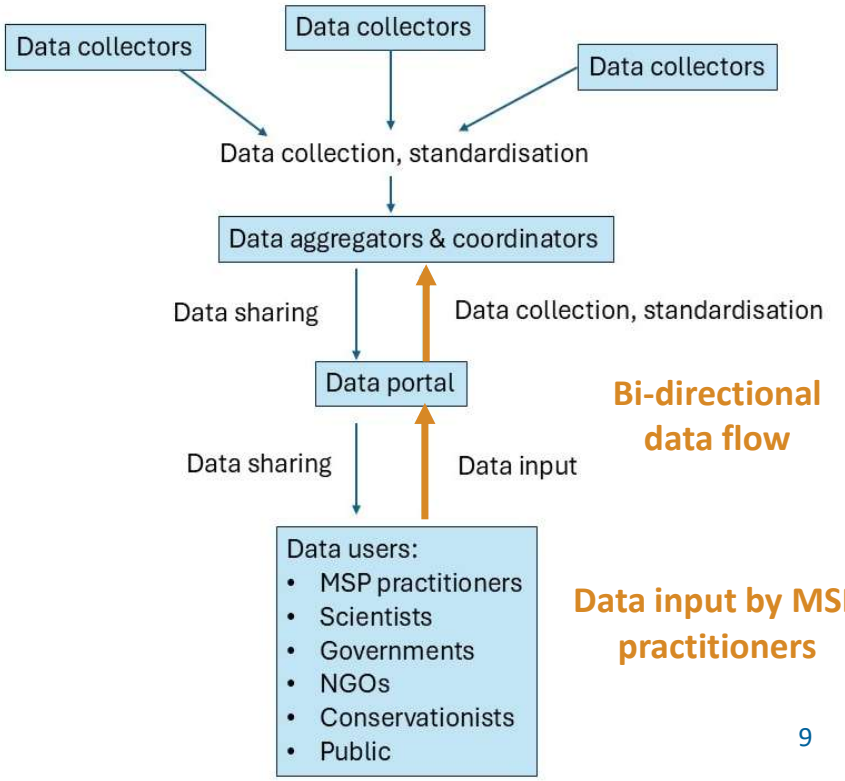
➢ Sampling techniques & platforms



Morris et al., 2021

➢ Key initiatives:

Data collectors, aggregators & coordinators

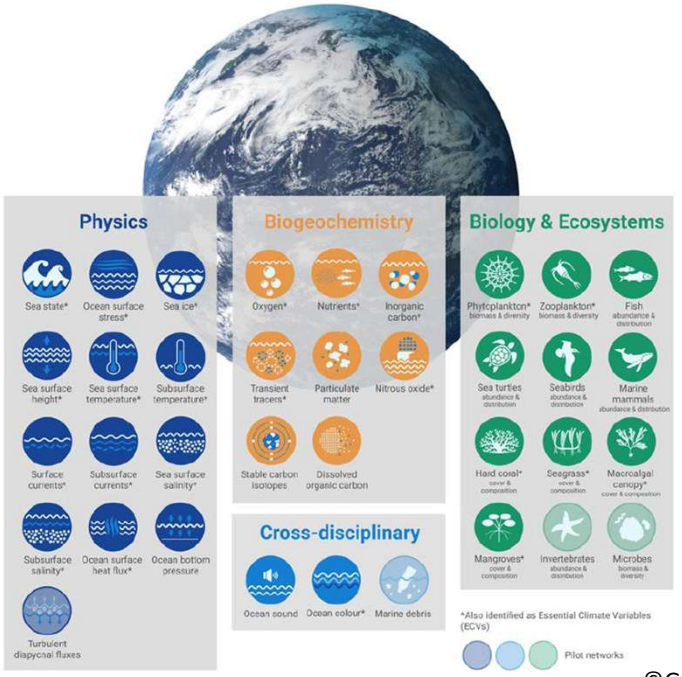


Bi-directional data flow

Data input by MSP practitioners

Volume 2: Ocean Observations for MSP

- **OO Data:**
- Key parameters & Essential Variables
- Data formats & interoperability
- Bi-directional data flow
- Uncertainties, quality metrics, validation



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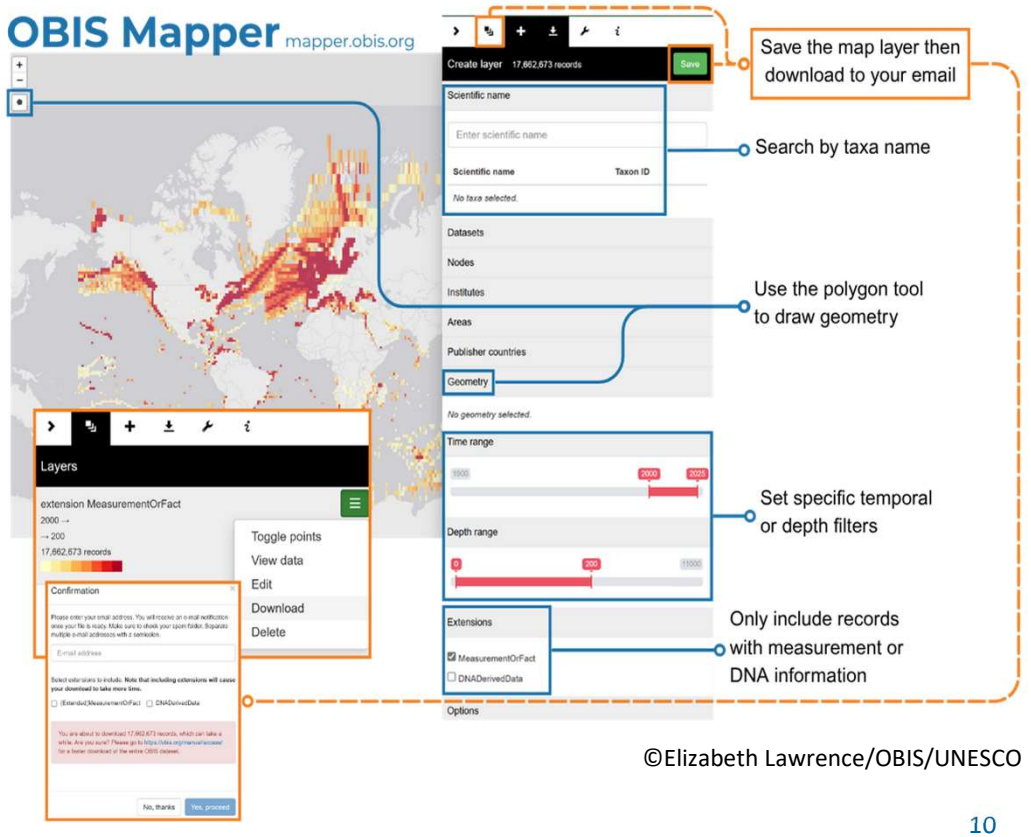
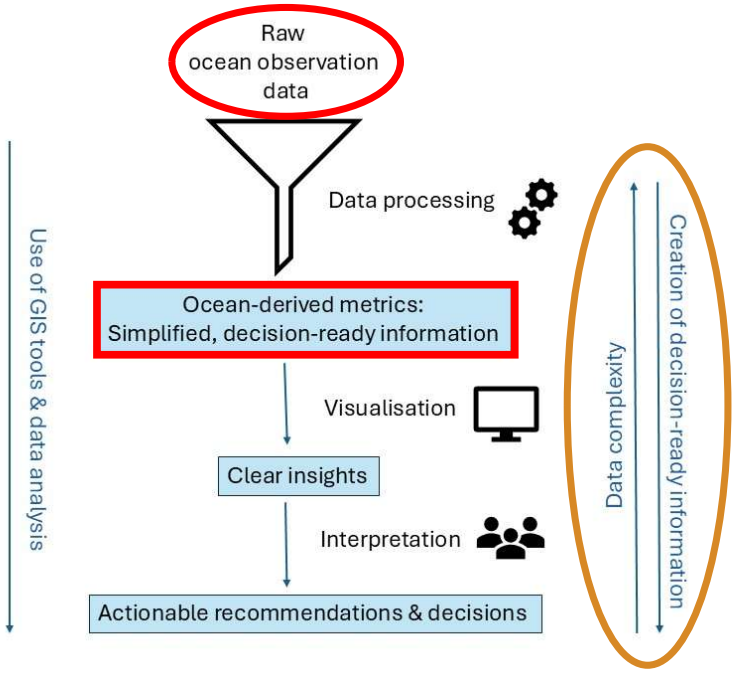


©Elizabeth Lawrence/OBIS/UNESCO

Ocean Observations for MSP – What data?

➢ **What OO data is suitable & helpful for your MSP initiative?**



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MSP analytical task	Ocean observation variable or ocean-derived metric
Defining planning areas and time horizons	Sea level trends, shoreline change, administrative boundaries and EEZ
Determining areas of influence around the planning area	Current patterns and circulation models, larval dispersal models, sediment transport and turbidity, connectivity indices (ecological or hydrodynamic connectivity)
Characterizing marine/costal ecosystems and their ecological states	Chlorophyll-a concentration, sea surface temperature, marine heatwaves, benthic habitat maps, species occurrence data, ocean acidification and oxygen levels
Identifying priority areas for conservation and restauration	Biodiversity indices (e.g., species richness, endemism), habitat extent and condition (e.g., coral bleaching data,

➢ **Data integration into MSP – practicals**

➢ **Emerging trends in OO**

Volume 3: CIA for MSP – MSPglobal 3.0

1. About this Data Toolbox
2. Foundations & Concepts of CIA for MSP
3. Data requirements & sources for CIA
4. Data preparation & processing
5. Frameworks in CIA
6. Mapping environmental components & sensitivity
7. Mapping human activities & pressures
8. CIA modelling & analysis

Coming soon

MSPglobal Data Toolbox

Volume 3 – How to use Cumulative Impact Assessment for MSP

Volume 3: CIA for MSP – MSPglobal 3.0

9. From CIA outputs to decision support in MSP: interpretation, communication & tools for MSP

10. Data – driven transboundary cooperation for CIA in MSP

11. Data governance, transparency & ethics

12. Future outlook for CIA in MSP

Ways to move forward

Annex - Details

Coming soon

MSPglobal Data Toolbox

Volume 3 – How to use Cumulative Impact Assessment for MSP

Training: online & in person

- **Data Toolboxes**
  - How to develop a Spatial Data Infrastructure for MSP
  - How to integrate Ocean Observations into MSP
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- **Training for MSP practitioners**
  - Online: OceanTeacher Global Academy
    → English, French, Spanish
  - In - person

reference

practice

Training part 1: online

“Ocean observation & data management for MSP”

- **OceanTeacher Global Academy**
- **English, French, Spanish**
- **4 Modules – self paced – 25 hours estimated**

- **Composed of**
- **Text & graphics & videos**
- **Case studies**
- **Expert interviews - videos**
- **Quizzes: pre – course evaluation | post-lesson reflection | post-module evaluation**
- **Certificate – 80% quiz passmark**

Training part 1: online

- **Pre – course quiz**

- **Module 1: Introduction to data and its importance to MSP**

  Quiz Module 1

- **Module 2: Spatial Data Infrastructure for MSP**

  Quiz Module 2

- **Module 3: Ocean Observations for MSP**

  Quiz Module 3

- **Module 4: Emerging trends in ocean observation for MSP**

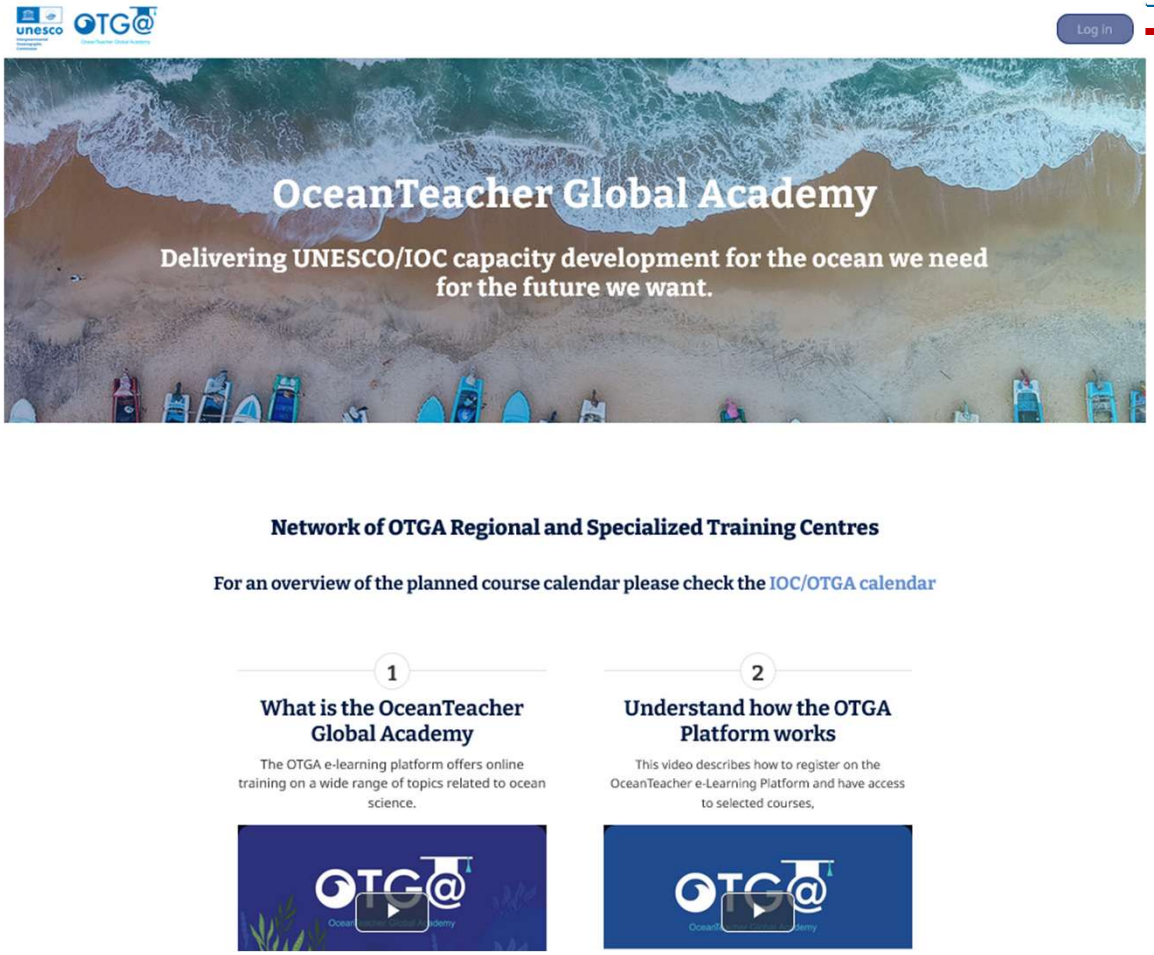
  Quiz Module 4

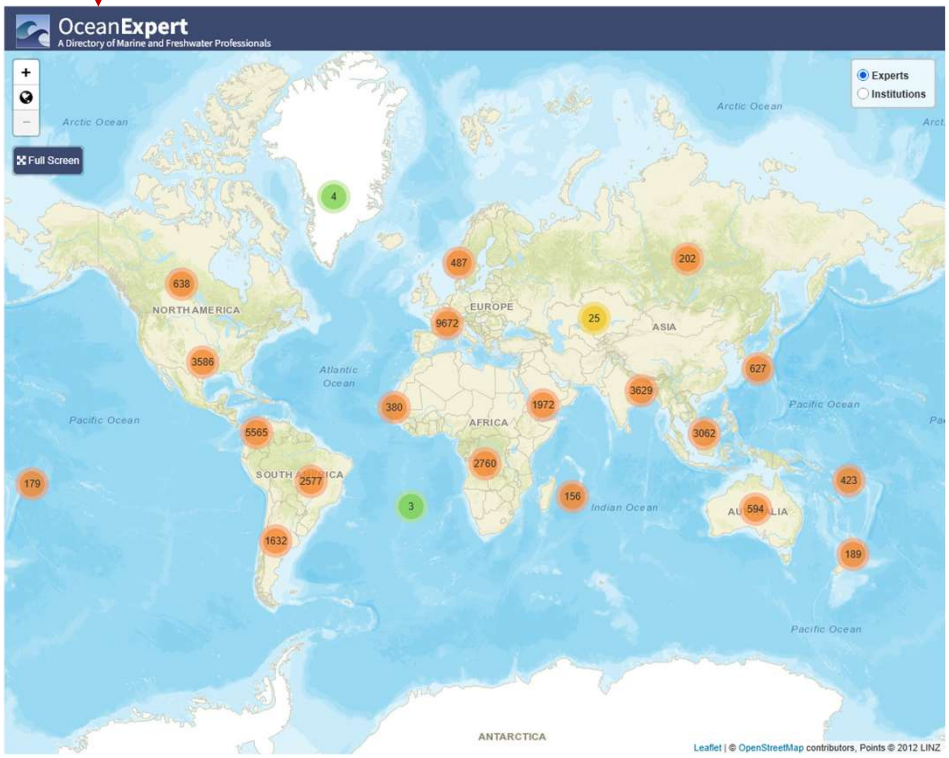
- **Course Feedback:**

  Module rating

  Overall feedback form

Training part 1: online

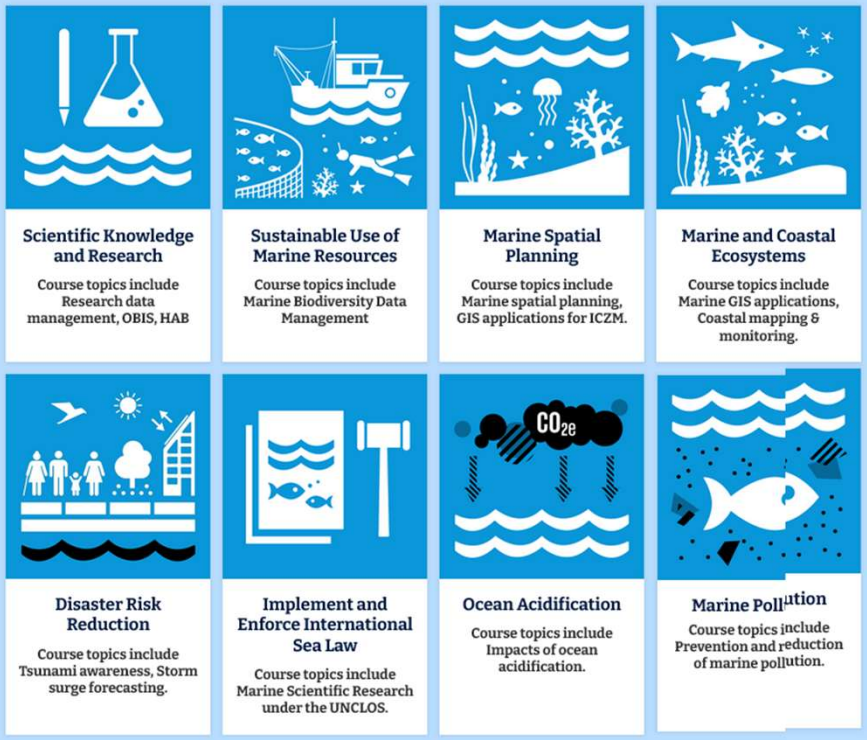


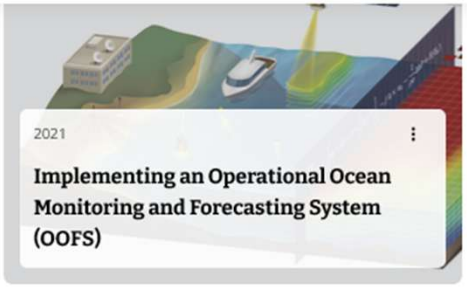


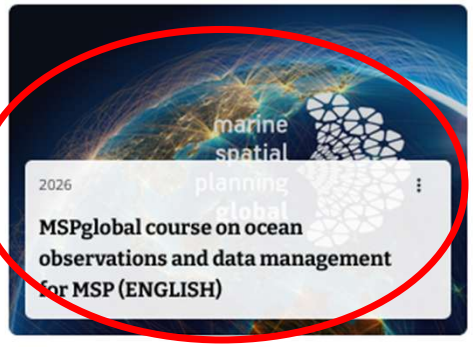
Training part 1: online

The OceanTeacher Global Academy (OTGA) provides a comprehensive internet-based training platform that supports classroom training, blended training, and online (distance) learning.

OTGA aims to build equitable capacity related to ocean research, observations and services in all IOC Member States by delivering training courses on a range of topics addressing the priority areas of the UN Decade of Ocean Science for Sustainable Development and the 2030 Agenda and its SDGs as well as supporting the implementation of the IOC Capacity Development Strategy.







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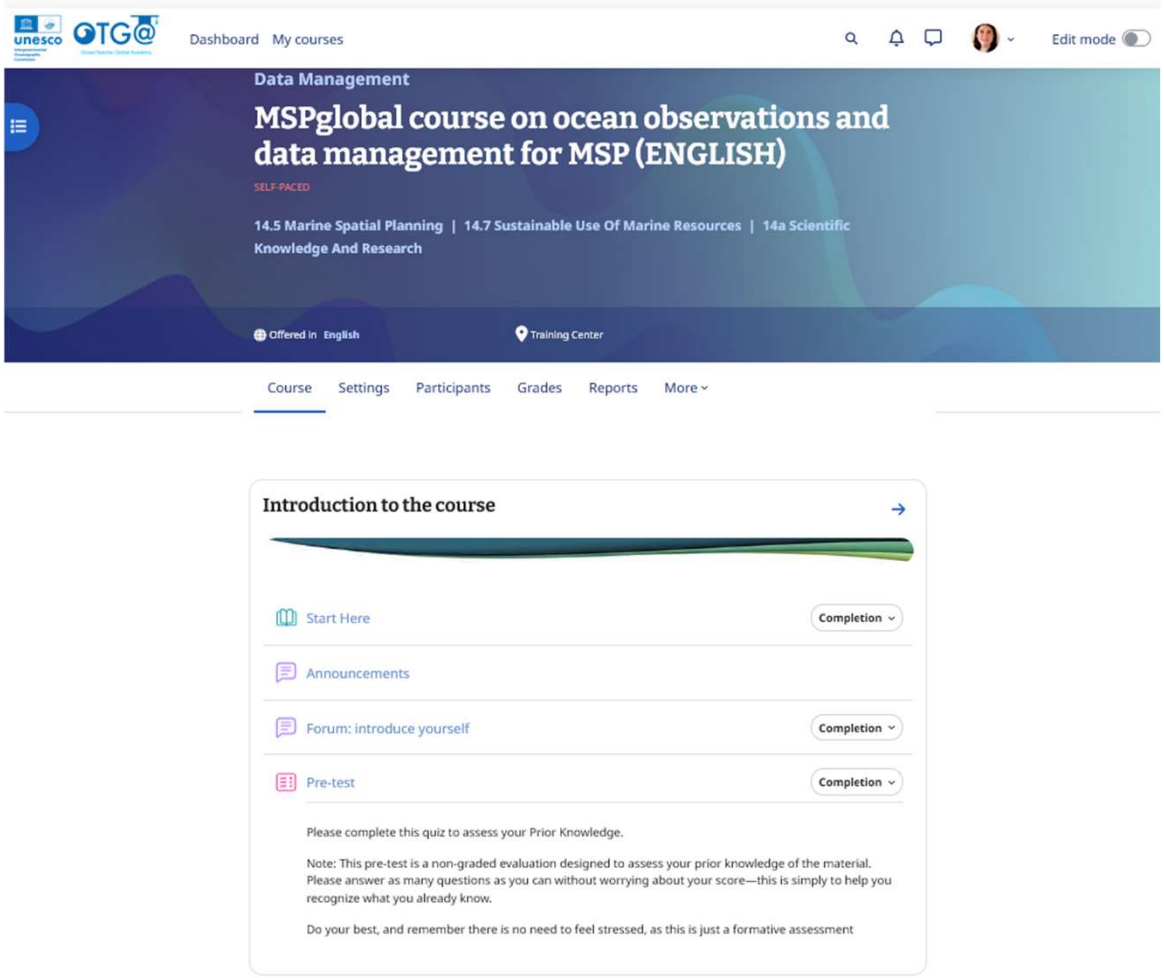

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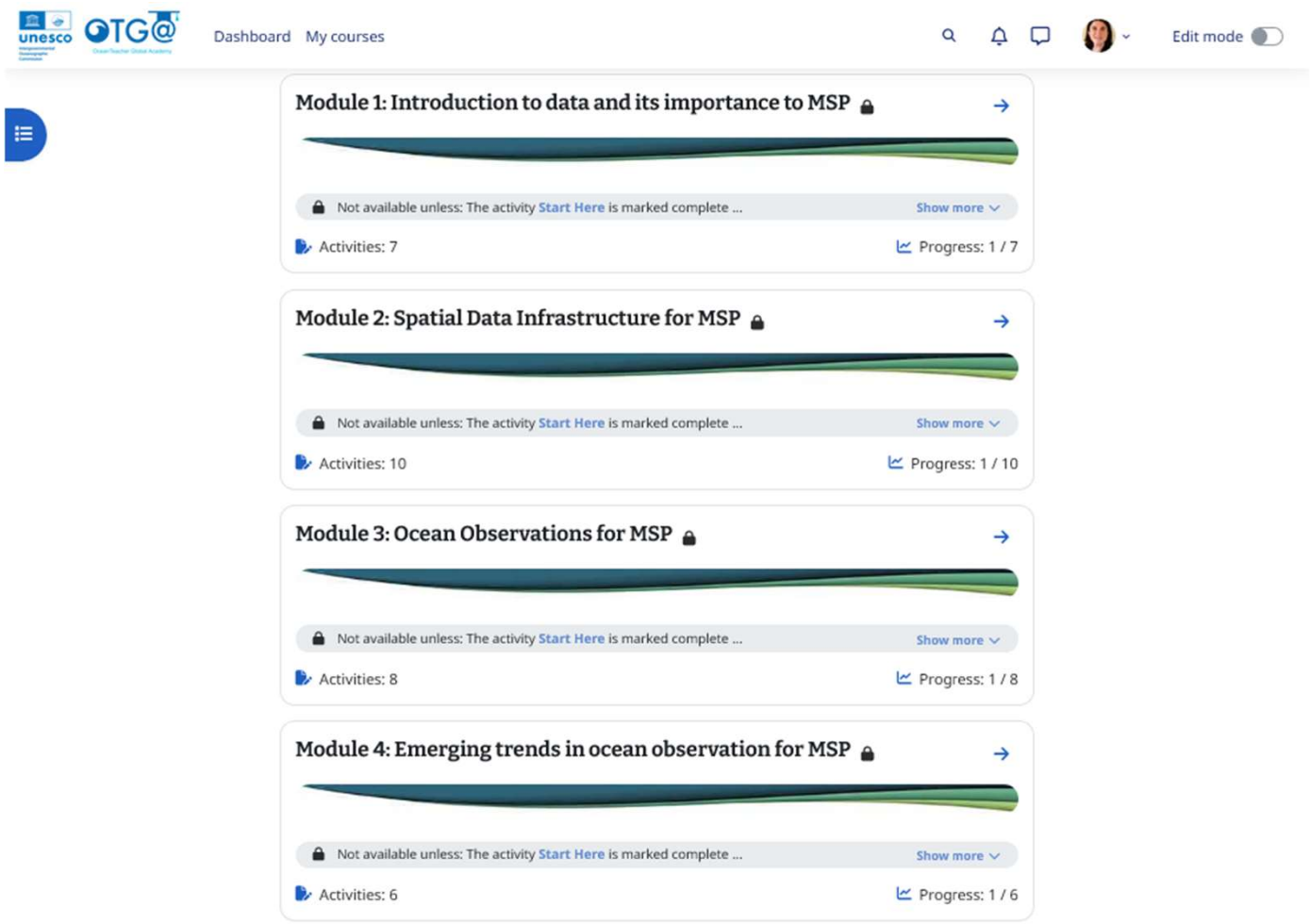

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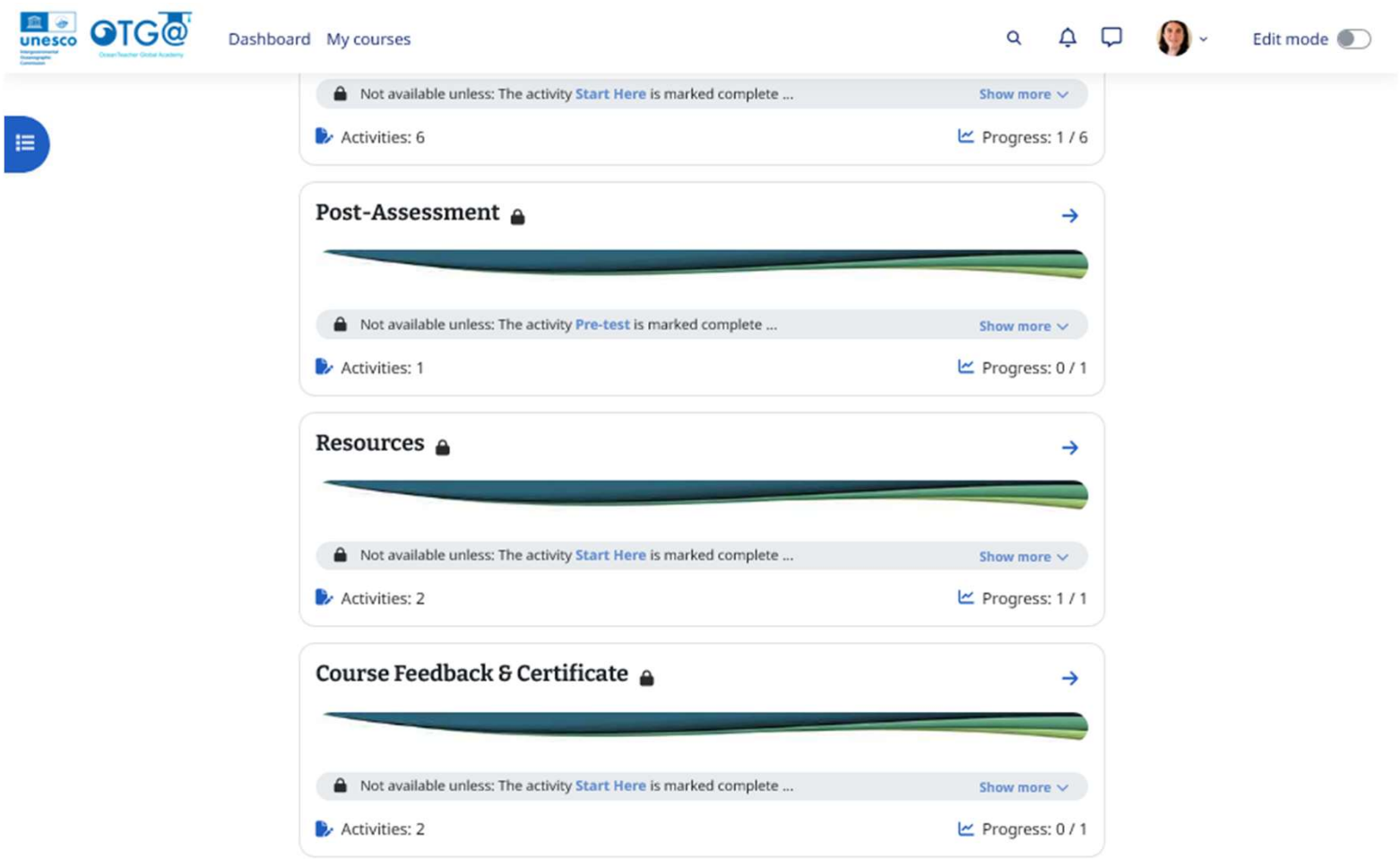

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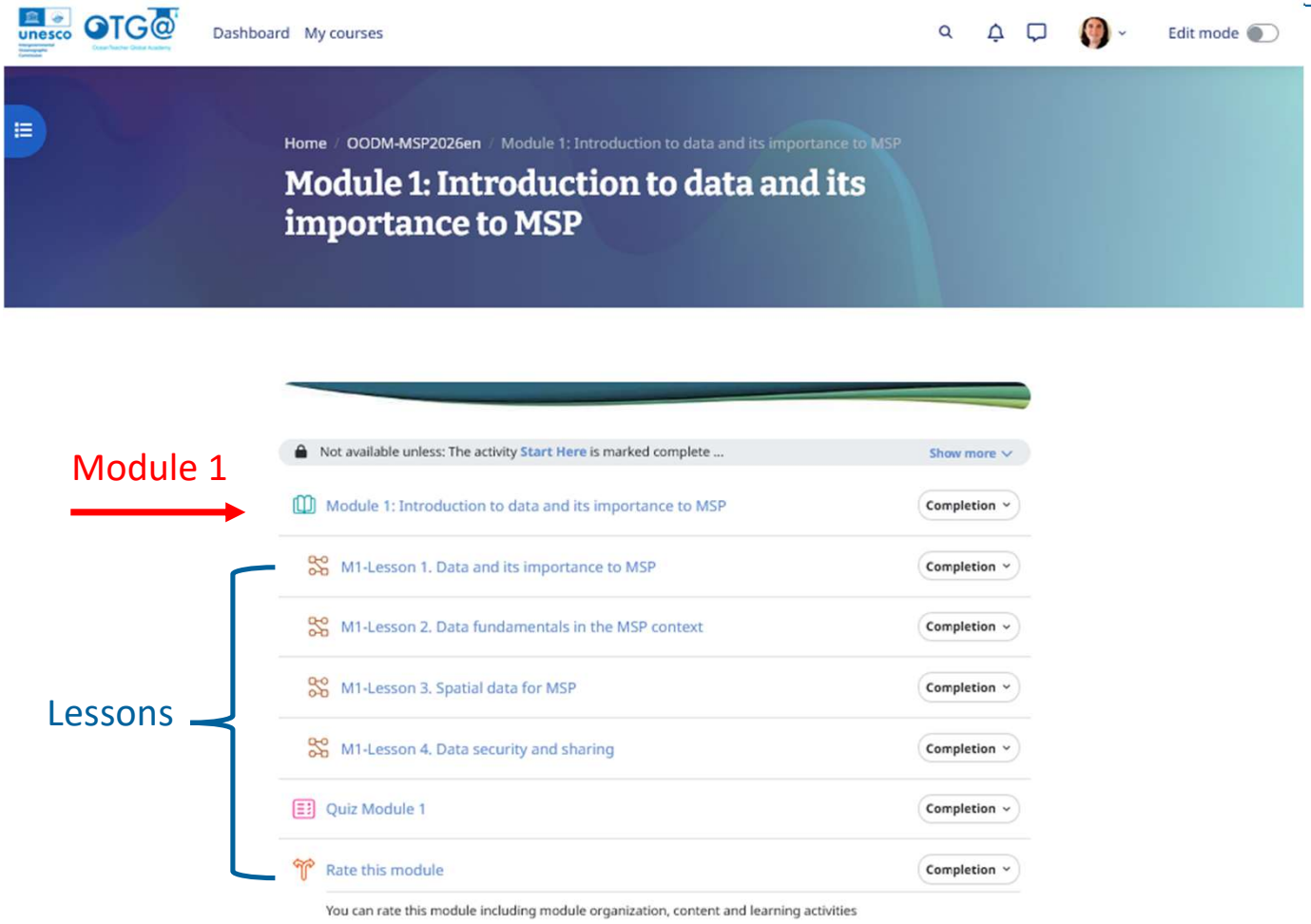

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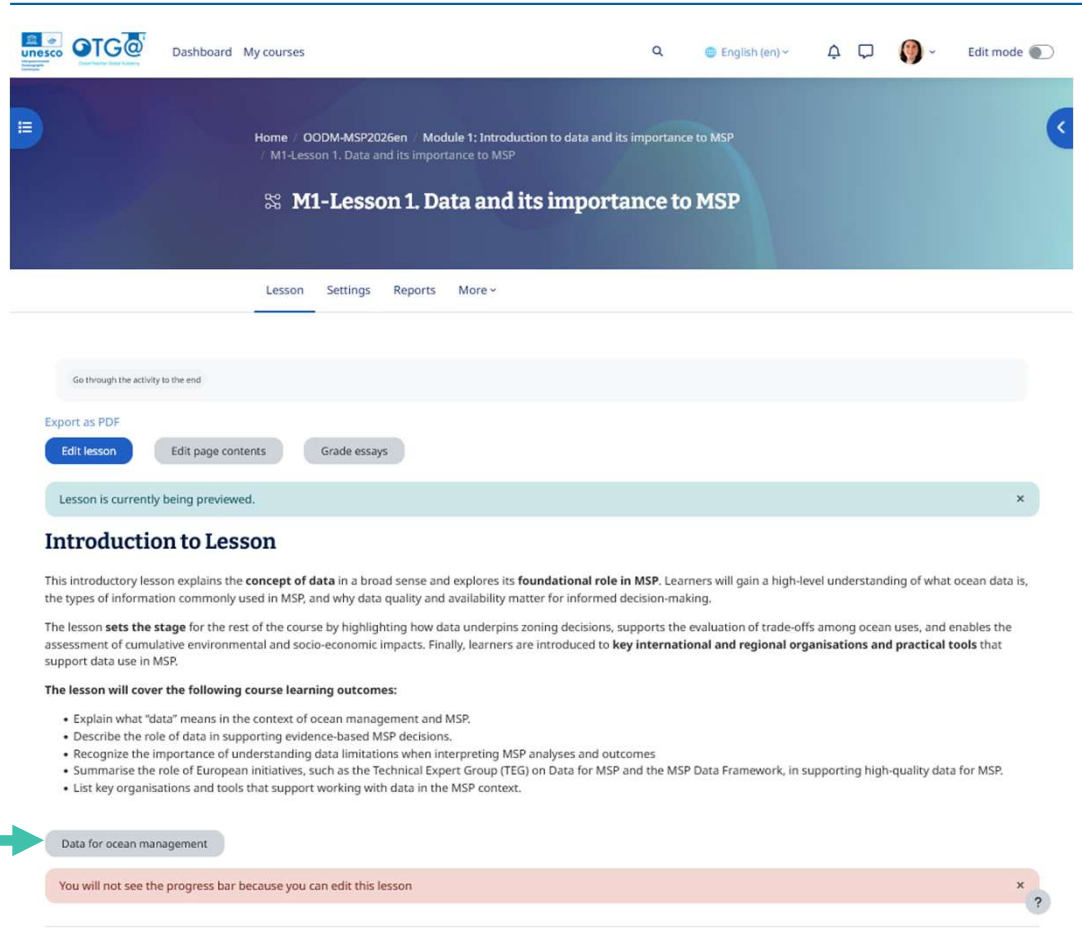
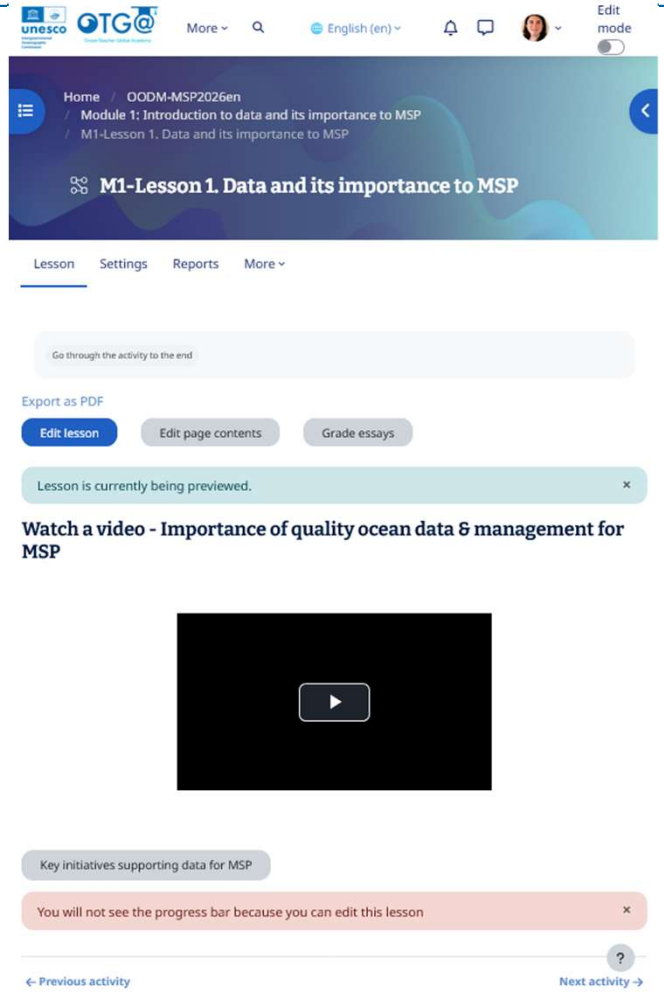




Training part 1: online

Guiding Principes & Good Practices

Good practices for data

Good practices for data are essential to **ensure that information is accurate, reliable, and usable across different applications**. In the context of MSP, good data practices are especially important because **planners and decision-makers rely on diverse datasets** (such as environmental, socio-economic, and governance-related) to guide spatial decisions, assess trade-offs, and evaluate cumulative impacts. Without robust practices, data can be incomplete, inconsistent, or difficult to interpret, which can undermine the quality of planning outcomes and limit the effectiveness of cross-border or multi-stakeholder collaboration.

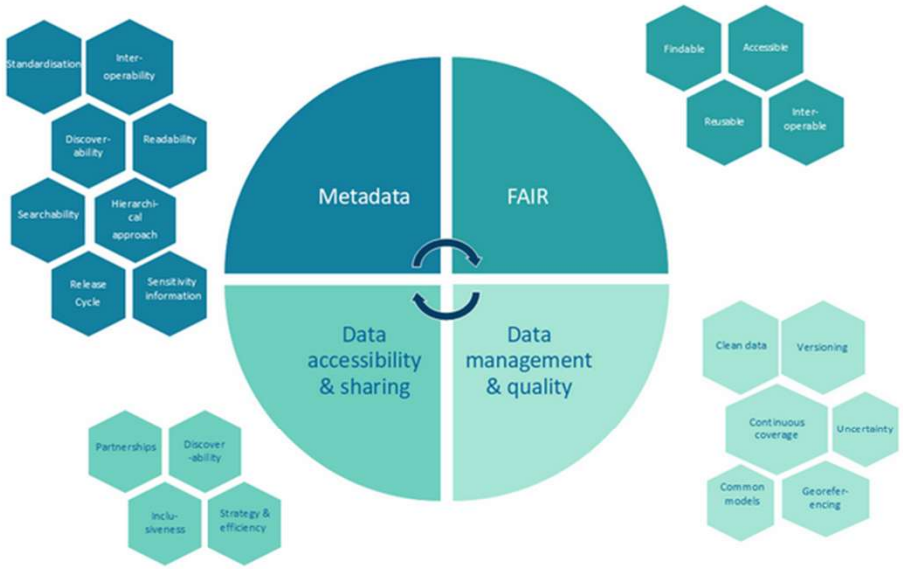


Figure 1: Good practices for data in MSP, with multiple practices contributing to each component. © UNESCO

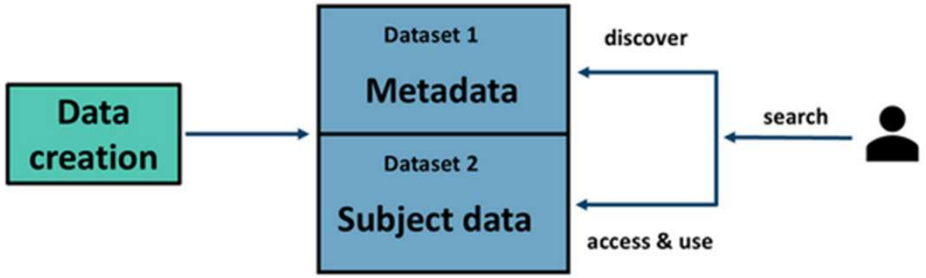
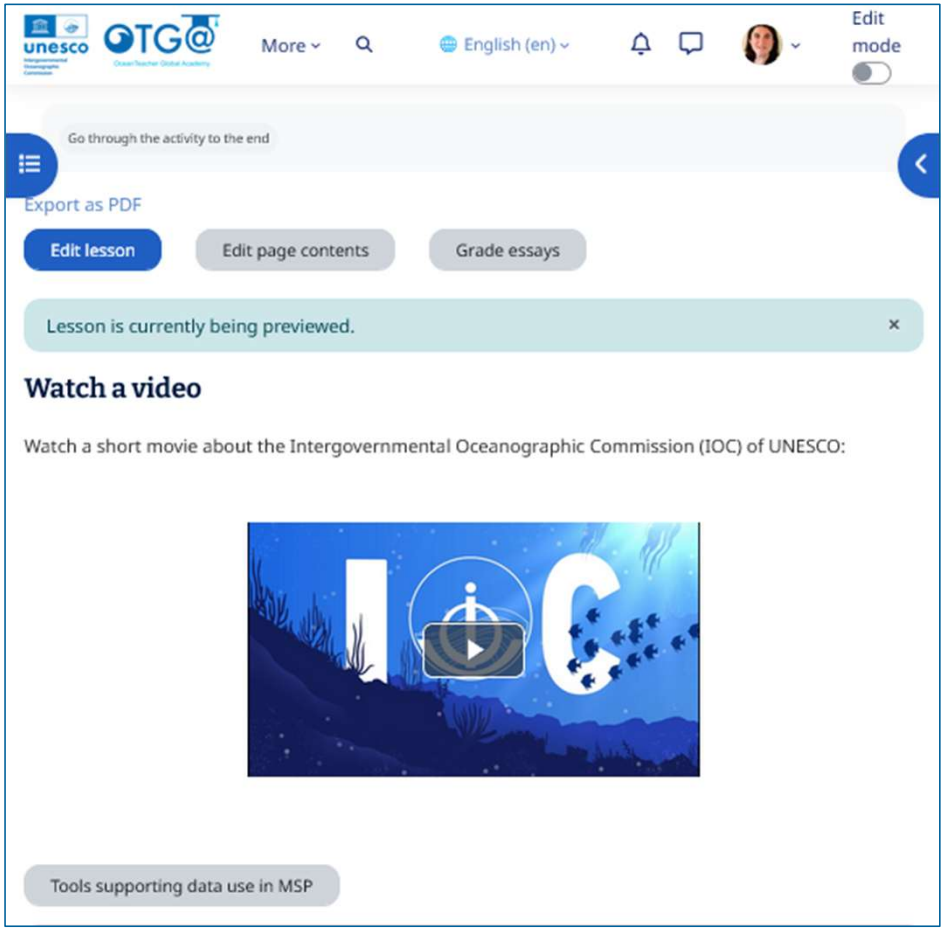


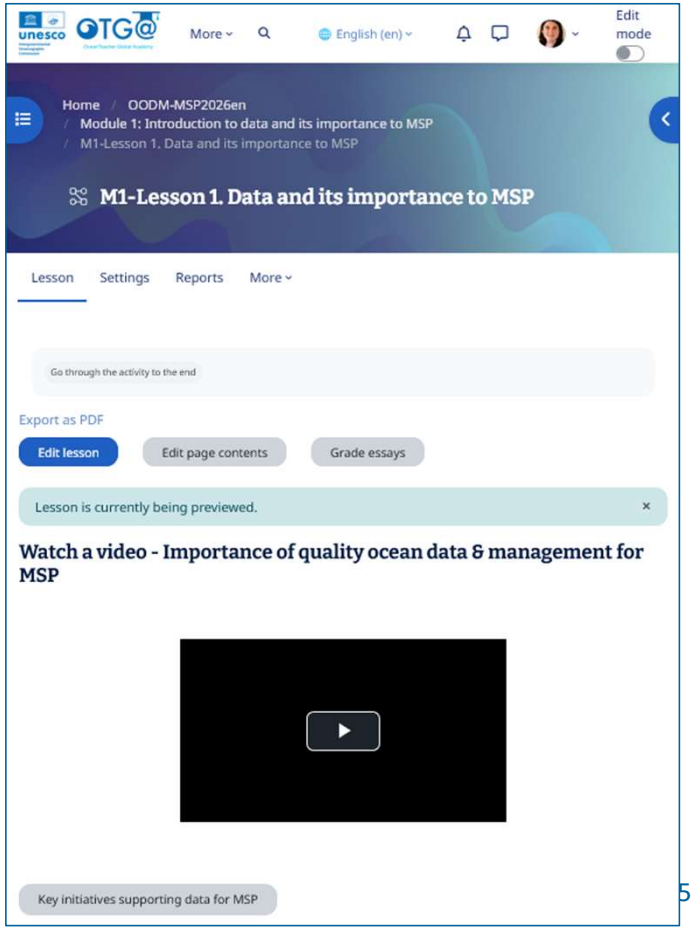
Figure 2: Illustration of the data and metadata components of a dataset. © UNESCO

Implementing good practices involves **careful data management, adherence to standards, and thorough documentation**. This includes maintaining comprehensive **metadata** (see next page) that describe how, when, and by whom data were collected, as well as its quality, limitations, and relevance. **Regular validation, updates, and version tracking** help maintain accuracy and reliability, while **structured categorisation and standardised format**s support interoperability and comparability across datasets (see "Interoperability" further ahead in this Lesson). Ensuring **accessibility, discoverability, and machine-readability** of data enhances usability for planners, stakeholders, and decision-makers, while fostering transparency and informed decision-making.

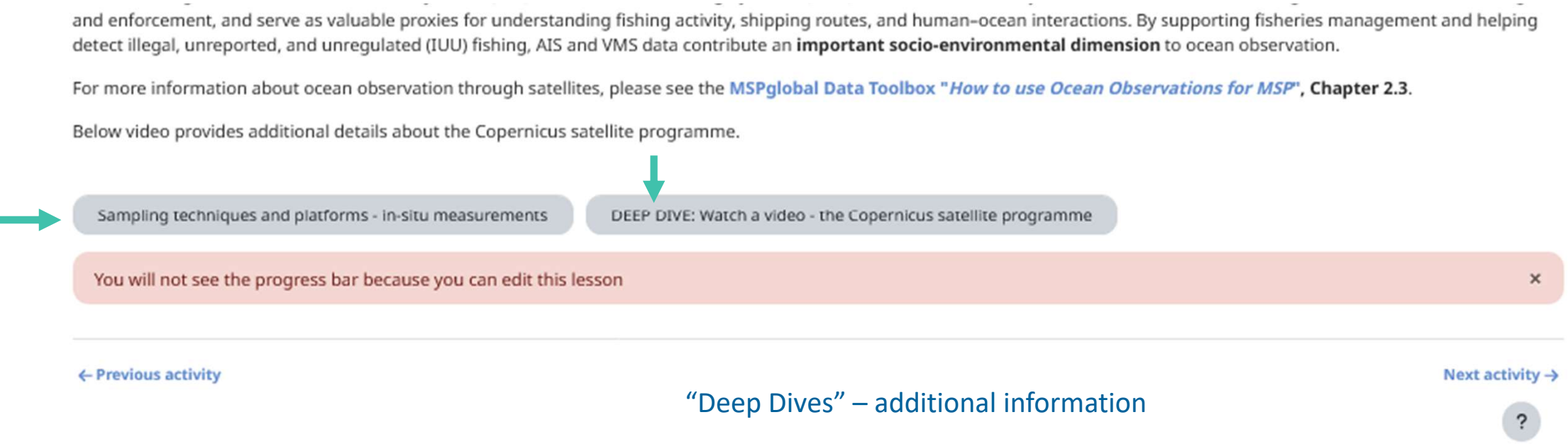
Training part 1: online



Videos - engagement

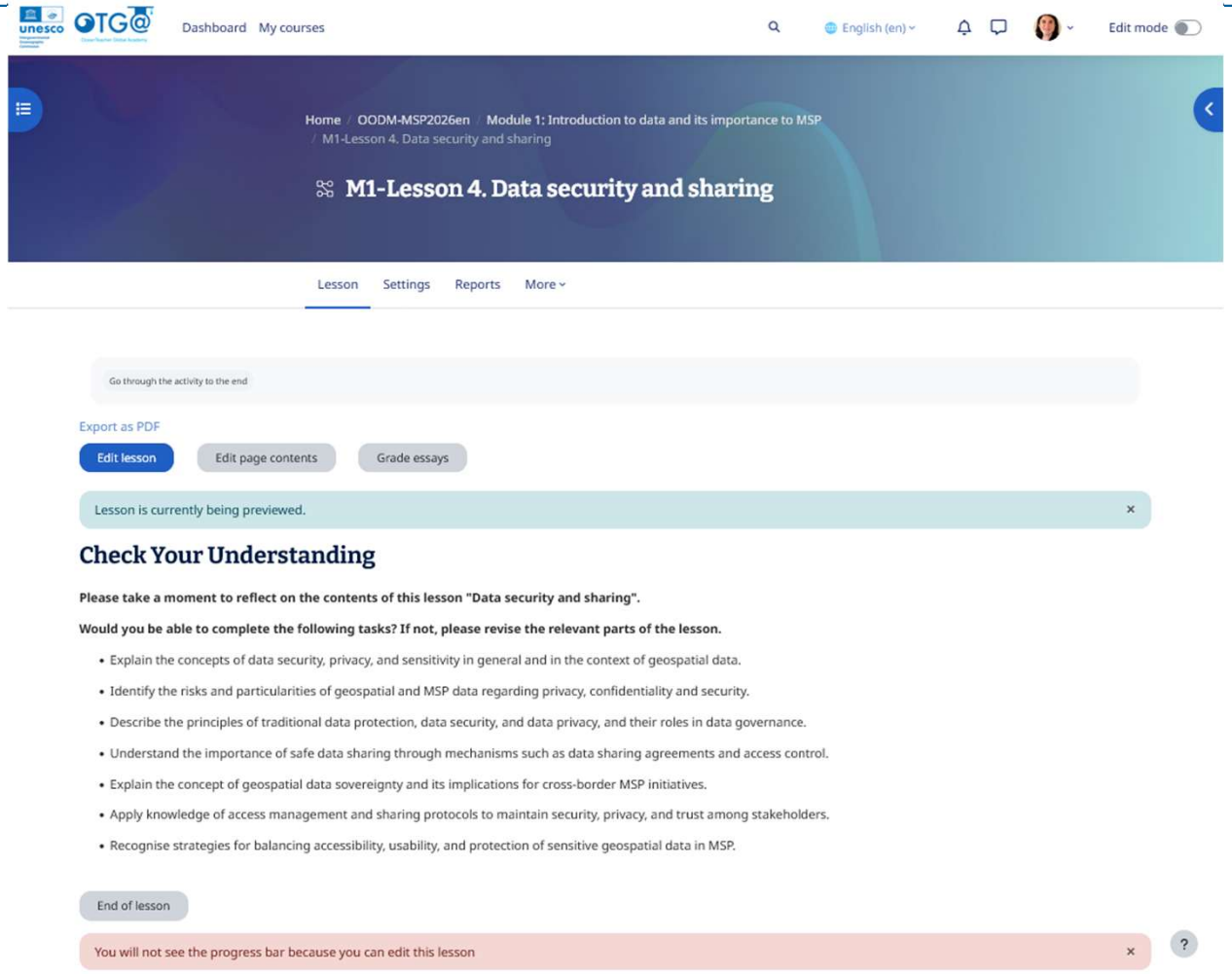


Training part 1: online



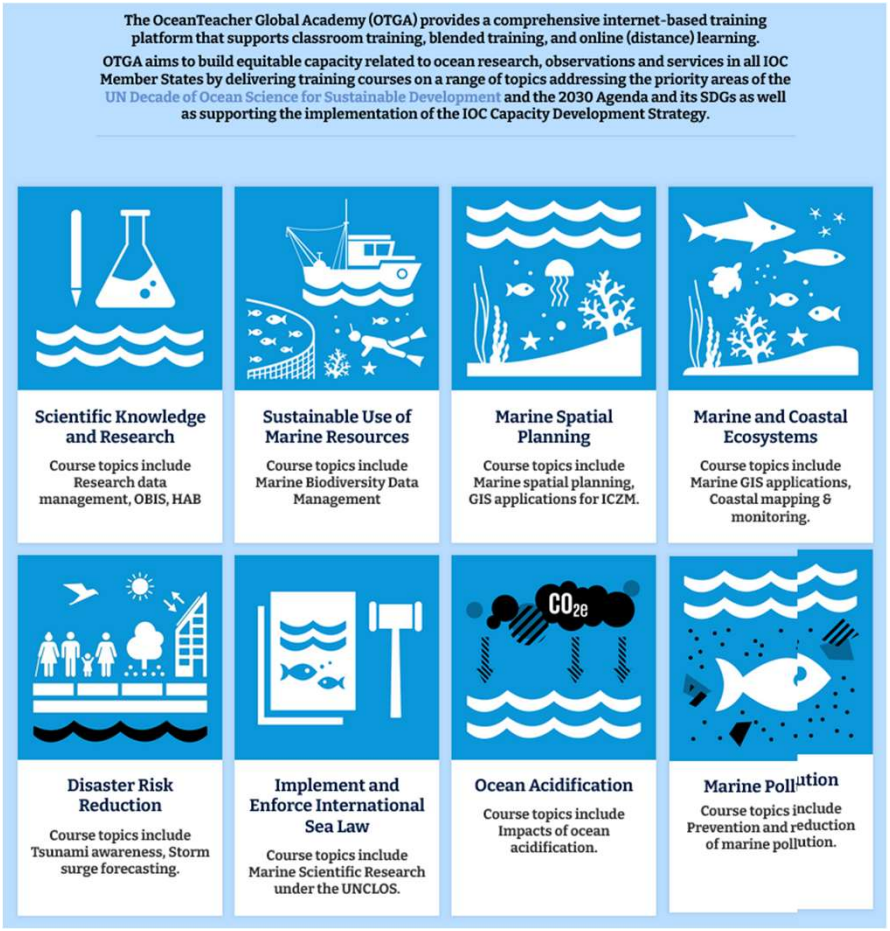
"Deep Dives" – additional information

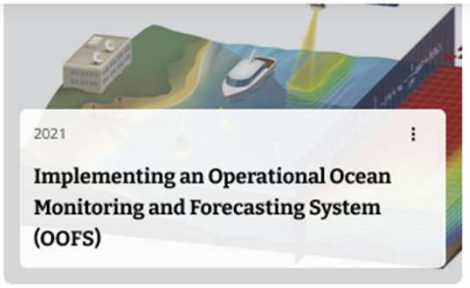
Training part 1: online



Reflection
&
checking of understanding

Training part 1: online – next steps





Training part 2: in person

- 2-day in-person course
- Practical complement to the MSPglobal online training programme
- Online course → conceptual foundations and policy context

  In-person training → applied learning: translate theory into practice

In-person training structure:

- 35% lectures
- 50% hands-on computer exercises
- 15% discussion & reflection

Training part 2: in person

Day 1 – MSP data foundations:

- Introduction & overview – Course aims and structure
- **1 - Data foundations – Data types, quality, FAIR/CARE, interoperability**
- **Capstone (Part 1) – Define MSP context and data needs**
- Hands-on 1–2 – Identify datasets, assess gaps, explore metadata & FAIRness
- Hands-on 3 – Map data lifecycle, actors, bottlenecks

Training part 2: in person

Day 2 – Data application: SDI & ocean observations & strategy:

- **2 - SDI basics – Concepts, components, role in MSP**
- Hands-on 4 – Assess SDI maturity and gaps
- Hands-on 5 – Design SDI architecture and data flows

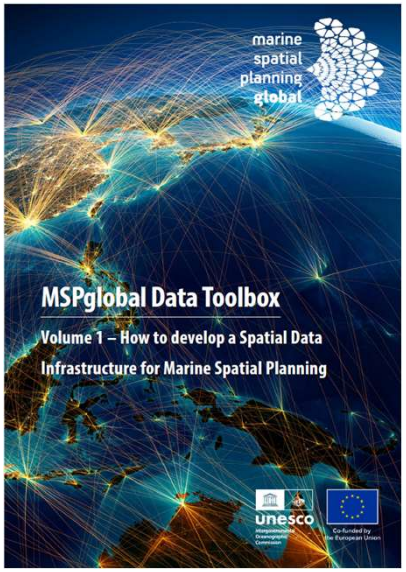
- **3 - Ocean observations – Systems and data types**
- Hands-on 6 – Explore ocean datasets
- Hands-on 7 – Link variables to MSP needs

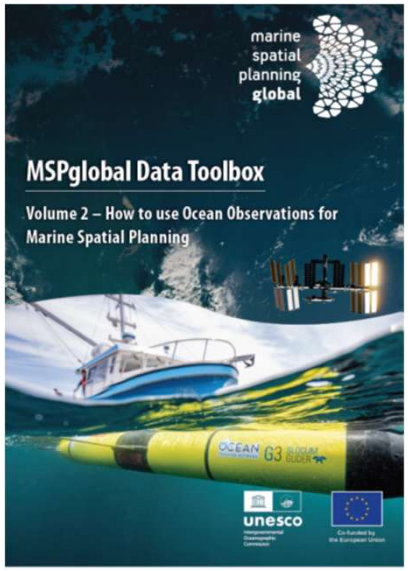
- **Hands-on 8 – Integrate future data developments**

- **Capstone (Part 2) – Finalise MSP data strategy**
- Presentations & discussion – Share results and reflect

Any feedback?

MSPglobal data tools – TEG contributions



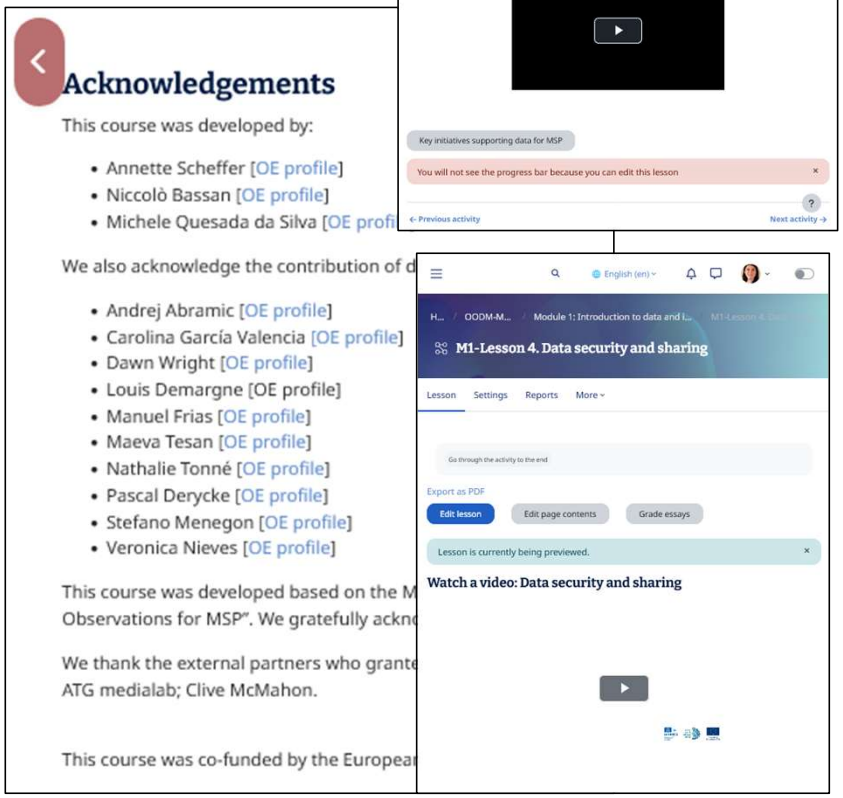


Coming soon

MSPglobal Data Toolbox

Volume 3 – How to use Cumulative Impact Assessment for MSP

Case studies, Highlight boxes



Thanks to all the experts involved !

MSPglobal data tools – what's next?

- **Data Toolboxes**
  - How to develop a Spatial Data Infrastructure for MSP
  - How to integrate Ocean Observations into MSP
  - How to use Cumulative Impact Assessment for MSP
  - Scenarios

- **Training for MSP practitioners**
  - Online: OceanTeacher Global Academy
    → English, French, Spanish
  - In – person – regional trainings

reference

practice

Thank you!

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