The Global Ocean Observing System

Session 6:
Update OCG data strategy

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FAIR DATA CHALLENGES

- Strategies and priorities differ across networks
- Users experience difficulties in finding data
- Inability to track how/if data reaches users (especially in delayed mode / products)
- Inability to objectively analyse system adequacy
- Difficulties in blending EOV/ECV data across platforms - metadata not adequate (uncertainties, etc) and access unclear
- System and dependencies are not visible (less resilient, no planning)
- System lacks automation

VISION

A functional GOOS data architecture that provides the **foundation for seamless access to interoperable data** and information across GOOS networks

How

A **federated** data/metadata system based upon **metadata**, **real-time** and **delayed mode data** with recognized **data endpoints** for each network, interoperable with WMO and IOC data standards.

Federation: an interoperability layer to unify independent, decentralised data sources without having to physically centralize the data

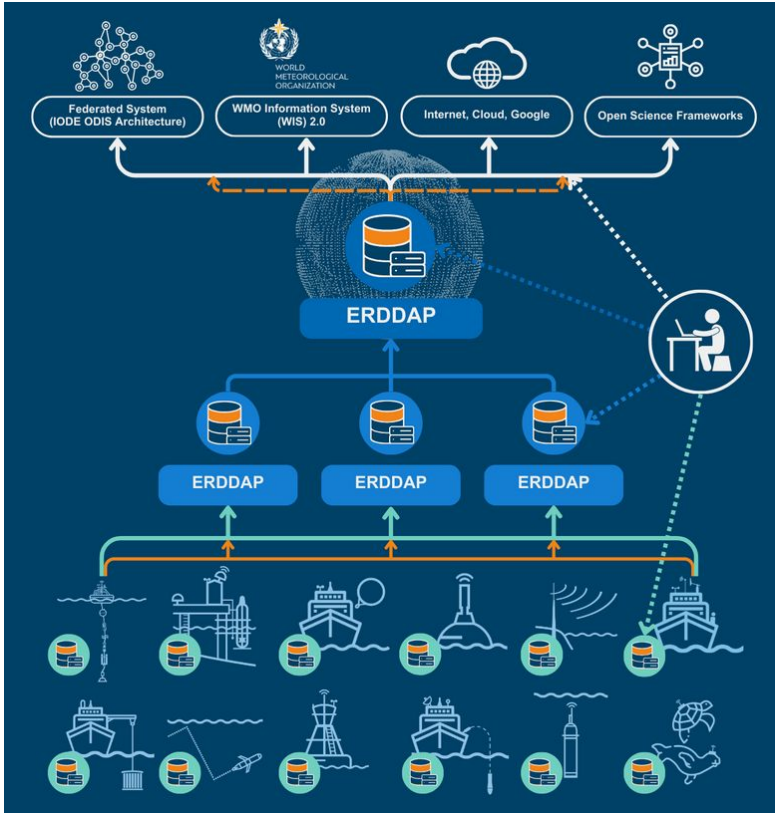
Metadata: Information that describes data, such as location, time range, units, etc. and allows users to understand and use the data

Endpoints: A URL that defines an access point for data/metadata

Building the system

Key elements:

- Robust data endpoints for each network federated through ERDDAP layer
- Harmonised minimum metadata - the GOOS Passport
- Focus delivery and access to recognised systems:
  a. Real-Time (WMO GTS/WIS 2.0)
  b. Delayed-Mode (GOOS ERDDAP / IOC ODIS)
- OceanOPS metadata services - start to end for tracking, support, analysis, etc.



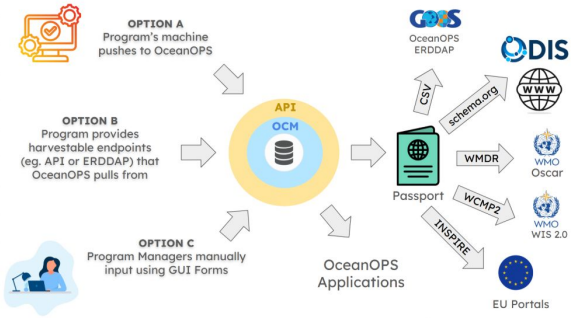
GOOS minimum metadata passport delivered by OceanOPS

Passport guide: www.ocean-ops.org/passports

Dictionary

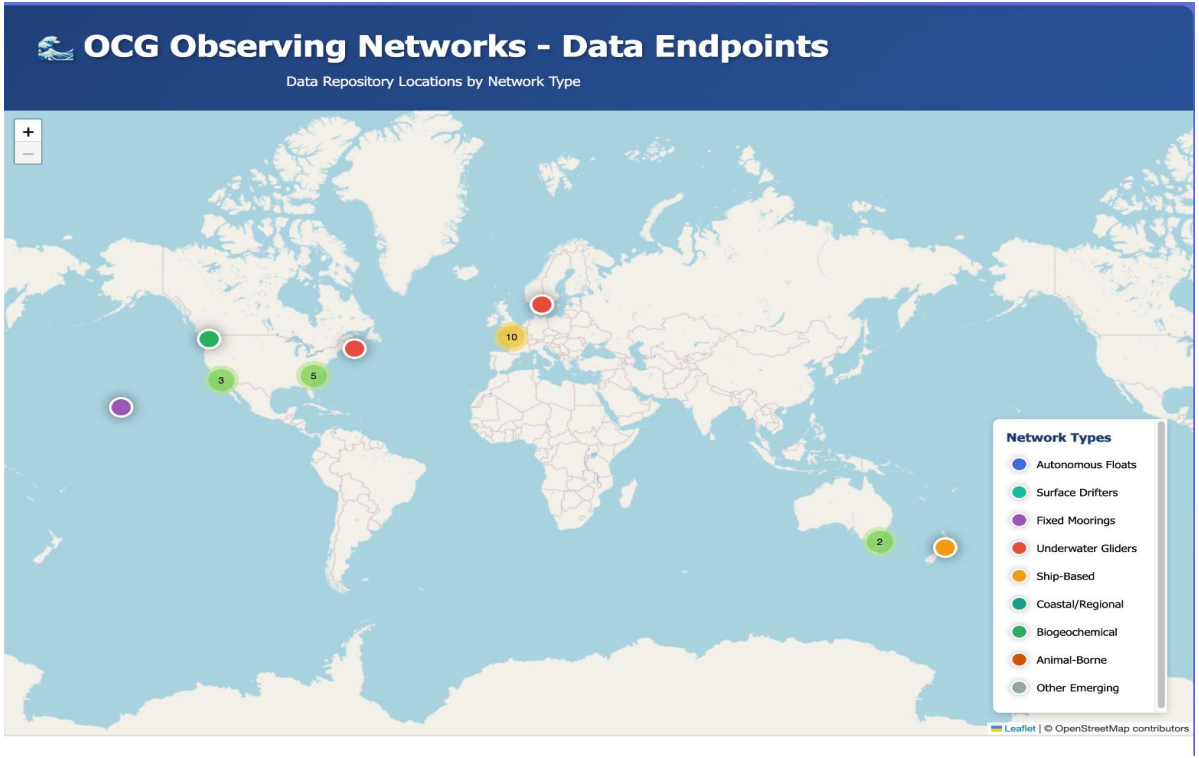
Passports include 41 fields across 6 categories.

IDENTIFICATION	Identifiers and categorisation of the platform and its mission 5 fields
AFFILIATION	Contributors and responsible entities and individuals 8 fields
OPERATIONS	Operational spatial-temporal information 6 fields
HARDWARE	Platform and sensor installations and configurations 12 fields
DATA CHANNELS	Observation data access points, procedures and contributors 5 fields
STATUS	Latest activity, operational status and location of the platform 5 fields



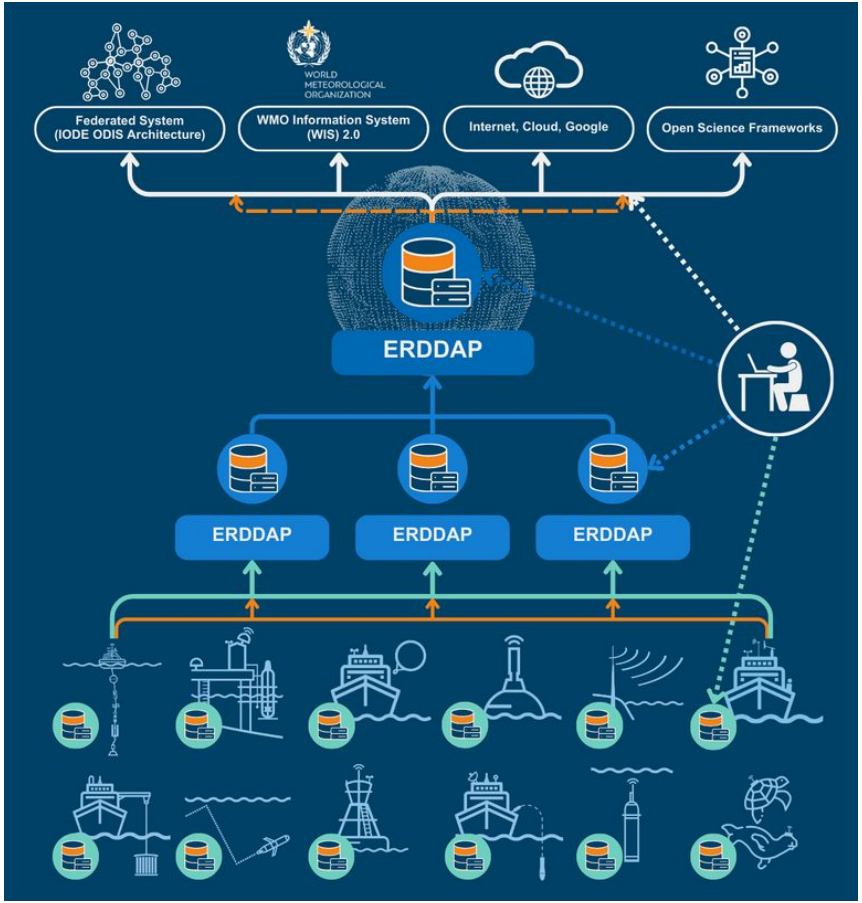
First map of data endpoints - data harvest

- Data endpoints indicated by networks (OCG Data TT)
- Critical for federation and tracking
- Visibility for national support (not often NODC)
- Verifying access, installing ERDAAPs, and support new
- A number of data centres are multi network endpoints
- WMO GTS/WIS is the main data endpoint for RT data



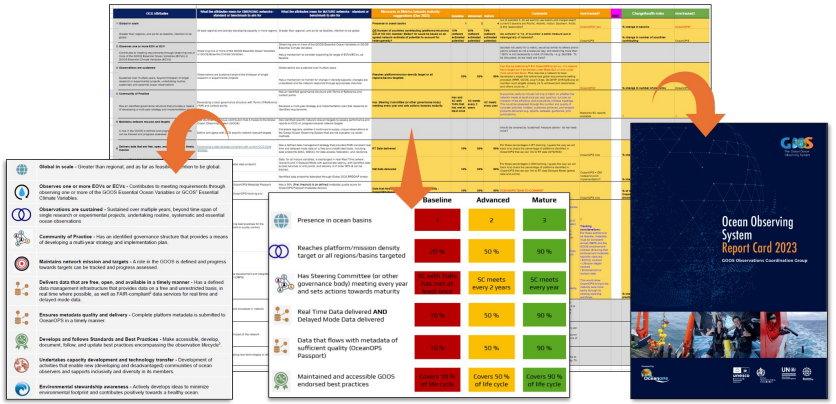
Where are we?

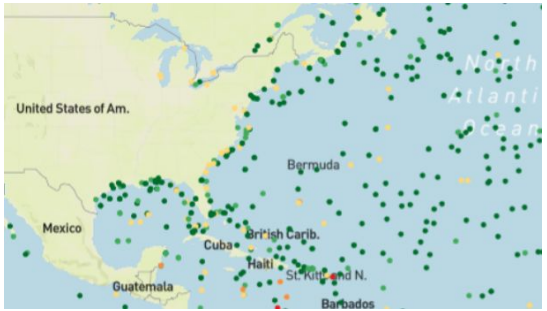
- **13** GOOS observing networks have provided clear data endpoints
- **8** networks have at least partially implemented ERDDAP
- **80%** RT data flows reach WMO GTS with required timeliness
- New **SUNFleet GDAC**/endpoint recently identified
- Pilot **GOOS ERDDAP** for central access in 2026 - cross network data harvest



Benefits & services under development

- Support EOV products - data havestable
- Network Metrics - data/metadata trackable - eye on network 'health
- 'EOV' Views - integrated system
- GOOS Report Card - automated
- Automated ingestion and production
- Passport (unique identifier, provenance, etc. make national contribution to GOOS visible by EOV, networks, time, etc.)
- IOC Data Architecture - facilitated
- Recognition national support - GOOS data (Passport) and system endpoints





NEXT STEPS

- Continue work with networks especially DM
- Pilot GOOS ERDDAP - at IFREMER
- Deepen collaboration with BioEco Panel/OBIS
- Integrate uncertainty in metadata - Panels
- Deepen dialogue with IODE and NODCs
    - friction to data flow
    - endpoints/GDAC - NODC mapping
    - supporting additional?
- OCG > ICG, e.g. broaden OceanOPS mandate to include data?

Key questions for the SC

How does GOOS find the resource needed to complete data integration for the 17 OCG networks & ICG expansion?

- 1 data FTE at OceanOPS - OCG
- 3 data FTE at OceanOPS - ICG

How will GOOS define its product strategy (EOV, indicators)?

Do we have the appropriate level connection with IODE?

The Global Ocean Observing System

Thank you

goosocean.org

unesco
Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

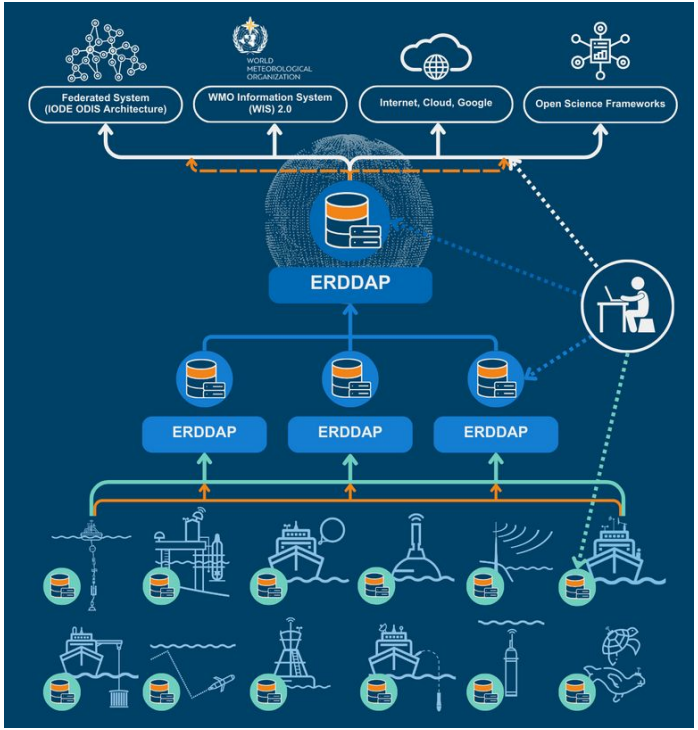
UN environment programme

International Science Council

Why federated why ERDDAP?

A federated ERDDAP-based system unifies decentralized data sources, and provides a simple, always-updated, easy-to-use data hub—without forcing into one location

- You don't have to move the data
- Everything seems like it's in one place (search one website instead of 20)
- Easy to use (even for non-experts)
- Up-to-date / open
- Works across organisations
- Scalable



Underlying principles

- Allow data producers and users to work within their community formats and processes (reduce burdens).
- Ensure GOOS observing network data is FAIR
- Adhere to widely-used open standards and conventions
- Be practical for networks to implement systematically
- Leverage capable existing tools where possible to reduce cost of implementation
- Use M2M harvesting/automation where possible for scalability
- Ensure data reaches key user access frameworks - WMO (GTS/WIS2.0), IODE (ODIS), internet

Passport Definition

41 Fields have been defined within the passport.

Not all are provided by the operator, some are derived, calculated and obtained from other sources.

6 categories:

- Identification (5)
- Affiliation (8)
- Operations (6)
- Hardware (12)
- Data (5)
- Status (5)

6 types:

- Persistent Identifier (1)
- Controlled Vocabulary Code (23)
- Geospatial Coordinates (4)
- Date / Date-Time (5)
- Constrained Decimal Number (2)
- String Identifiers (6)