Enhancing the integration of in-situ Atlantic Observation data and services to users

IMDIS 2018 Session 3

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- The European data system targeted within the AtlantOS project
- Achievements on enhancing data integration
- Achievements on enhancing services to users

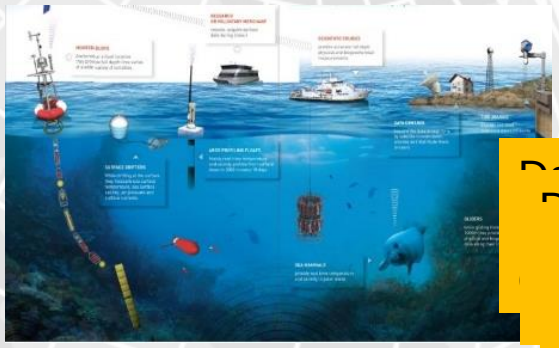
Contents

- The European data system targeted within the AtlantOS project
  - The existing systems involved
  - The starting point and the target of enhanced data integration
  - The integrated data system
- Achievements on enhancing data integration
- Achievements on enhancing services to users

The existing systems involved in the AtlantOS integration

In-situ observing Networks active in the Atlantic Ocean

- Networks are **platform oriented**
- their **data systems are organised** to provide homogeneous data processed according to common standards in terms of Quality Control, metadata and formats
- Networks also **ease access to their data**



Data mgt for network

- **Ship-based observation**
  (GO-SHIP, VOS/SOOP, Continuous Plankton Recorder, fish and plankton surveys, seafloor mapping)
- **Autonomous observation**
  (Argo, Gliders, Drifters, OceanSITES, European animal Tracking)
- **Coastal observation**
  (Ferrybox, Fishery Observing System, coastal profilers, fixed moorings)

European Integrators

- **An Integrator aggregates data** from various networks, data centers and platform operators **to provide an integrated thematic service to users.**
- It **checks consistency** of the Essential Ocean Variables in time and space **to provide easy to use specific products to end users**

INS TAC Copernicus | **SeaDataNet** | **EMODnet** | **EurOBIS** | **ICES** | **GEOSS**

Infrastructures

- **For marine environmental data**: **SeaDataNet** for validated and archived data and the **Copernicus INS TAC** for NRT data and for the past 60 years of historical data assembled for reanalysis needs
- **For marine biodiversity data**: **ICES** and **EurOBIS**

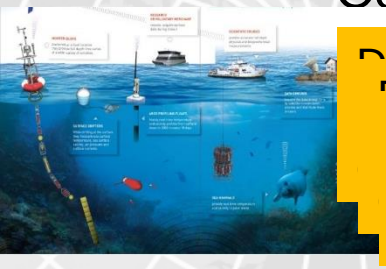
and portals

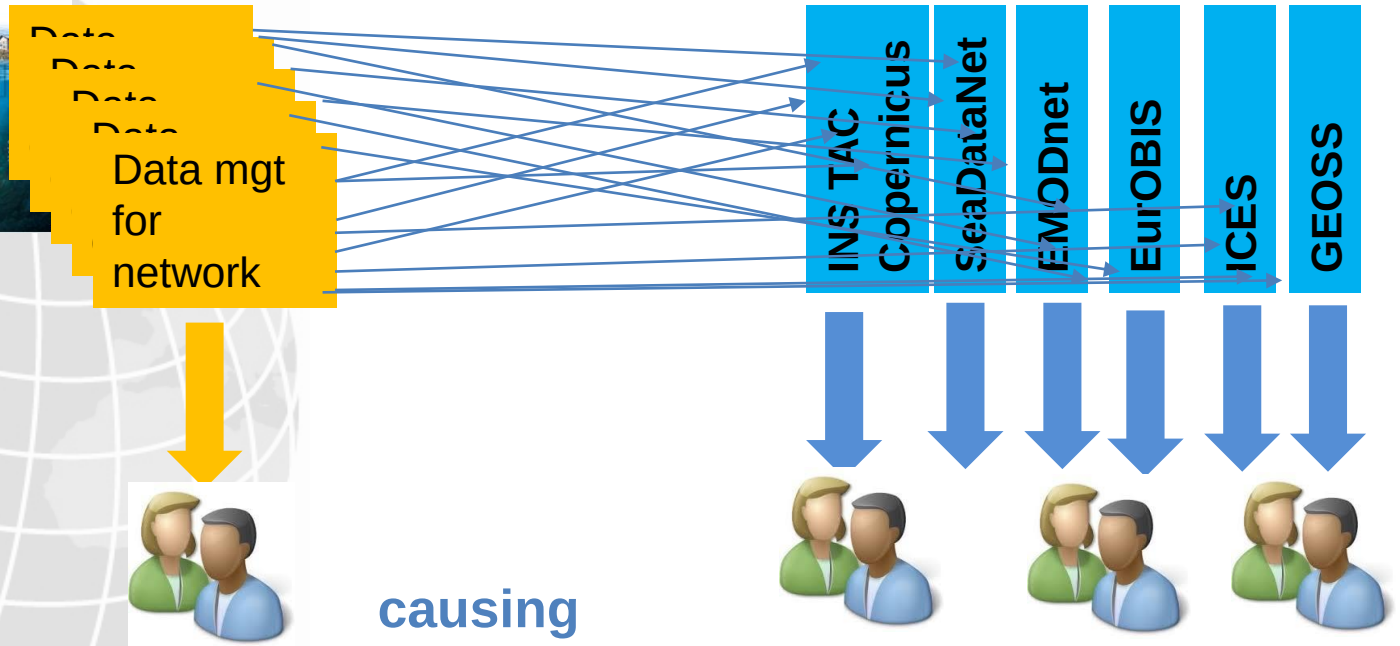
- **EMODnet lots** fed by Copernicus INS TAC, SeaDataNet and EurOBIS
- **GEOSS** (Global Earth Observation System of Systems)

Integration starting point

Lack of harmonization across the existing systems for

- in-situ observations connection to Integrators (ad'hoc interfaces)
- Common identification of platforms, institutions, parameters,…
- Commonly agreed Near Real Time QC procedures across systems

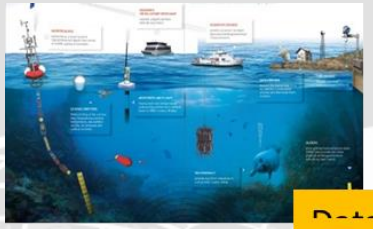




causing

- Duplication of efforts
- Risk of "mixing apples and oranges"
- Difficulty in tracing data usage
- Underuse of existing services

Integration target



Data mgt
for network

TOOLS

INS TAC Copernicus | SeaDataNet | EMODnet | Euro-BIS | ICES | GEOSS

TOOLS

Services

Users

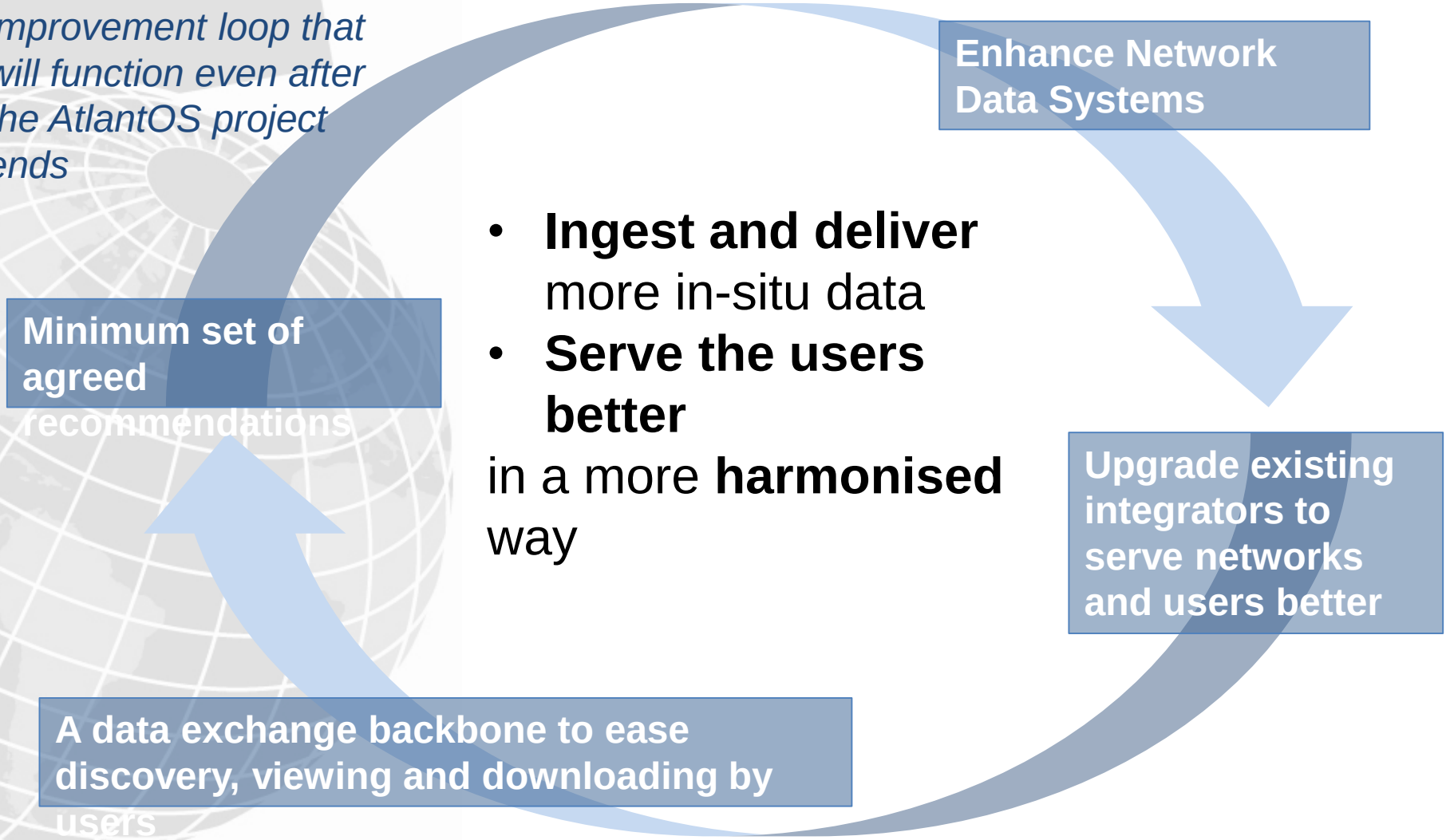
Virtual Data exchange backbone

Standardization between networks
from acquisition to service to users

The integrated data system

A continuous improvement loop that will function even after the AtlantOS project ends

Not a new system !



- **Ingest and deliver** more in-situ data
- **Serve the users better**

in a more **harmonised** way

Contents

- The European data system targeted within the AtlantOS project
- Achievements on enhancing data integration
  - Harmonisation across data systems
  - Enhanced interoperability
- Achievements on enhancing services to users

Harmonisation across data systems

Implementation of agreed recommendations

- **For metadata** relying on existing standards and allowing easier traceability
  - Common and unique identification for
    - **Platforms** (WMO codes present in C17 SeaDataNet vocabulary and station ids in ICES directory)
    - **Institutions** (EDMO codes)
  - Common **A05 vocabulary** for 'Essential Variables' and **mapped to recommended vocabularies (**P01,P07,P06 of SeaDataNet and WoRMS for species)

- **For quality procedures**
  - For **Essential Variables measured by two or more networks**: Temperature, Salinity, Current, Sea level, Oxygen, Chlorophyll-A, Nitrate and Carbon
  - For data acquired in **Near Real Time** (distributed within a few hours up to several days)

Recommendations to evolve under the EuroGOOS umbrella (DATAMEQ working group and Task teams)

Enhanced interoperability

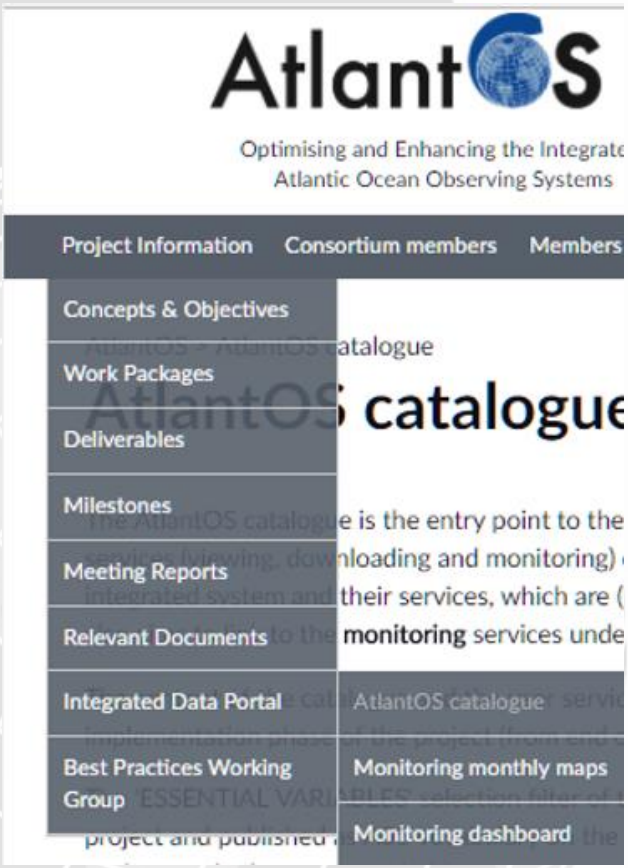
- **Enhanced access to network data by setting up a unique entry point to discover and download existing data**
  - **More data in the existing Global data centres** (EGO for gliders, OceanSITES for fix point platforms and transport array, ICOS-Ocean for some VOS and GO-SHIP carbon data)
  - **Improved access to ADCP data** for GO-SHIP
  - **A new GDAC for drifters** (endorsed by DBCP/JCOMM) for data access to NRT data and best copy selection of DM data
- **Enhanced ingestion of network data in integrators: improved "connection" and greater data**
  - **Setting up new nodes** (ICOS-Ocean, physical data from CPR) **or direct GDAC data flow (**(Argo, Gliders, Drifters and OceanSITES) **in SeaDataNet**
  - **New marine biological data flow to integrators** (Fish Acoustics to ICES, ETN to EMODnet-Biology)
  - **More data in Copernicus INS TAC** through GDACs harvesting
- **Enhanced checking of data integration through monitoring facilities provided by JCOMMOPS**

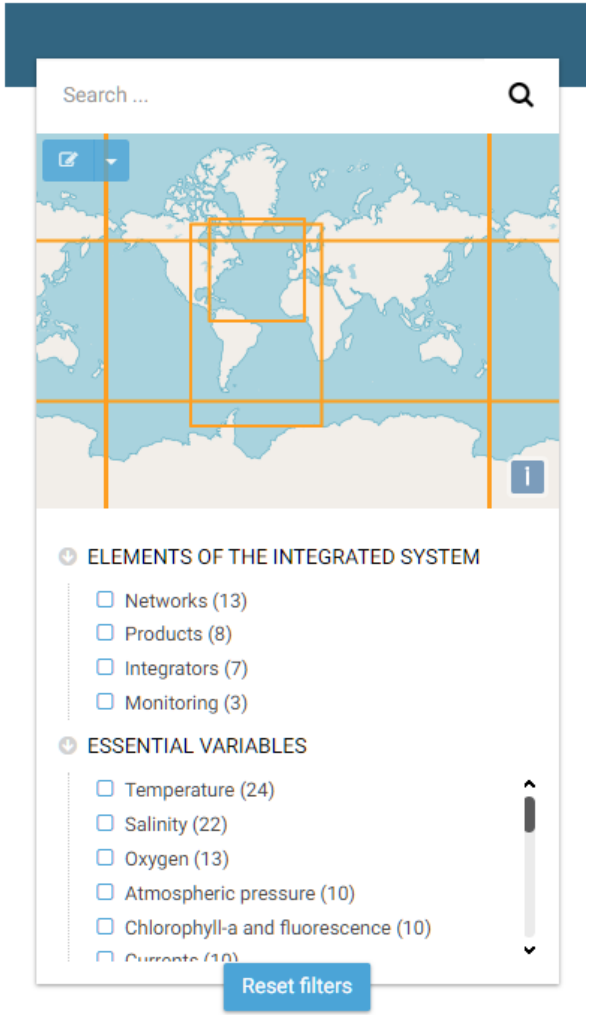
Contents

- The European data system targeted within the AtlantOS project
- Achievements on enhancing data integration
- Achievements on enhancing services to users
  - The AtlantOS catalogue to discover and facilitate the access to data services
  - Monitoring services designed under the JCOMMOPS and EuroGOOS umbrellas
  - A traceability service to give visibility of data usage

The AtlantOS catalogue

https://www.atlantos-h2020.eu/atlantos-catalogue/





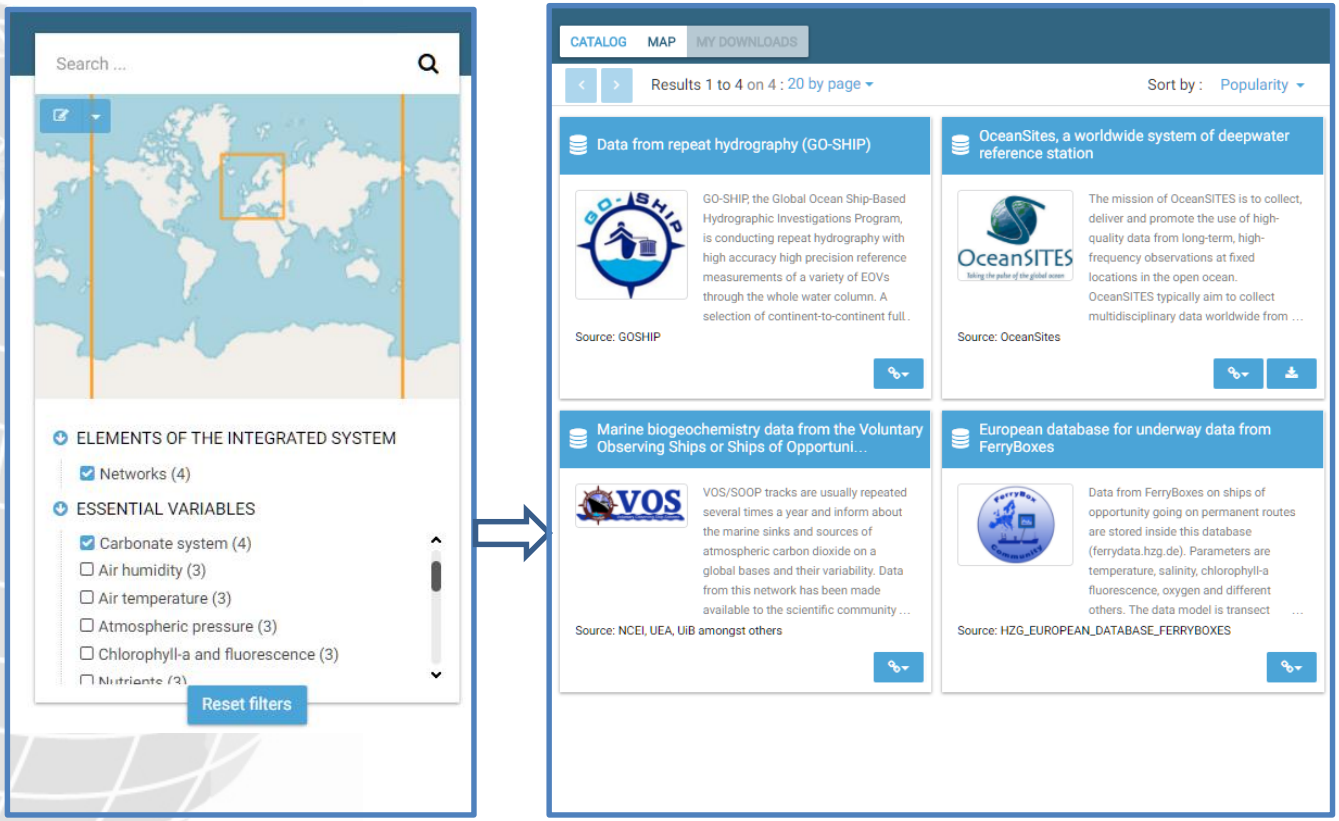
Discovering by browsing through the catalogue entries (ISO 19115 descriptions – INSPIRE compliant)

Elements of the integrated system among 'Networks', 'Integrators', 'Products' and 'Monitoring'

Essential Variables vocabulary 'AtlantOS EVs' (https://www.bodc.ac.uk/data/codes_and_formats/vocabulary_search/A05/)

Discovering

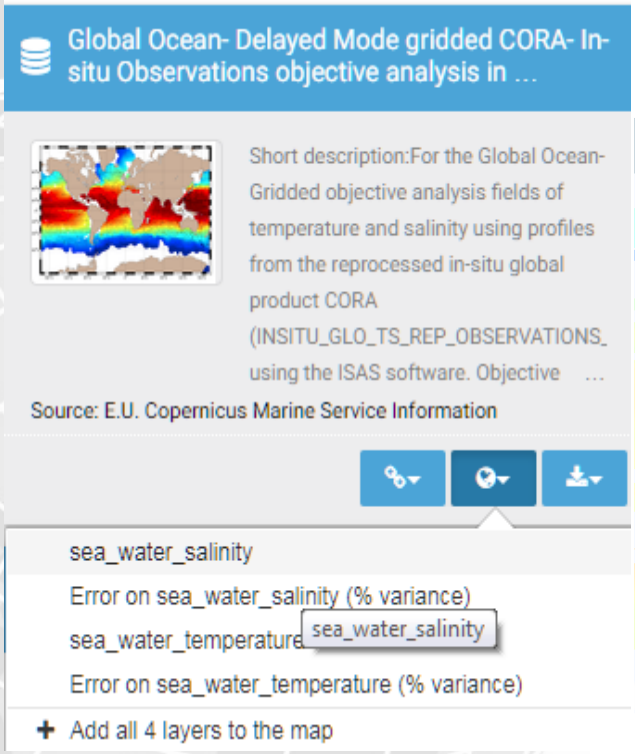
For example : which Networks handle “Carbonate system” data ?

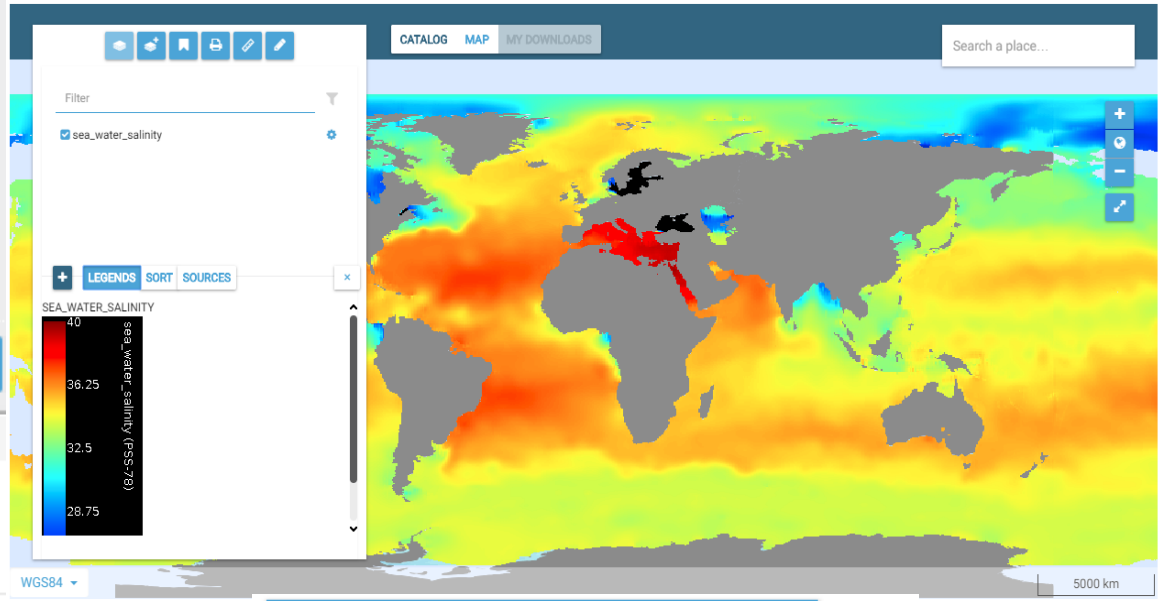


Facilitating access to data services

Viewing

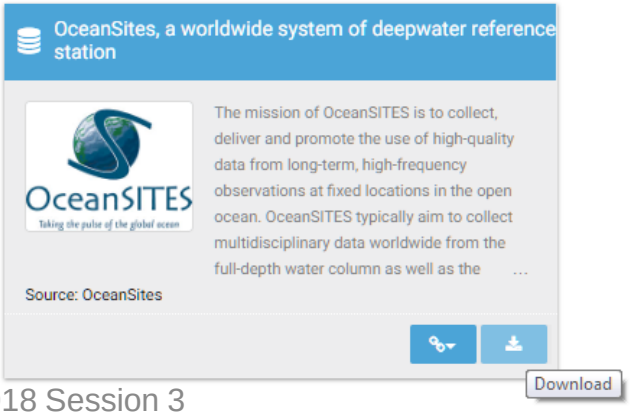
For WMS services made available in the catalogue entries, the different data layers can be displayed in the map facility of the tool





Downloading

The FTP download services, when made available in the catalogue entries, can be accessed directly



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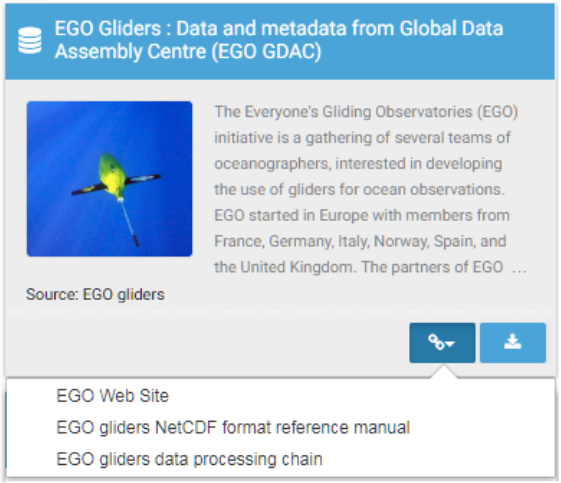
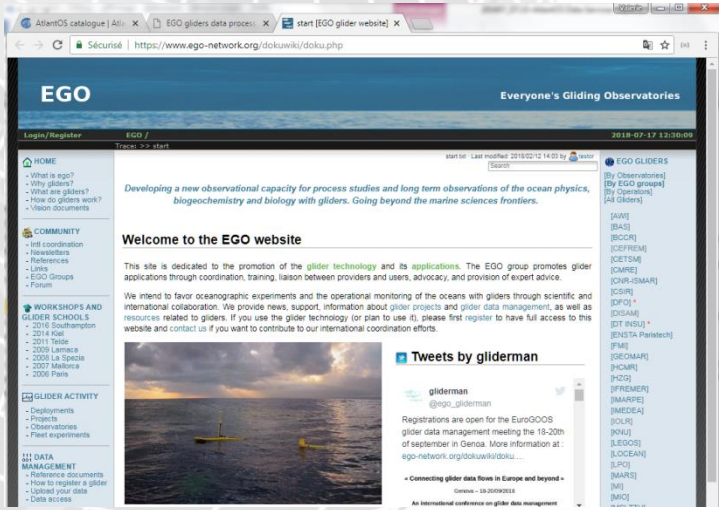
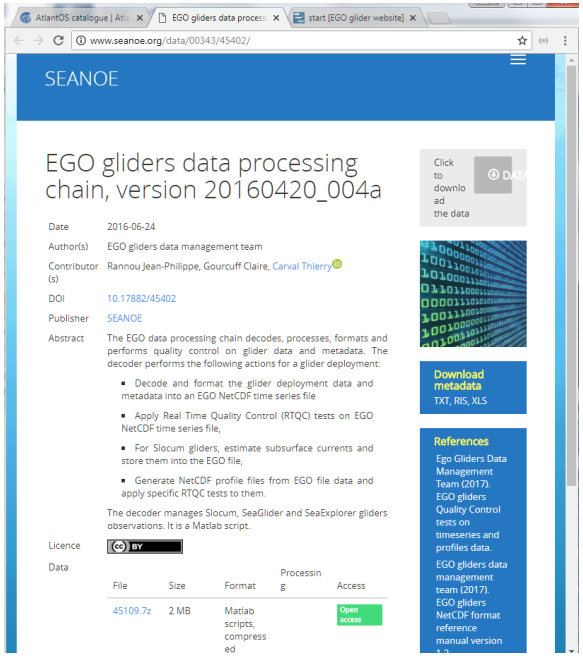
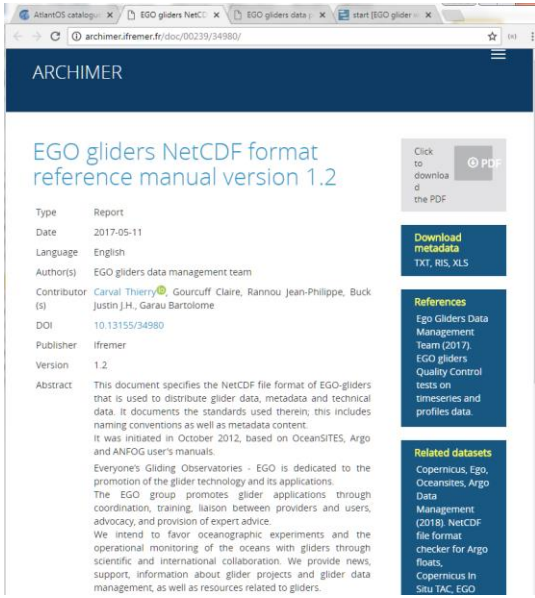


Access to more resources

Through external web links made available in the catalogue entries

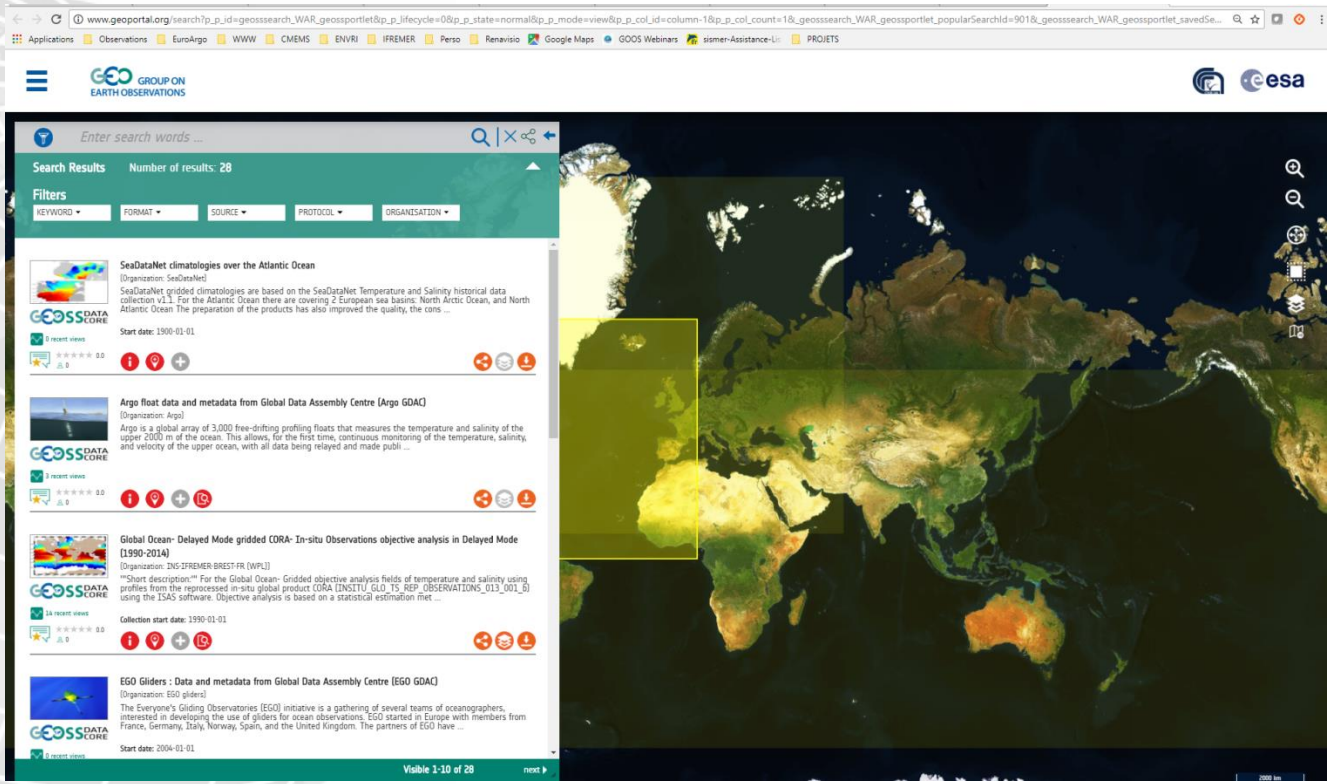






AtlantOS catalogue sustainability

Achieved through GEOSS

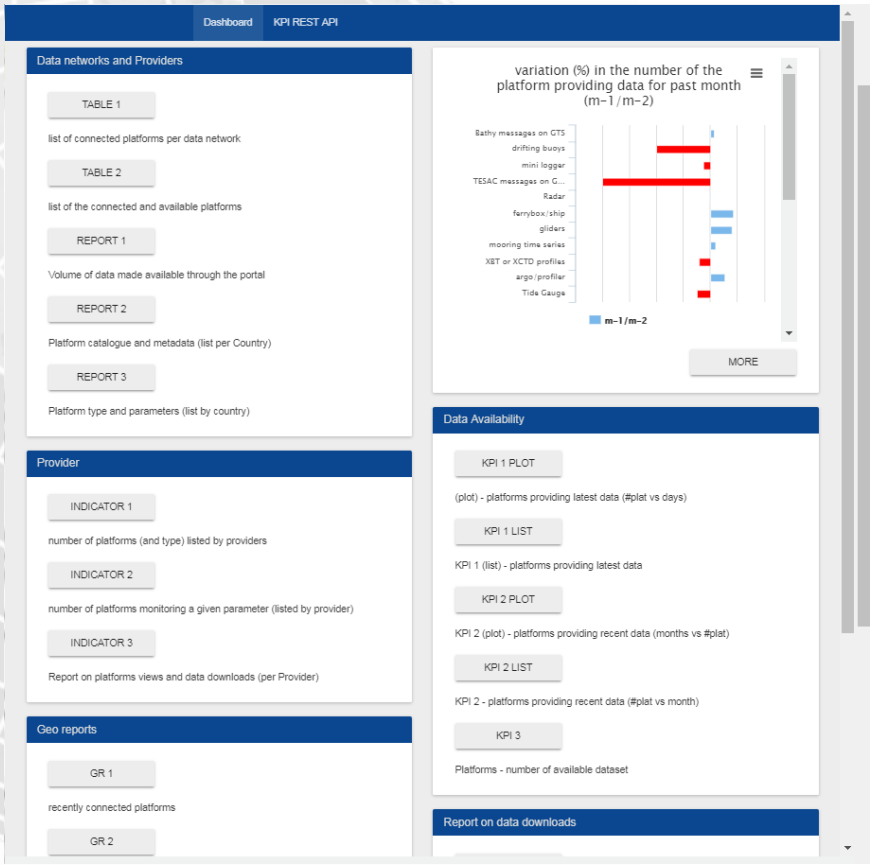


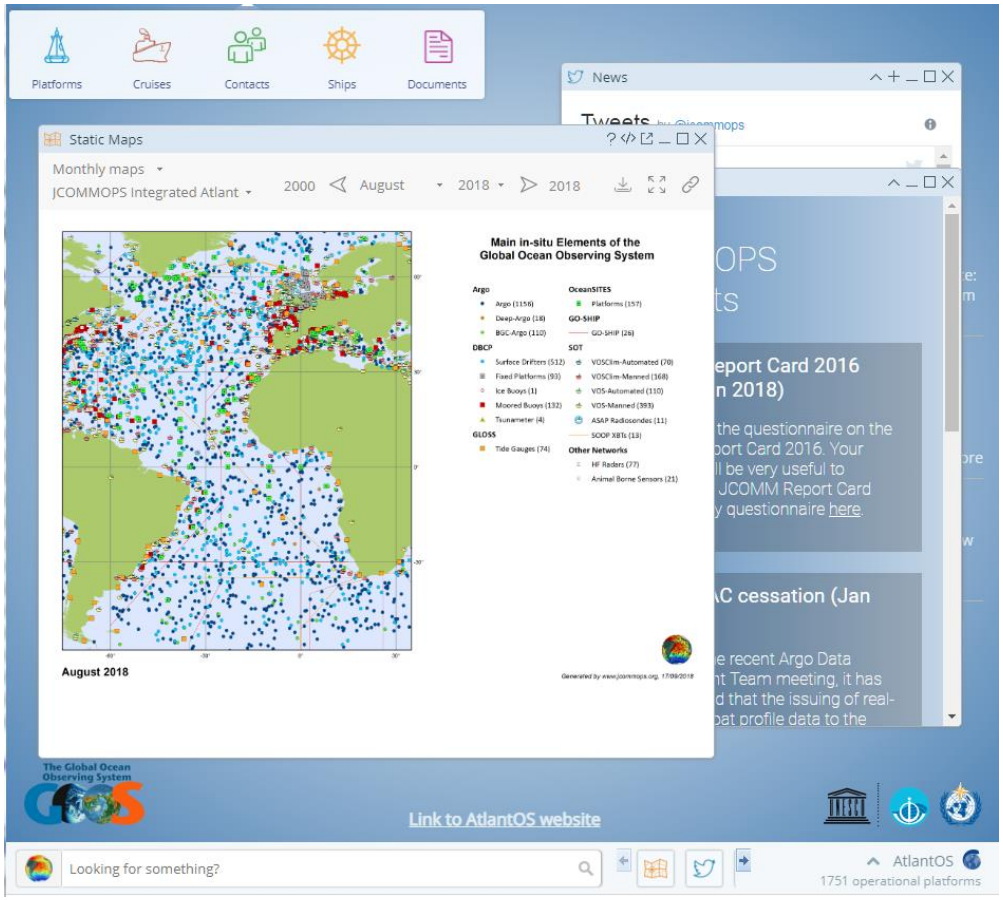
and EuroGOOS

Monitoring services

Two web services developed within the AtlantOS project (WP9.1)

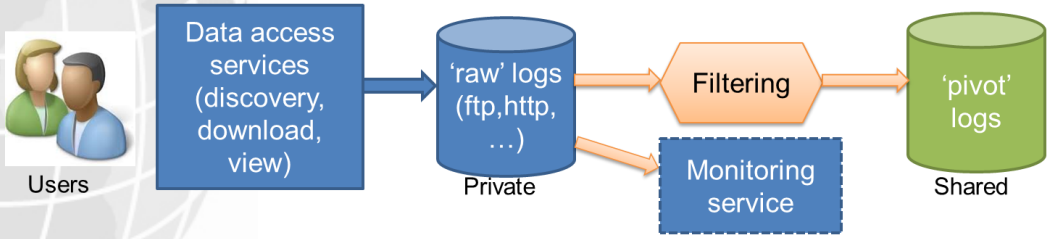
- **The European service** (including coastal/regional regions) (embedded into the EuroGOOS web page http://eurogoos.eu/atlantos/atlantos-dashboard/) **to track from the user's side**
- **and the international service (IOC/JCOMMOPS), to track the implementation of networks** (http://www.jcommops.org/board?t=atlantos)



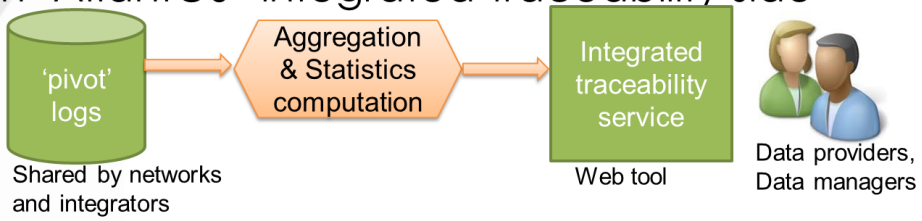


The traceability service on data usage

- **Diversity among data services (discovery, download, viewing, DOI,…)**
  - Data plots with no restriction
  - Different services with different rules and different service level agreements
  - Privacy laws
  - …
- **But still maintaining a common set of minimal tracking information, that can be shared to compute usage statistics in an integrated traceability service**
  - On the network or integrator data system side



  - On 'AtlantOS' integrated traceability side

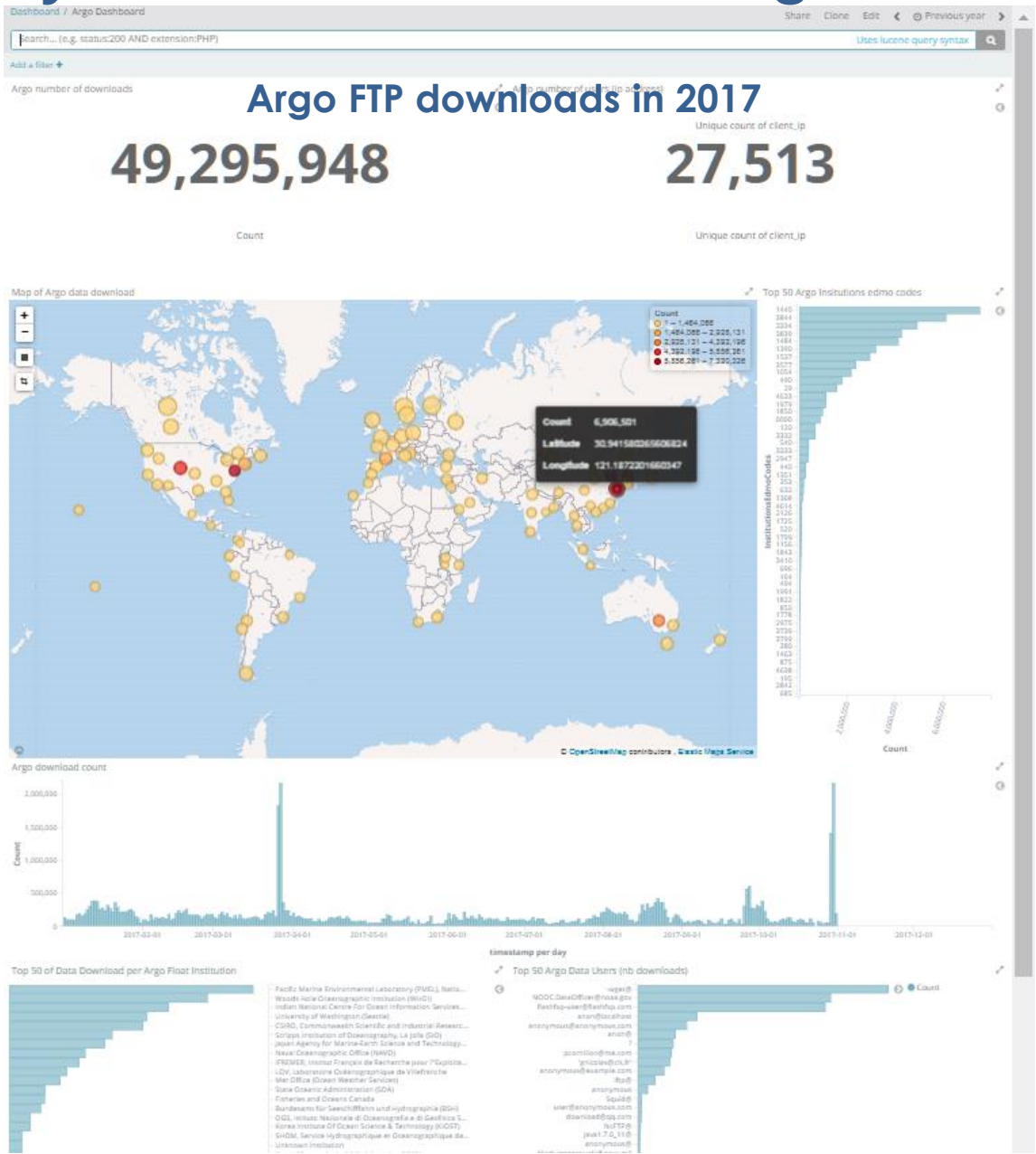


The traceability service on data usage

A Web interactive dashboard

Core statistics giving visibility of data usage to data providers and system managers

Nb of downloads
Nb of unique identified users
Map of downloads
Top 50 data providers (Institutions)
Nb of downloads per day
Top 50 users downloading data
Top 50 downloaded datasets

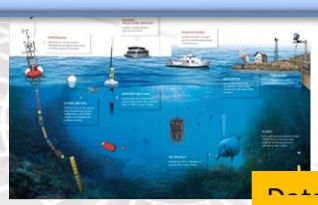


Joint developments (Ifremer, ETT, JCOMMOPS)

- ***Initial version for FTP downloads to be made available by the end of 2018***
- ***Later versions will include other data services (http, wms,…)***

Conclusion

An enhanced system based on existing (sustained) infrastructures that will continue to run even after the AtlantOS project has ended



Data mgt for network

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INS TAC Copernicus

SeaDataNet

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TOOLS

Services

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Virtual Data exchange backbone

Standardization between networks from acquisition to service to users

Implementation has started within the AtlantOS project and will continue in the framework of other projects

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