

 eOSC | Blue-Cloud2026

**Italian Integrated Ocean Observing
System: how to integrate multi-
source digital data and their near real
time processing for management
phases**

Mauro Caccavale (CNR-ISMAR)

5-6 November 2025, Brussels [Belgium]



Funded by
the European Union

IT-IOOS:

how to integrate multi-source digital data and their near real time processing for management phases

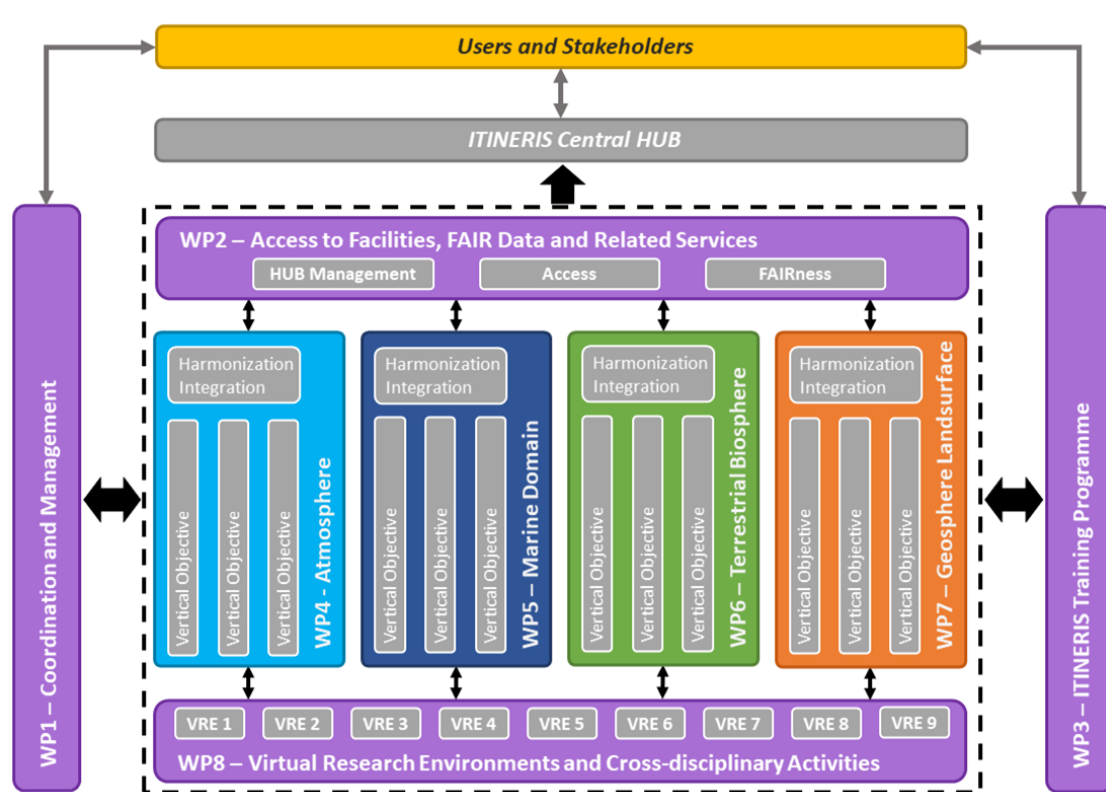
- CNR - ISMAR Italy
- Mauro Caccavale & Rosalia Santoleri

mauro.caccavale@cnr.it

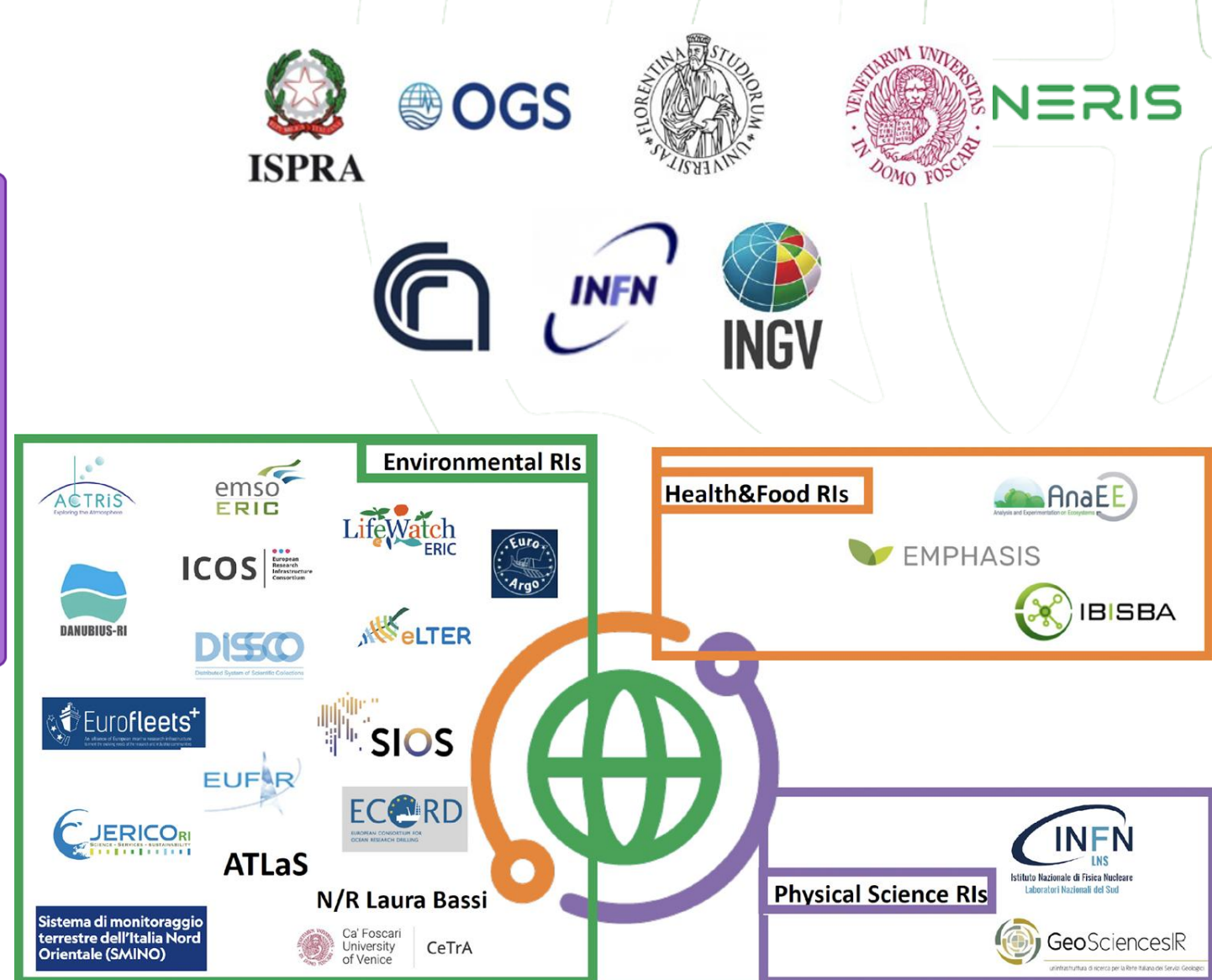
mauro.caccavale@it-ioos.cnr.it

IR0000032 – ITINERIS, Italian Integrated Environmental Research Infrastructures System
(D.D. n. 130/2022 - CUP B53C22002150006) Funded by EU - Next Generation EU PNRR-
Mission 4 “Education and Research” - Component 2: “From research to business” - Investment
3.1: “Fund for the realisation of an integrated system of research and innovation infrastructures”

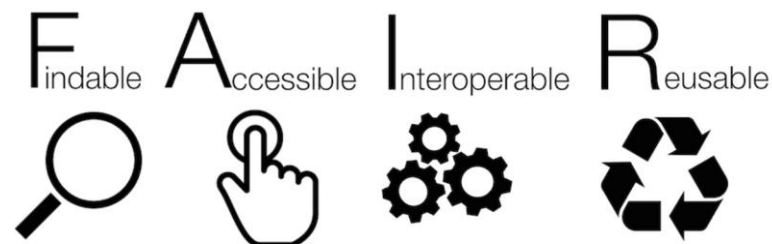
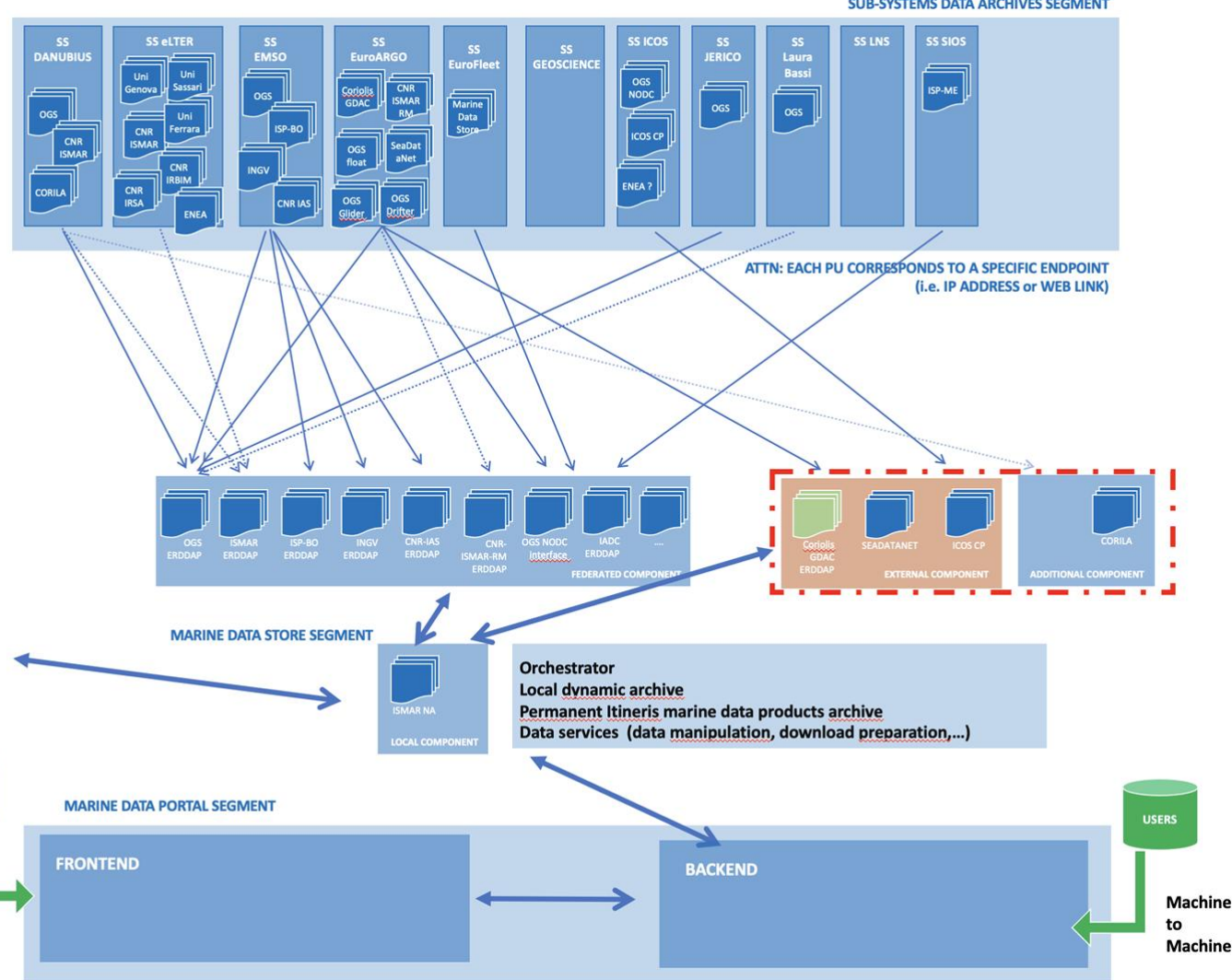
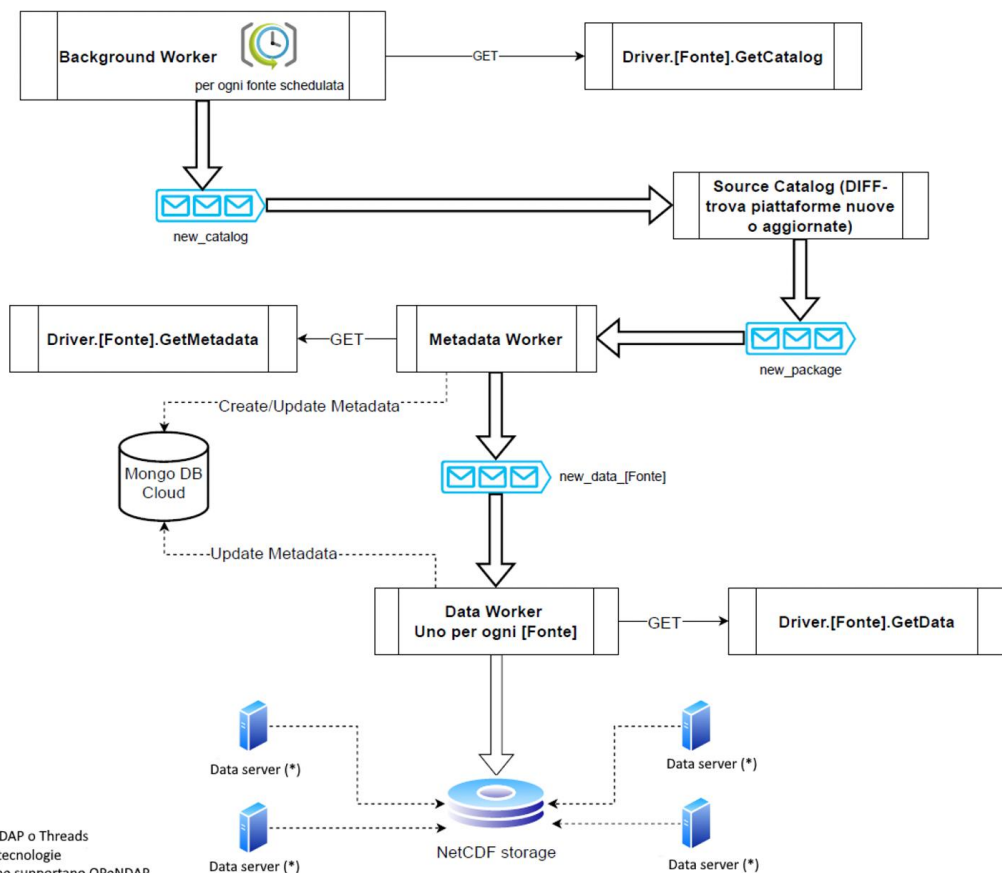
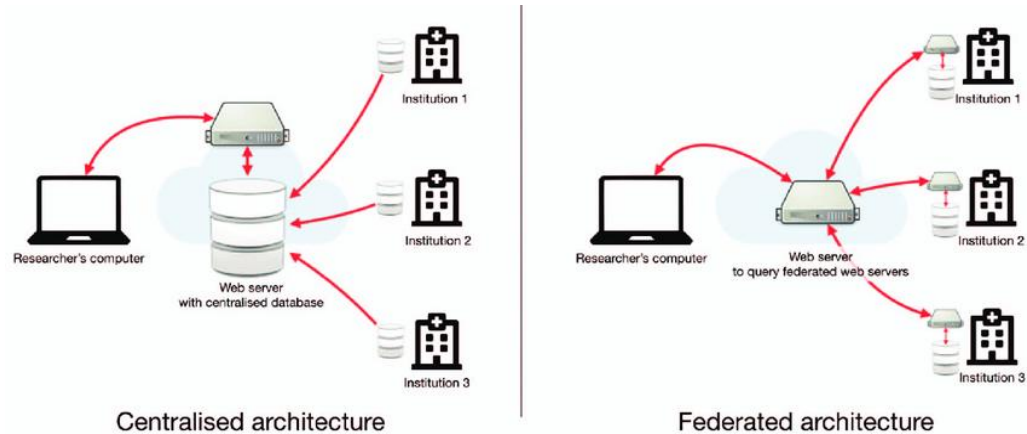




4 HUB 7 Partners
 1 Virtual LAB 39 OU
 22 RI
 ~500 units ~5Pb marine

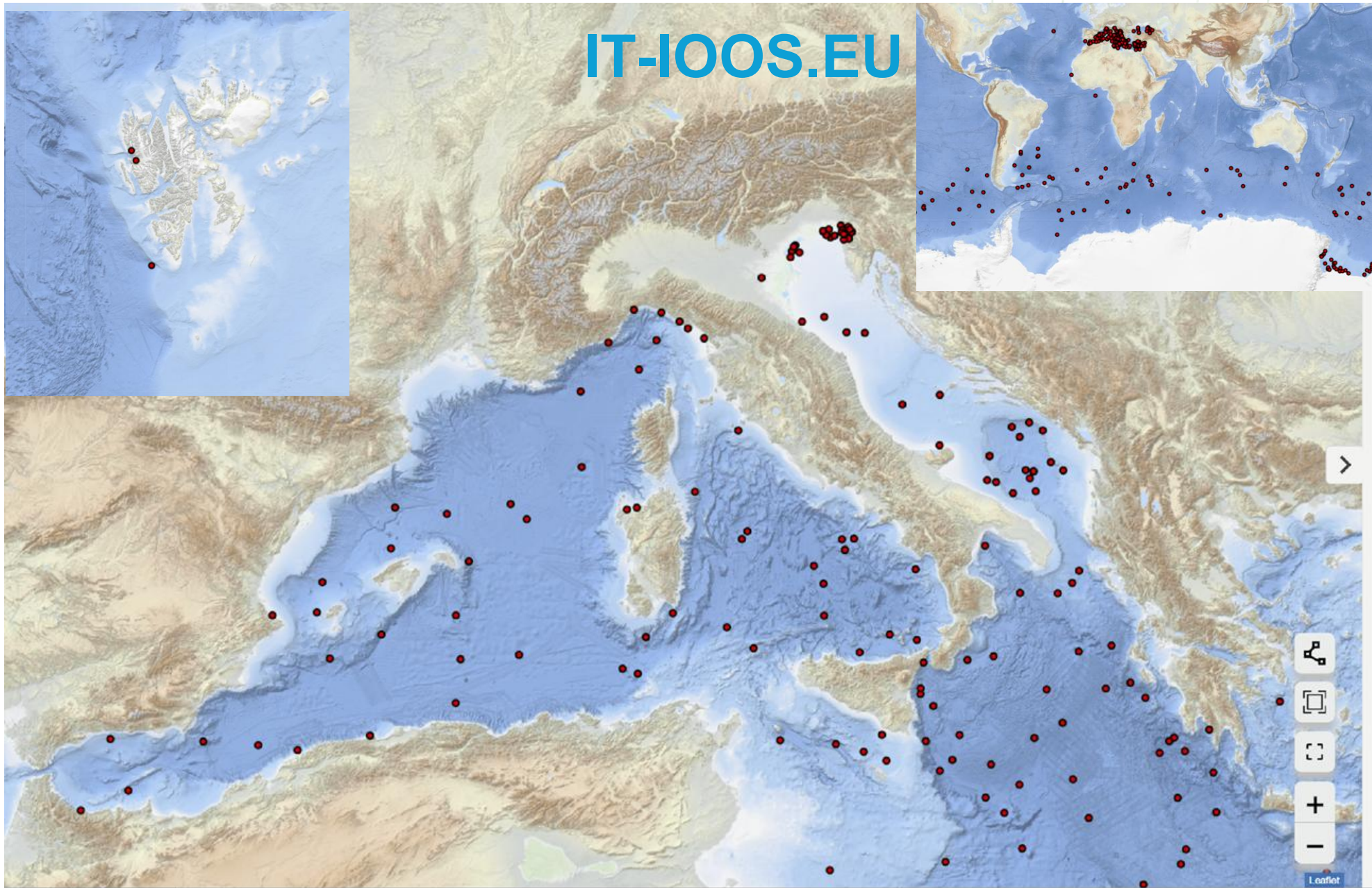


one portal for marine data



- Add proper metadata to each dataset is an essential requirement for a working data infrastructure
- However, since IT-IOOS data are multi-disciplinary, and each discipline uses specific metadata standard, as well as specific controlled vocabularies for annotating metadata records, the WP5 Data Catalogue infrastructure is designed to re-use as much as possible existing metadata, without requiring the original records to be re-created based on the reference standard (namely, DCAT-AP).
- Harvesting procedure will add metadata to the schema where necessary (e.g. label all datasets from a RI endpoint with RI name)

IT-IOOS.EU



Login

Dataset store

Filters



time



depth (m)



integrated variables



EOV



ECV



research infrastructure



Euro-Argo

DANUBIUS-RI

eLTER-RI

JERICO-RI

ICOS

IS



CNR, NATIONAL RESEARCH COUNCIL, INSTITUTE OF MARINE SCIENCE

Platform Name:

HFR_TIRLIG_PFIN

Codes:

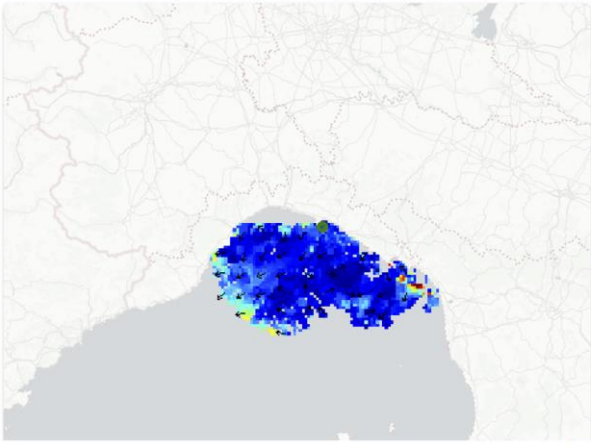
HFR_TIRLIG_PFIN

Projects:

RITMARE, IMPACT, Jerico-Next, EuroSea, SINAPSI

Type:

HF Radar Radial



Login

Dataset store

Filters



time



depth (m)



integrated variables



EOV



ECV



research infrastructure



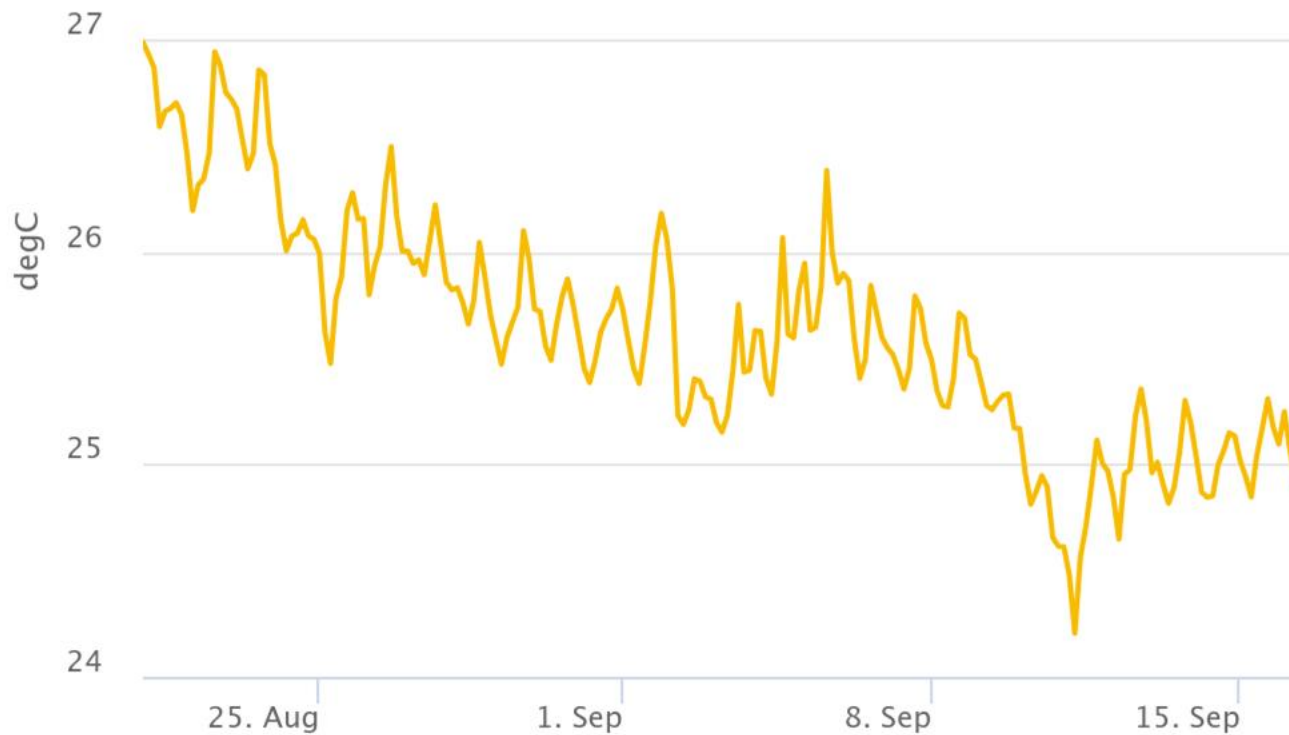
Euro-Argo

DANUBIUS-RI

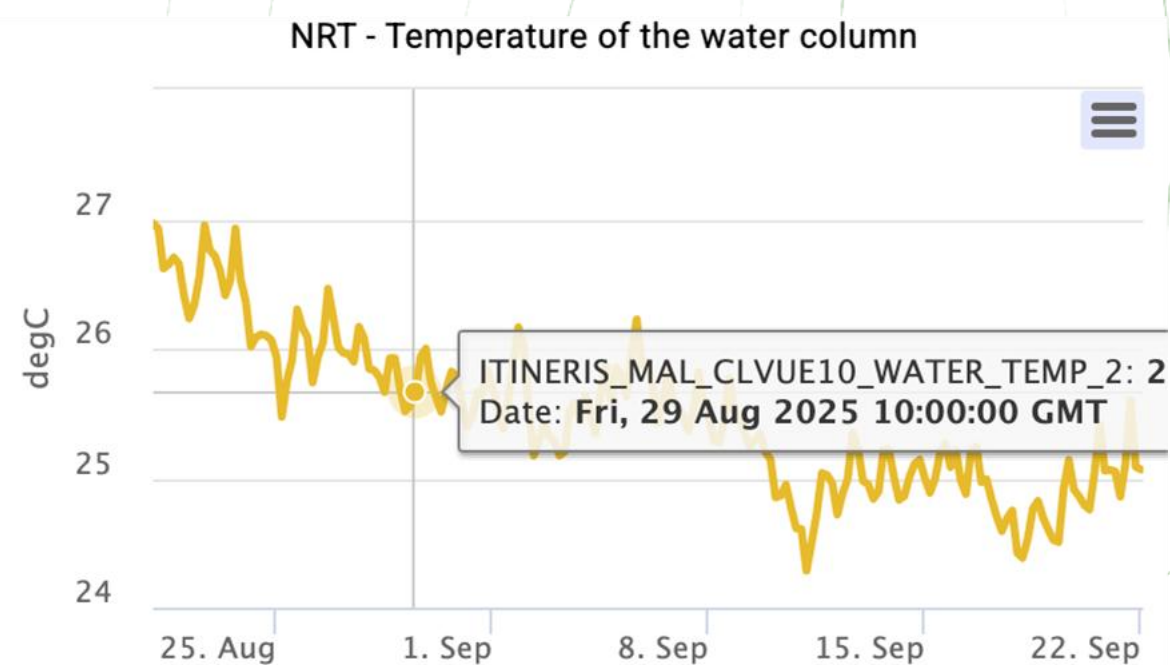
eLTER-RI

JERICO-RI

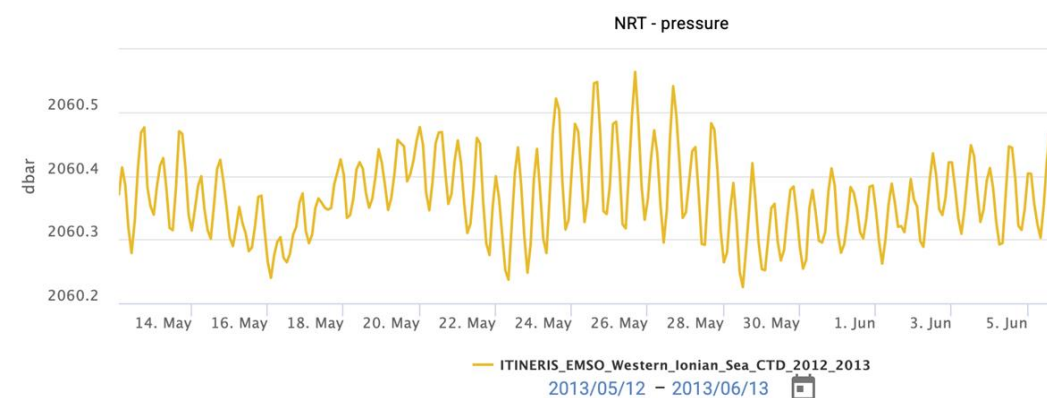
ICOS



— ITINERIS_MAL_CLVUE10_WATER_TEMP_2



— ITINERIS_MAL_CLVUE10_WATER_TEMP_2
2025/08/21 – 2025/09/22



	A	B
1	DateTime	ITINERIS_EMSO_Western_Ionian_Sea_CTD_2012_2013
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3	2013-05-12T03:02:19Z	2060.379
4	2013-05-12T04:02:19Z	2060.415
5	2013-05-12T05:02:19Z	2060.413
6	2013-05-12T06:02:19Z	2060.388
7	2013-05-12T07:02:19Z	2060.385
8	2013-05-12T08:02:19Z	2060.333



Campagna: ITINERIS_eye

PI: Organelli E.

Doi: <https://doi.org/10.82175/it-ioos/vq4g-0t11>

[Gaia Blu Official web page](#)

[D4science catalogue](#)



R/V GAIA BLU CRUISE REPORT

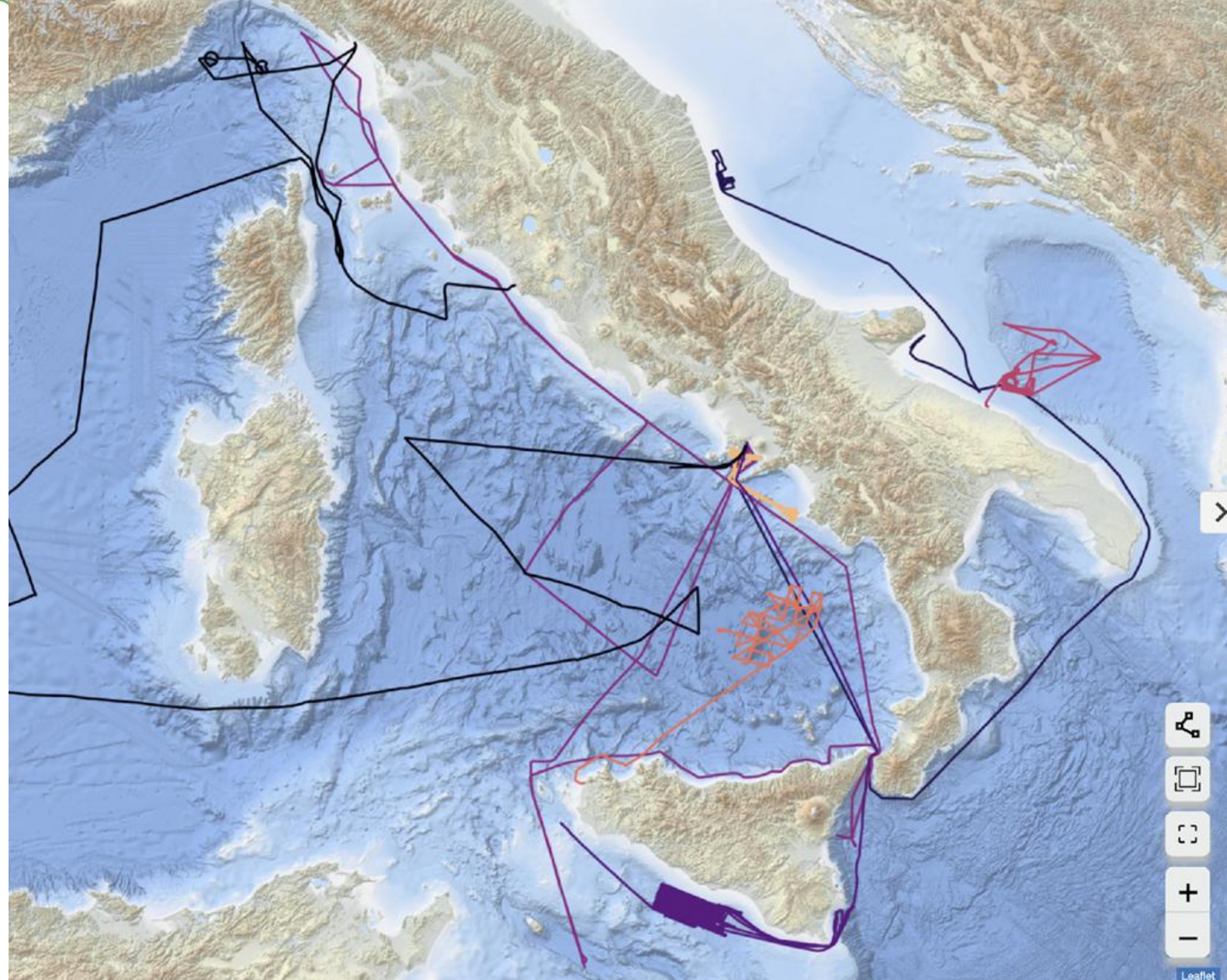
ITINERIS' EYES

INTEGRATING, INNOVATING, EVOLVING RESEARCH
INFRASTRUCTURES FOR HEALTHY AND PREDICTED
MARINE ECOSYSTEMS

(comitato Organelli)
Marco Bortolotti, Maki Bragosa, Marco Bortolotti, Carmela Bortolotti, Martina Bortolotti,
Jenny Bortolotti, Ilva Cappelletti, Loredana Cappelletti, Elisabetta Cappelletti, Stefano Cappelletti,
Giovanna Cappelletti, Simona Cappelletti, Elisabetta Cappelletti, Roberto Cappelletti, Loredana
Cappelletti, Ivan Cappelletti, Mirella Cappelletti, Antonella Cappelletti, Alessandra Cappelletti, Loredana
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Maddalena Cappelletti, Silvia Cappelletti, Francesco Cappelletti, Mirella Cappelletti, Mirella Cappelletti,
Piero Cappelletti, Roberto Cappelletti, Anna Cappelletti, Simona Cappelletti, Vincenza Cappelletti, Loredana
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Cappelletti, Ciro Cappelletti, Simona Cappelletti, Rosanna Cappelletti, Mirella Cappelletti, Mirella
Cappelletti, Paola Cappelletti, Antonella Cappelletti, Zia Cappelletti, Loredana Cappelletti, Mirella
Cappelletti, Mirella Cappelletti, Mirella Cappelletti, Mirella Cappelletti, Mirella Cappelletti,
Cristina Cappelletti, Mirella Cappelletti, Mirella Cappelletti, Mirella Cappelletti, Mirella Cappelletti,

Circoscrizione 07 July 2023 - Circoscrizione 07 July 2023

DOI: <https://doi.org/10.82175/it-ioos/vq4g-0t11>



Login

Dataset store

Filters



time

depth (m)

integrated variables

EOV

ECV

research infrastructure

Euro-Argo

DANUBIUS-RI

eLTER-RI

EMSO

IT_SIOS

JERICO-RI

ICOS

Research vessels

Select Dataset

FILTERS

Clarivue10 at Malamocco inlet-seawater_temperature_datastream (MAL CLVUE10 WATER TEMP 2)

Temperature of the water column at -2 m depth datastream

ISMAR

Clarivue10 at San Nicolo inlet-seawater_temperature_datastream (SN CLVUE10 WATER TEMP 2)

Temperature of the water column at -2 m depth datastream

ISMAR

Clarivue10 at Treporti inlet-seawater_temperature_datastream (TRP CLVUE WATER TEMP 2)

Temperature of the water column at -2 m depth datastream

ISMAR

CTD data set from mooring S1 @ 1000 m (s1 ctd)

Timeseries recorded at the mooring S1, at nominal depth of 1000 m during different deployments. The scope of the measurements is to study the temporal variability of the thermohaline properties of the Norwegian Deep Water, and associated deep flow.

N/A

CURRISO timeSeries, NRT in situ Observations (CURRISO TS)

CURRISO timeSeries, Near Real Time (NRT) in situ Observations

Subsurface Temperature River Discharge

JERICO

DWRG2 timeSeries, NRT in situ Observations (DWRG2 TS)

DWRG2 timeSeries, Near Real Time (NRT) in situ Observations

Clarivue10 at Malamocco inlet-seawater_turbidity_datastream (MAL CLVUE10 WATER TURB 2)

Turbidity (Nephelometric Turbidity Units (NTU)) of seawater at Malamocco inlet -2 m depth datastream

ISMAR

Clarivue10 at San Nicolo inlet-seawater_turbidity_datastream (SN CLVUE10 WATER TURB 2)

Turbidity (Nephelometric Turbidity Units (NTU)) of seawater at San Nicolo inlet -2 m depth datastream

ISMAR

Clarivue10 at Treporti inlet-seawater_turbidity_datastream (TRP CLVUE10 WATER TURB 2)

Turbidity (Nephelometric Tu

ISMAR

CURRISO profile, N

CURRISO profile, Near Real

Subsurface Currents

JERICO

DWRG1 timeSeries

DWRG1 timeSeries, Near Re

Sea State

JERICO

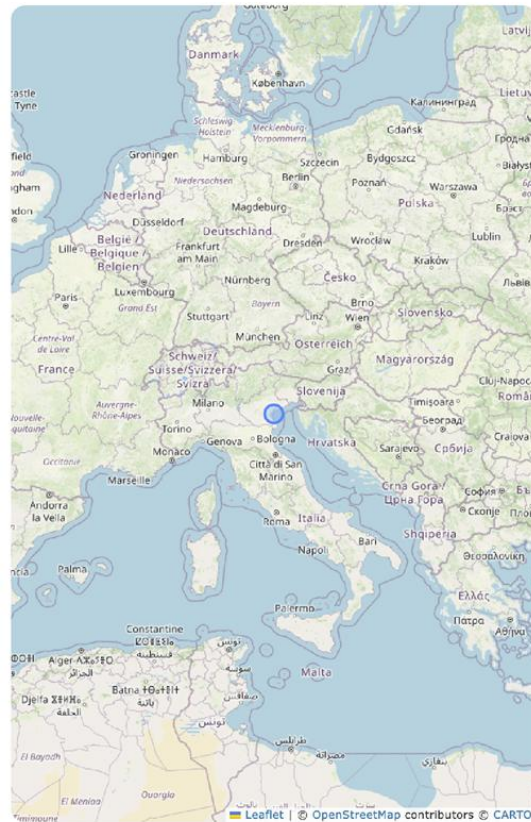
DWRG3 timeSeries

DWRG3 timeSeries, Near Re

Your selection

Clarivue10 at Malamocco inlet-seawater_turbidity_datastream (MAL CLVUE10 WATER TURB 2)

ITINERIS Download page



Data

ITINERIS_MAL_CLVUE10_WATER_TURB_2

cdm_data_type: TimeSeries
creator_name: Istituto di Scienze Marine del Consiglio Nazionale delle Ricerche
creator_type: Institution
creator_url: http://www.ismar.cnr.it
data_update: 2025-05-23T09:11:25.678962Z
dataset_id: ITINERIS_MAL_CLVUE10_WATER_TURB_2
depthrange: -1;;0;
geospatial_lat_max: 45.333646
geospatial_lat_min: 45.333646
geospatial_lat_units: degrees_north
geospatial_lon_max: 12.32811
geospatial_lon_min: 12.32811
geospatial_lon_units: degrees_east
geospatial_vertical_max: 0

Download

Date

Select date range

Parameters

Select Parameters
New Parameters

resultTime

seawater_turbidity

resultQuality

depth

Download



Select Dataset

FILTERS

Clarivue10 at Malamocco inlet-seawater_temperature_datastream (MAL CLVUE10 WATER TEMP 2)

Temperature of the water column at -2 m depth datastream

ISMAR



Clarivue10 at Malamocco inlet-seawater_turbidity_datastream (MAL CLVUE10 WATER TURB 2)

Turbidity (Nephelometric Turbidity Units (NTU)) of seawater at Malamocco inlet -2 m depth datastream

ISMAR



Clarivue10 at San Nicolo inlet-seawater_temperature_datastream (SN CLVUE10 WATER TEMP 2)

Temperature of the water column at

ISMAR

Clarivue10 at Treporti inlet-seawater_temperature_datastream (TREP CLVUE10 WATER TEMP 2)

Temperature of the water column at

ISMAR

CTD data set from mooring

Timeseries recorded at the mooring station. The measurements are used to study the temperature, salinity, and associated deep flow.

N/A

CURRISO timeSeries, Near Real Time

CURRISO timeSeries, Near Real Time

Subsurface Temperature

JERICO

DWRG2 timeSeries, Near Real Time

DWRG2 timeSeries, Near Real Time

Your selection

Clarivue10 at Malamocco inlet-seawater_turbidity_datastream (MAL CLVUE10 WATER TURB 2) X

creator_type: institution
creator_url: http://www.ismar.cnr.it
data_update: 2025-05-23T09:11:25.678962Z

Select Parameters

Survey

Country*

Reference community

☐ Are you part of the scientific community? ☐ Are you part of the private sector? ☐ Are you part of the education sector? ☐ Other (please specify)

Purpose of data usage

☐ Research ☐ Commercial ☒ Other (please specify)

Cancel Confirm



Download

Server numbers

Startup Time: 03/13/2025 16:58:19 GMT+1

Response Succeeded (Since Startup): 698

Response Failed (Since Startup): 0

Active dataset

- ITINERIS_BB_567_SBE56
- ITINERIS_BB_584_SBE56
- ITINERIS_BB_591_SBE56
- ITINERIS_FF_700_SBE56
- ITINERIS_BB_505_ADCP
- ITINERIS_BB_595_CTD
- ITINERIS_FF_644_ADCP

Inactive dataset

- ITINERIS_BB_591_SBE56

Successful requests



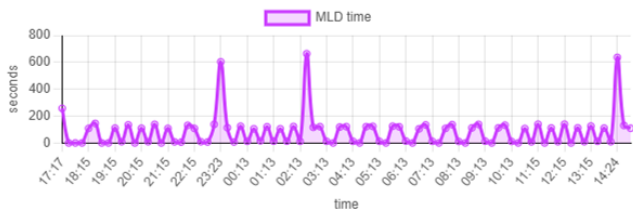
Failed requests



Memory usage



Major Load Datasets



Datasets

7

Last update 03/14/2025

Institutions

1

Last update 03/14/2025

0
Publishers

1
Sources

4
Variables

5
ECVs



03 14 2010
First dataset time

04 06 2024
Last dataset time

FAIRsharing.org

standards, databases, policies

ITINERIS



doi 10.25504/FAIRsharing.12b144 

Knowledgebase and repository

Database

re3data.org
REGISTRY OF RESEARCH DATA REPOSITORIES

 DataCite
Fabrica

Jisc

OpenDOAR

IT-IOOS

ERDDAP Data Processor

127.0.0.1:5000

Google MapsAppleUtrechtBlurbDiz.SisNotizieebayINFINSiteflickrFacebookMarine MHazardNital scholarRevisioneFind IPturnikenrockw

ITINERIS

ITINERIS Data/metadata Processor

Upload Any Data File or Folder:

Scegli fileNessun file selezionato

Select Metadata Format:

Default ITINERIS

Upload Metadata File:

Scegli fileNessun file selezionato

Select Metadata Format to Embed in NetCDF:

Excel

If no metadata file is uploaded, the default ITINERIS metadata will be used.

☐ Edit Metadata Before Processing

☐ Compare Data/Metadata Variables

☐ Auto-sync metadata variables with data

Process Files

RI_short_name

RI_coordin_organization

RI_coordin_organization_edmo_code

RI_coordin_organization_edmo_uri

RI_coordinating_person

RI_start_date

RI_geographical_coverage

RI_abstract

-- select --

IT-IOOS

DANUBIUS

eLTER

EMSO ERIC

Euro-Argo ERIC

EROFLEET

GEOSCIENCE-MER

ICOS ERIC JERICO

LAURA BASSI

OCEAN SOUND

SIOS

Edit Metadata

GlobalOnly Value is editable

Hide SectionCollapse All Groups

Add extra attribute:Type to search or anAdd

Attribute name

Value (click icons for info)

► acknowledgement

▼ cdm

cdm_data_type

timeSeries

► contributors

▼ Conventions

Conventions

CF-1.11 Copernicus-InSituTAC-FormatManual-2.0.0 Copernicus-InSituTAC-ParametersList-3.3.0 Copernicus-InSituTAC-AttributesList-1.0.0

► Coordinates

► creator

► data

► distributor

▼ geospatial

geospatial_lat_max

40.67660

geospatial_lat_min

40.67660

geospatial_lat_resolution

Enter value...

geospatial_lat_units

Enter value...

Description

A place to acknowledge various types of support for the project that produced this data

IT-IOOS.EU / TOOLS

14

ITINERIS Data Processor

Upload Metadata File

Scegli file Nessun file selezionato

Default: ITINERIS

Scegli file Nessun file selezionato

Select Metadata Format

Excel

If no metadata file is uploaded, you can select a default metadata file.

☐ Edit Metadata Before Processing

RI_short_name	
RI_coordin_organization	Enter value...
RI_coordin_organization_edmo_code	Enter value...
RI_coordin_organization_edmo_uri	Enter value...
RI_coordinating_person	Enter value...
RI_start_date	Enter value...
RI_geographical_coverage	Enter value...
RI_abstract	Enter value...

IT-IOOS
DANUBIUS
eLTER
EMSO ERIC
Euro-Argo ERI
EROFLEET
GEOSCIENCE-
ICOS ERIC JEF
LAURA BASSI
OCEAN SOUNDING
SIOS



✓ **Metadata successfully edited and saved!**

Your files are ready for download.

All data columns and metadata variables match!

- Download ZIP Package
- Download NetCDF (.nc)
- Download Metadata (.xml)
- Download Metadata (.xlsx)
- Download Metadata (.json)
- Download Data (CSV bundle)
- Back to Home

Value (click icons for info)

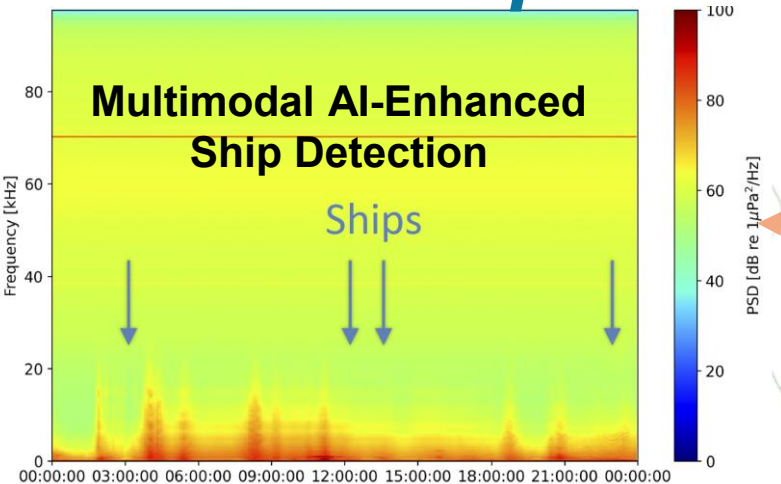
Collapse All Groups

C-FormatManual-2.0.0 Copernicus-InSituTAC-
iclus-InSituTAC-AttributesList-1.0.0

Description

place to acknowledge various types of support for the project that
produced this data

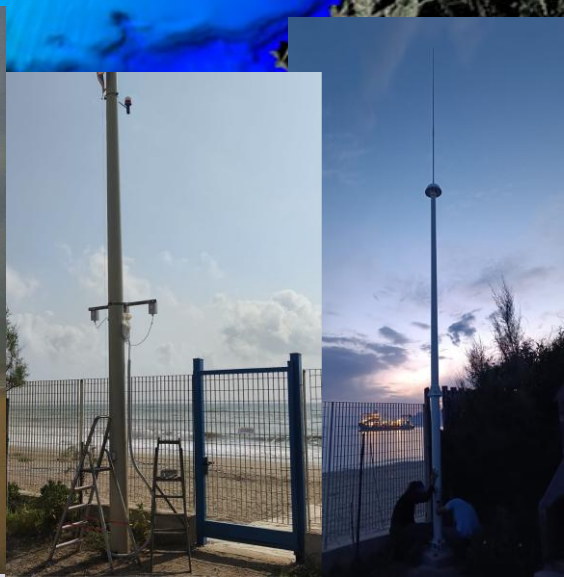
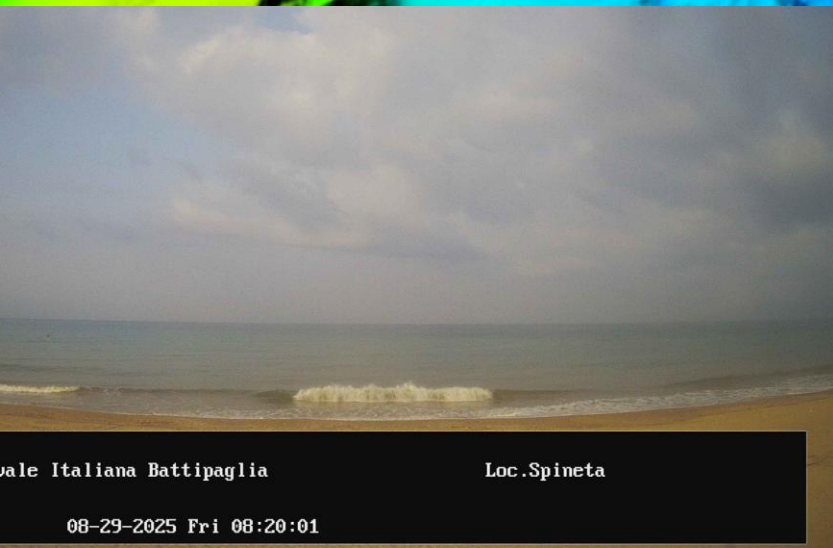
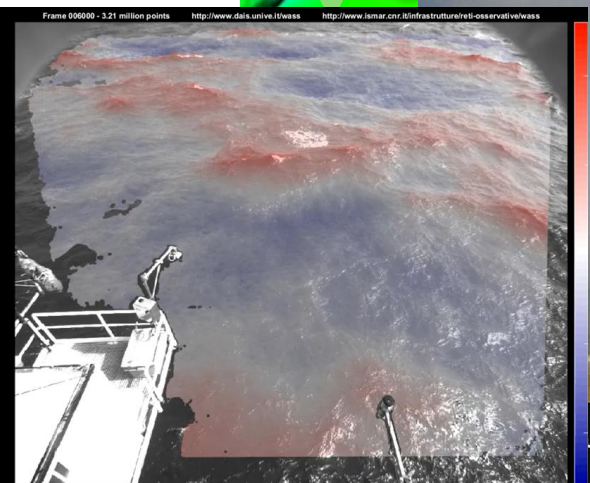
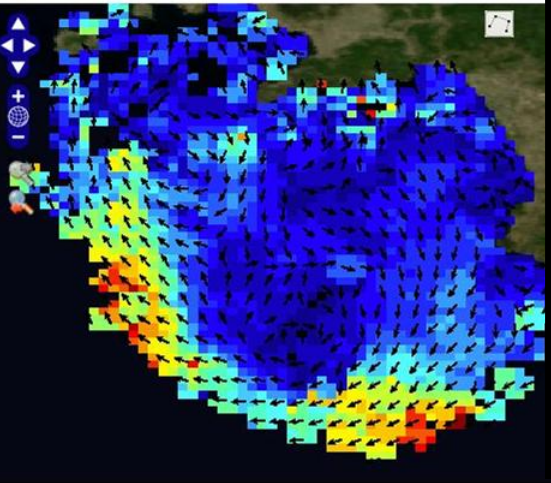
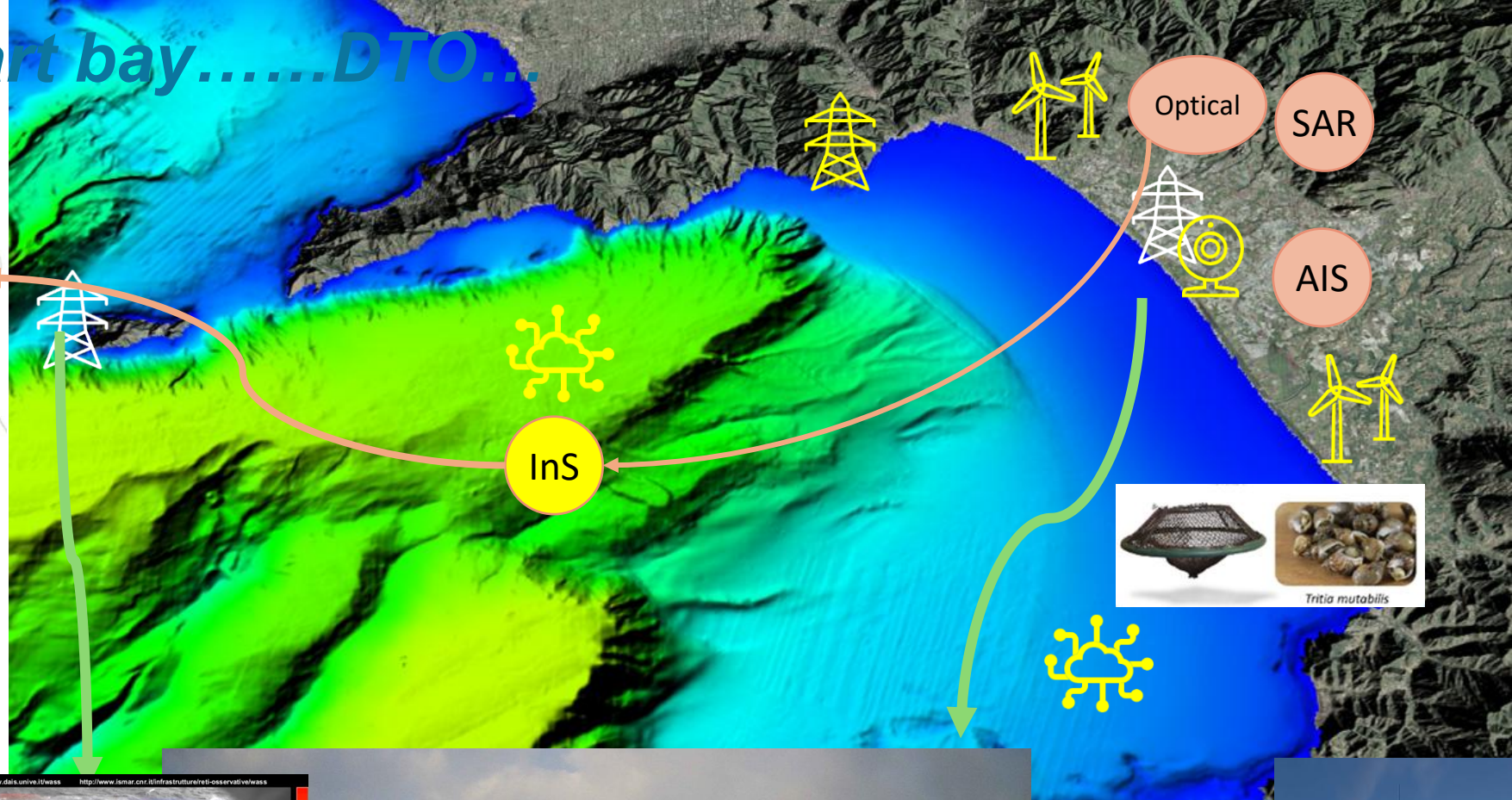
...next steps smart bay.....DTO...



Low Probability Hazard Analysis Custom

Weather Forecast

Time History Analysis





THANKS!

mauro.caccavale@cnr.it
mauro.caccavale@it-ioos.cnr.it

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