Software for ocean data and metadata management

Elena Partescano

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”

Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani

Outline of topics covered:

- SeaDataNet Metadata formatting tools:
- MIKADO : for editing and generating XML metadata entries for the for the SeaDataNet directories EDMED, CSR, EDMERP and CDI.

- SeaDataNet Data formatting tools:
- NEMO : for conversion of any ASCII format to all SeaDataNet data formats (ODV ASCII, NetCDF (CF) and MedAtlas)
- OCTOPUS : a multi-format splitter and converter tool to convert files in a given SeaDataNet format to another SeaDataNet format (eg: ODV to NetCDF, MedAtlas to NetCDF , MedAtlas to ODV)

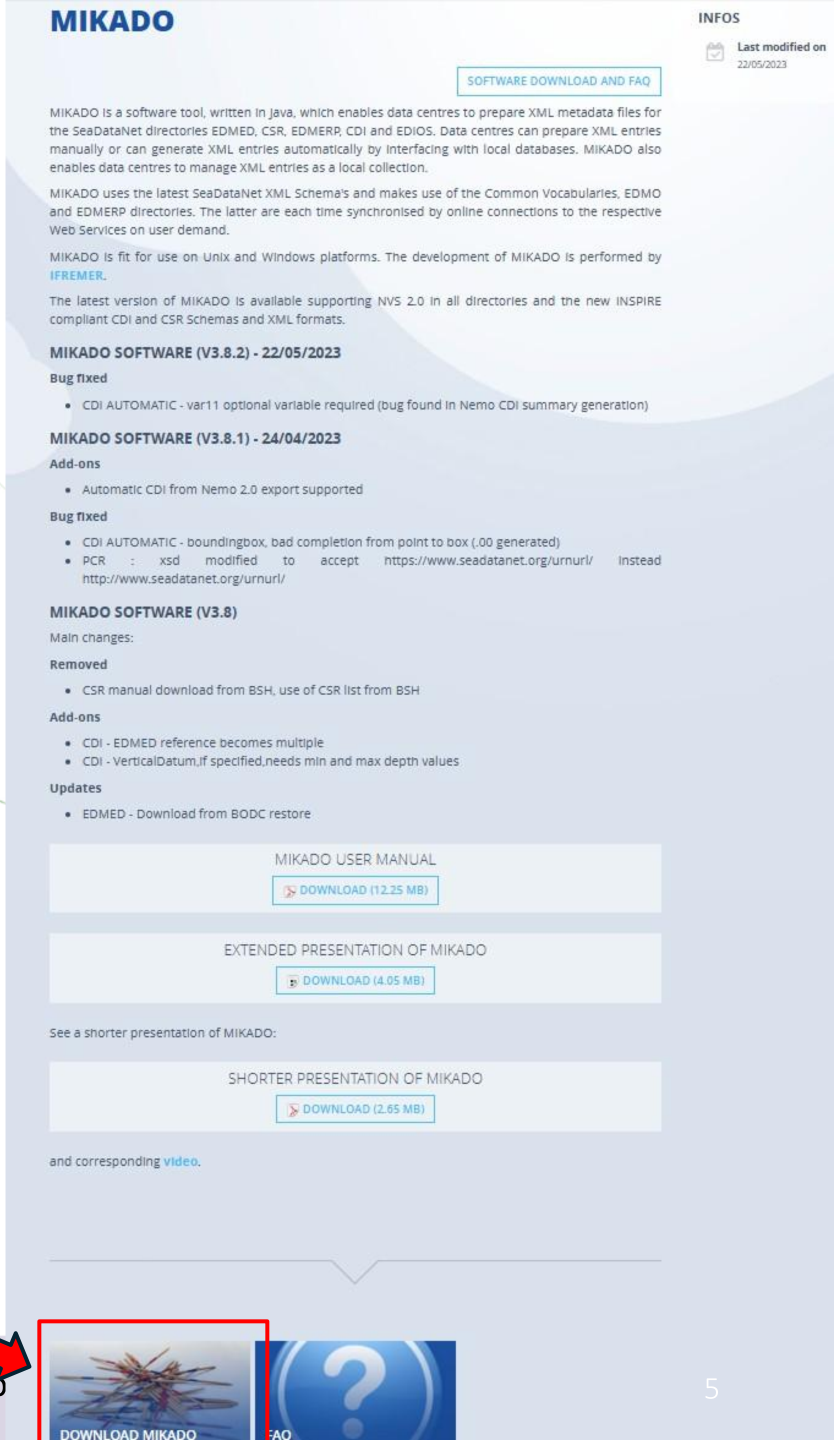
SeaDataNet software Tools

- To generate the metadata at the SDN standards : MIKADO
- To generate the data files at the SeaDataNet standards : NEMO
- To check the compliance of the data files : OCTOPUS

Exercise

Creating a CSR - Cruise Summary Reports

1- Download Mikado software https://www.seadatanet.org/Software/MIKADO


MIKADO

INFOS

Last modified on 22/05/2023

SOFTWARE DOWNLOAD AND FAQ

MIKADO is a software tool, written in Java, which enables data centres to prepare XML metadata files for the SeaDataNet directories EDMED, CSR, EDMERP, CDI and EDIOS. Data centres can prepare XML entries manually or can generate XML entries automatically by interfacing with local databases. MIKADO also enables data centres to manage XML entries as a local collection.

MIKADO uses the latest SeaDataNet XML Schema's and makes use of the Common Vocabularies, EDMO and EDMERP directories. The latter are each time synchronised by online connections to the respective Web Services on user demand.

MIKADO is fit for use on Unix and Windows platforms. The development of MIKADO is performed by IFREMER.

The latest version of MIKADO is available supporting NVS 2.0 in all directories and the new INSPIRE compliant CDI and CSR Schemas and XML formats.

MIKADO SOFTWARE (V3.8.2) - 22/05/2023

Bug fixed

- CDI AUTOMATIC - var11 optional variable required (bug found in Nemo CDI summary generation)

MIKADO SOFTWARE (V3.8.1) - 24/04/2023

Add-ons

- Automatic CDI from Nemo 2.0 export supported

Bug fixed

- CDI AUTOMATIC - boundingbox, bad completion from point to box (.00 generated)
- PCR : xsd modified to accept https://www.seadatanet.org/urnurl/ instead http://www.seadatanet.org/urnurl/

MIKADO SOFTWARE (V3.8)

Main changes:

Removed

- CSR manual download from BSH, use of CSR list from BSH

Add-ons

- CDI - EDMED reference becomes multiple
- CDI - VerticalDatum,if specified,needs min and max depth values

Updates

- EDMED - Download from BODC restore

MIKADO USER MANUAL

DOWNLOAD (12.25 MB)

EXTENDED PRESENTATION OF MIKADO

DOWNLOAD (4.05 MB)

See a shorter presentation of MIKADO:

SHORTER PRESENTATION OF MIKADO

DOWNLOAD (2.65 MB)

and corresponding video.

DOWNLOAD MIKADO

FAQ

Creating a CSR - Cruise Summary Reports

1- Download Mikado software https://www.seadatanet.org/Software/MIKADO

DOWNLOAD MIKADO

To install MIKADO, you have to download the MIKADO zip file, to unzip it and to copy the MIKADO directory on your computer.

Important notice:

- MIKADO >= 3.6 generates CDI XML files which can be managed only with **RM version >= 1.0.45**

Known issue:

- Due to a bug in different java versions, you may experience problems when opening existing XML files in MIKADO. Error message: "*Unexpected format for the selected catalog: md:aggregateDataSetName unnexcepted child in <gmd:MD_AggregateInformation> tag*". To by-pass this problem, please install another java version than affected versions: **7u341, 8u331, 11.0.15-oracle, 17.0.3-oracle, 18.0.**
- For more information, please refer to https://www.oracle.com/java/technologies/javase/8u331-relnotes.html (Known issues).

Version	All Platforms
3.8.2	DOWNLOAD
3.8.2 (OpenJDK)	DOWNLOAD
3.5.3	DOWNLOAD

If you have any remarks or problems, please contact sdn-userdesk@seadatanet.org

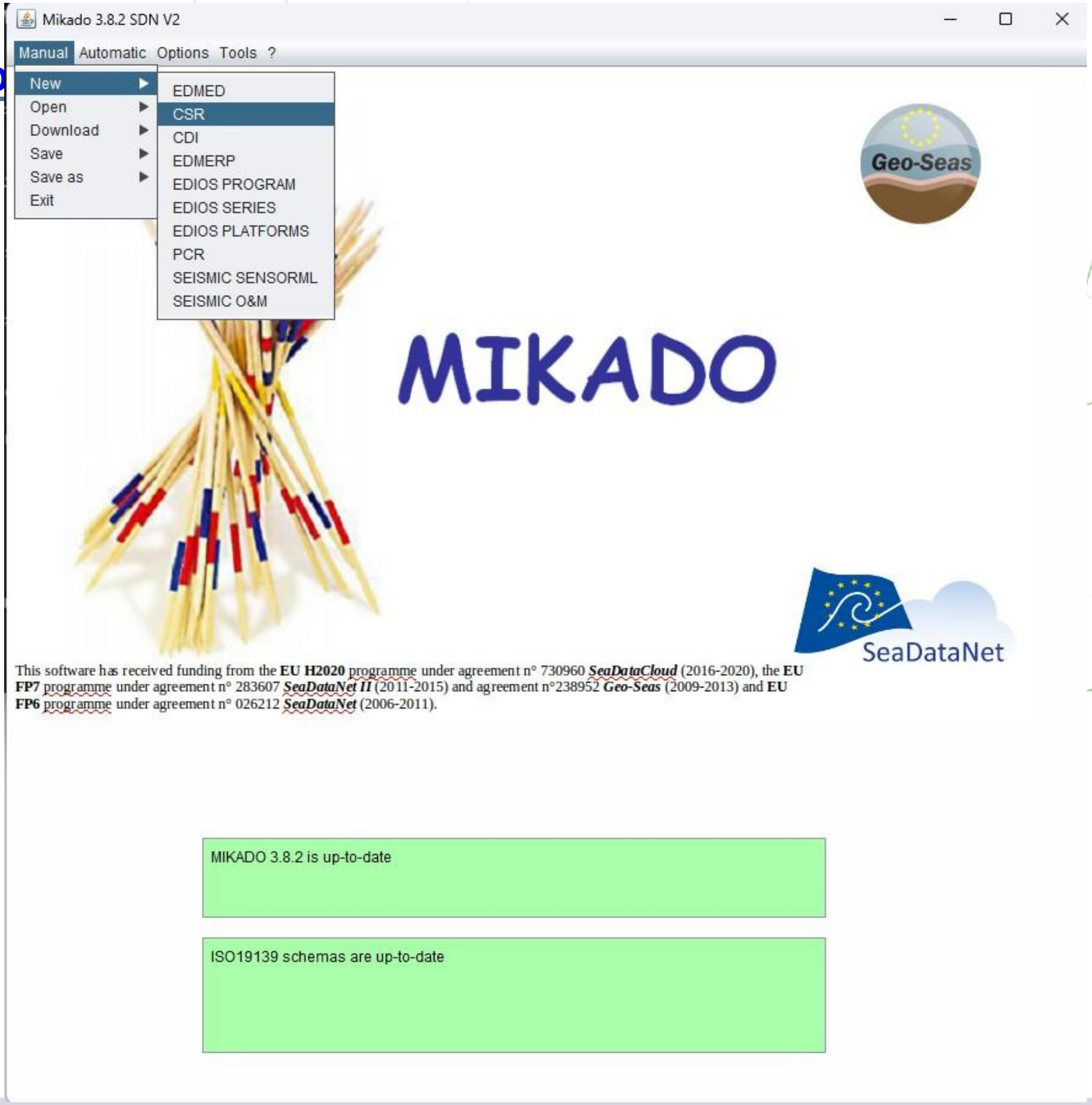
Creating a CSR - Cruise Summary Reports

1 Download Mikado software https://www.seadatanet.org/Software/MIKADO
2 run mikado.bat executable

Nome	Ultima modifica	Tipo	Dimensione
conf	28/11/2024 16:52	Cartella di file	
dist	28/11/2024 16:52	Cartella di file	
languages	28/11/2024 16:52	Cartella di file	
lists	28/11/2024 16:52	Cartella di file	
mapping	28/11/2024 16:52	Cartella di file	
NemoTemplates	28/11/2024 16:52	Cartella di file	
OODatabase	28/11/2024 16:52	Cartella di file	
sql	28/11/2024 16:52	Cartella di file	
mikado.bat	28/11/2024 16:52	File batch Windows	6 KB
mikado.csh	28/11/2024 16:52	File CSH	6 KB
mikado.ico	28/11/2024 16:52	File ICO	10 KB
Mikado.log	28/11/2024 16:53	Documento di testo	2 KB

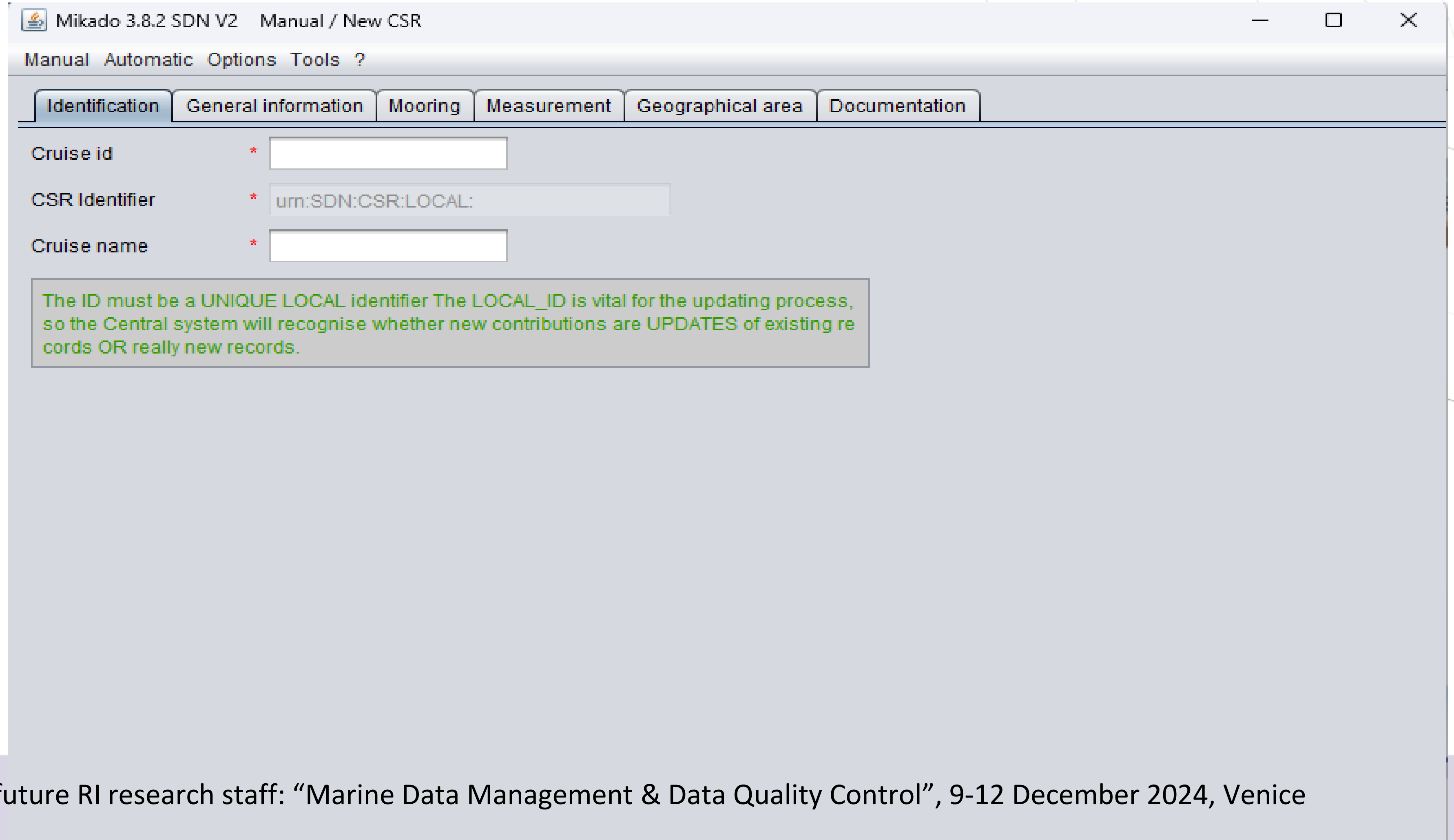
Creating a CSR - Cruise Summary Reports

1 Download Mikado software **https://www.seadatanet.org/So**
2 run mikado.bat executable
3 open a new CSR form : Manual->New->CSR



Creating a CSR - Cruise Summary Reports

1 Download Mikado software https://www.seadatanet.org/Software/MIKADO
2 run mikado.bat executable
3 open a new CSR form : Manual->New->CSR



Creating a CSR - Cruise Summary Reports

Enter the following information in the Mikado fields:

GENERAL INFORMATION

ID
21031496

Platform/Ship
Aegaeo

Cruise begin
01.07.2023

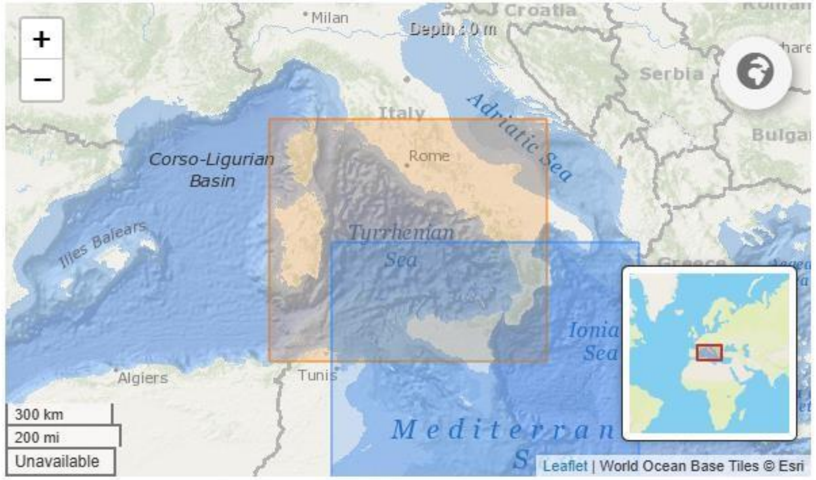
Cruise end
11.07.2023

Pc
Piraeus, Greece

Port of Return
Piraeus, Greece

Chief Scientist(s)
Silvia Ceramicola - National Institute of Oceanography and Applied Geophysics - OGS, Division of Geophysics

Responsible(s) Laboratory
National Institute of Oceanography and Applied Geophysics - OGS, Division of Geophysics
National Oceanography Centre (Southampton)



DESCRIPTION

ERODOTO was an expedition funded by the Eurofleets+ programme, and had four specific objectives: 1. Detailed documentation of canyon head morphology, particularly of the all geomorphological indicators of imminent/incipient sediment failure (e.g. cracks, development of scarps, creeping etc¿) and related deposits (e.g. blocks, pebbles, slab slides etc¿) 2. Quantification of the dynamics of sediment flows in the combined fiumare-canyon system: to measure frequency and magnitude of the events, quantify the volume of sediment mobilised and couple the onshore-offshore record 3. Assessment of the geotechnical properties of the shelf sedimentary sequences incised by the headwalls: shear strength, cohesion, consolidation ¿ 4. Development of a blueprint for coastal hazard assessment and monitoring in proximity to submarine canyon heads: provide a pilot test and series of guidelines demonstrating the approach and methodologies for semi-autonomous hazard monitoring in shallow coastal areas adjacent to submarine canyon heads.

Creating a CSR - Cruise Summary Reports

Enter the following information in the Mikado fields:

LOCATION

General Ocean Areas
Mediterranean Region

Marsden Squares (S, N, E, W)
143 (30.0, 40.0, 20.0, 10.0)

Bounding Box(es)

West	East	South	North
8	17	37	43

Specific Geographic Areas
-

ADDITIONAL INFORMATION

Parameters measured
Bathymetry and Elevation
Gravity
Horizontal velocity of the water column (currents)
Salinity of the water column

Instruments used
-

Linkage / Report / Station list
-

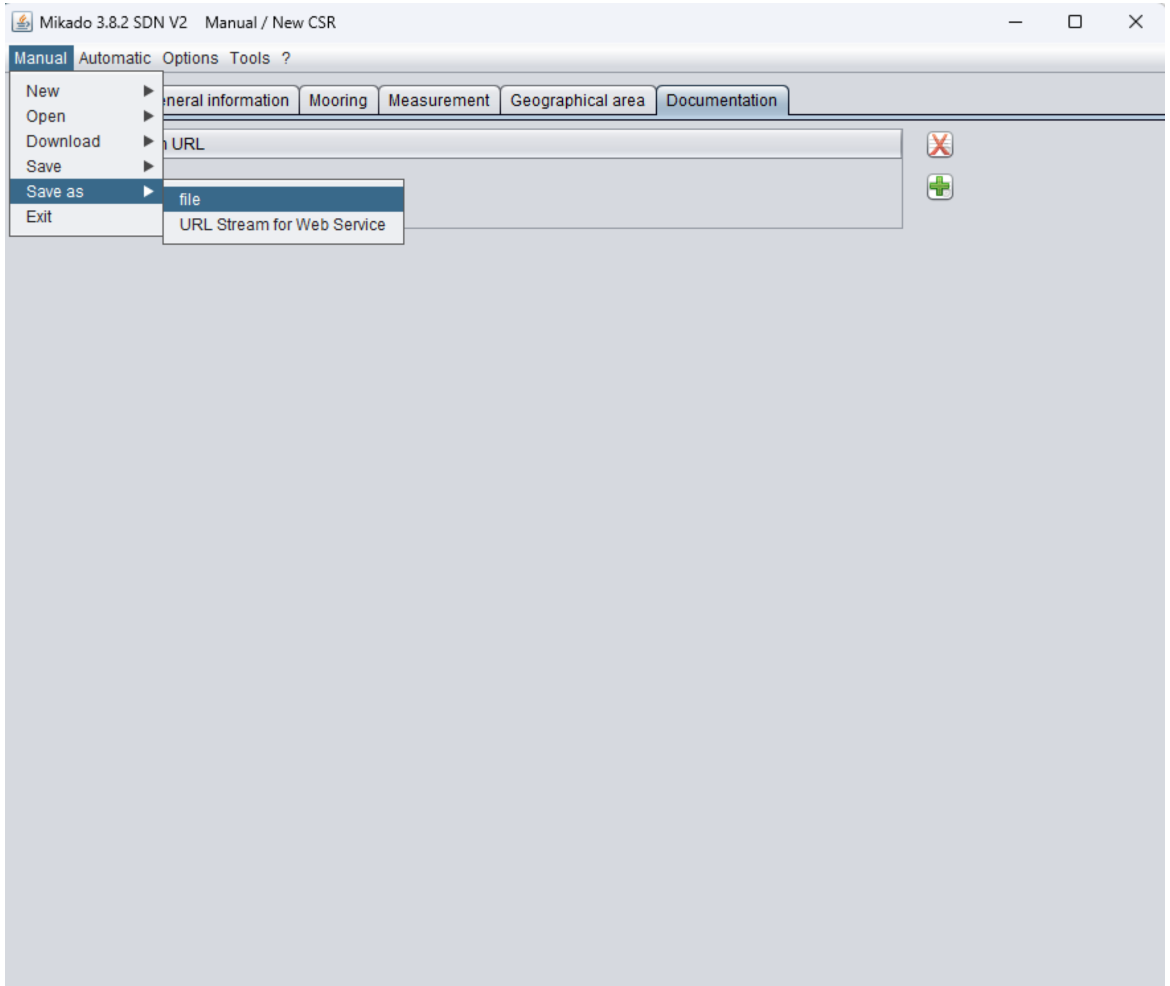
Project
EUROFLEETS+ - EUROFLEETS+: An Alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities

SUMMARY OF MEASUREMENTS AND SAMPLES

Type	Quantity	Description	Reference date	PI	Organisation
MARINE GEOLOGY					
G04 Core soft bottom	14 cores	Gravity cores	01.07.2023	Silvia Ceramicola	National Institute of Oceanography and Applied Geophysics - OGS, Division of Geophysics
G08 Bottom photography	11 dives	ROV dives (video, 4 pushcores, 4 rock samples)	01.07.2023	Silvia Ceramicola	National Institute of Oceanography and Applied Geophysics - OGS, Division of Geophysics
G72 Geophysical meas. made at depth	8 surveys	Gavia AUV missions (Klein interferometric sidescan sonar, photography, Temp, Sal, ADCP)	01.07.2023	Silvia Ceramicola	National Institute of Oceanography and Applied Geophysics - OGS, Division of Geophysics
G74 Multi-beam echosounding	200 square_kilometres	ELAC Seabeam3030 multibeam data	01.07.2023	Silvia Ceramicola	National Institute of Oceanography and Applied Geophysics - OGS, Division of Geophysics
PHYSICAL OCEANOGRAPHY					
H10 CTD stations	1 stations	CTD cast (temp, sal)	01.07.2023	Silvia Ceramicola	National Institute of Oceanography and Applied Geophysics - OGS, Division of Geophysics

Creating a CSR - Cruise Summary Reports

Save the Mikado file:



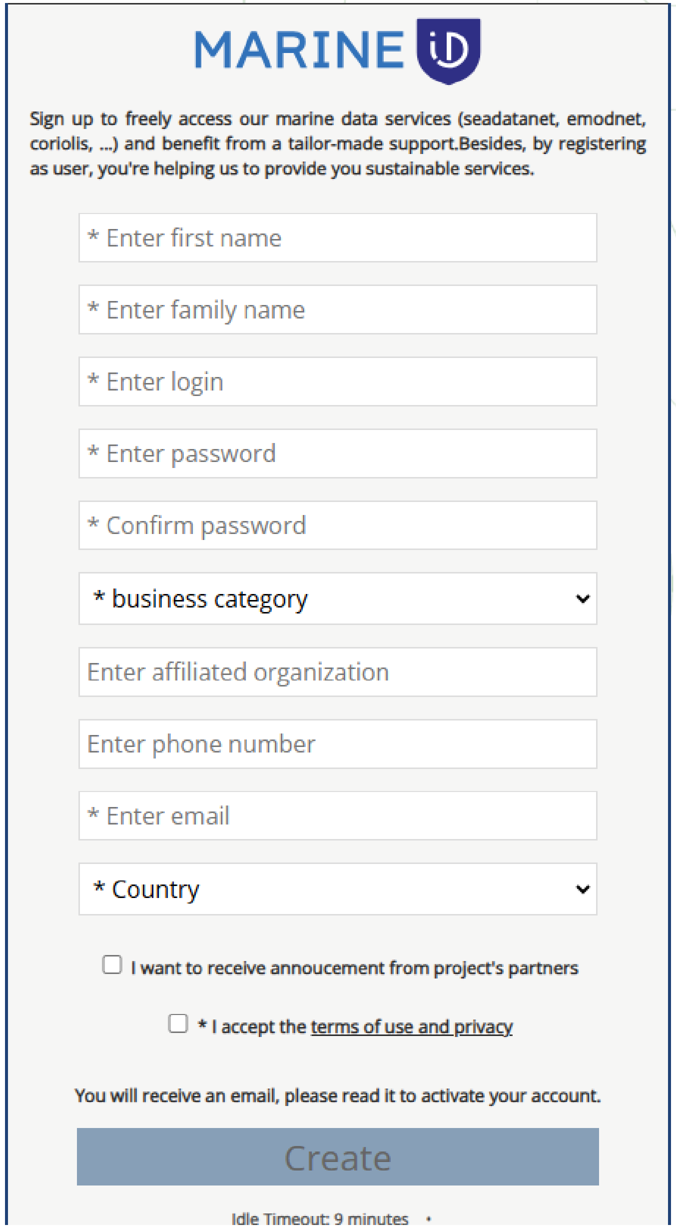
File.xml

CSR Publication Flow - Cruise Summary Reports

Exercise

MARINE-id Creation

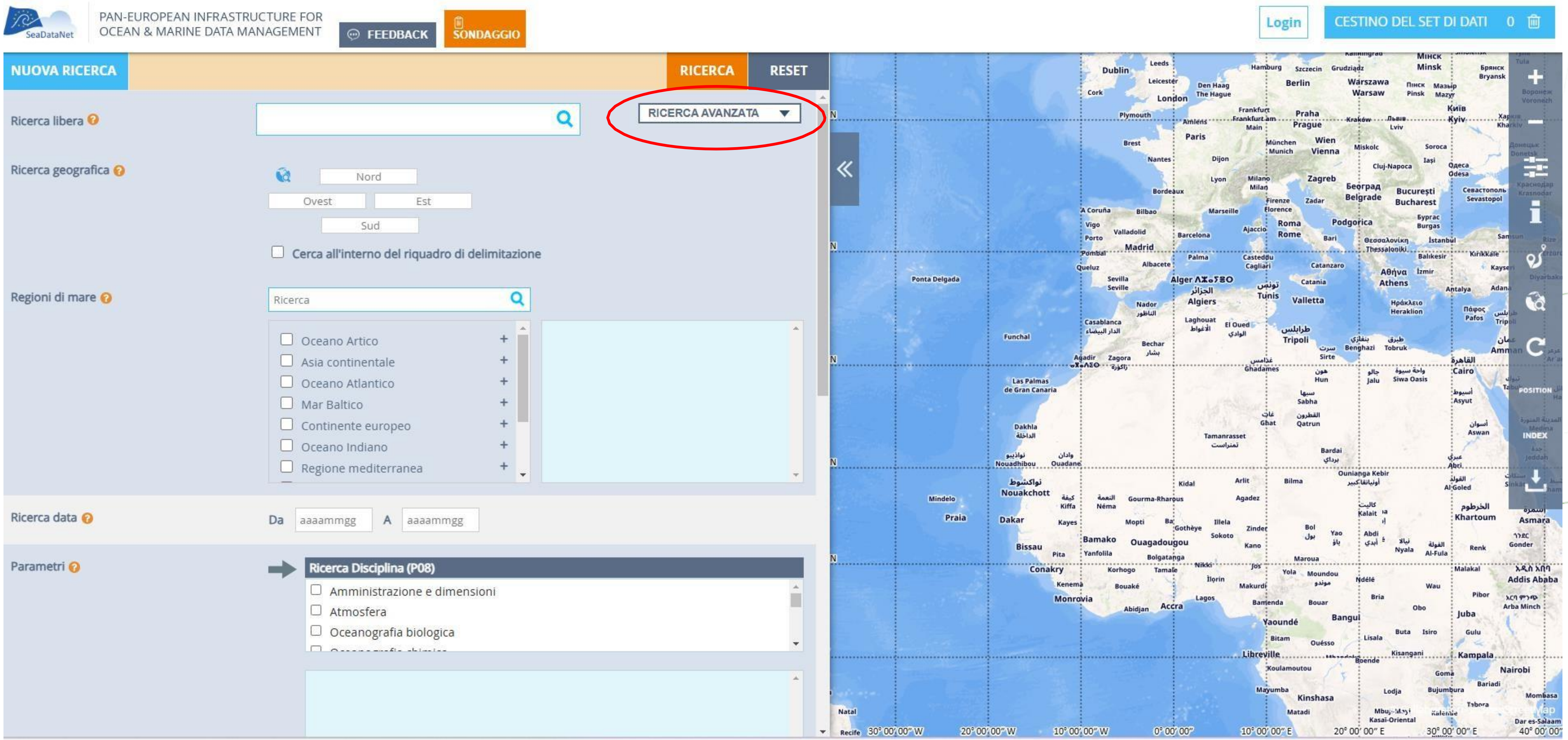
https://www.marine-id.org/



Exercise

https://cdi.seadatanet.org/search

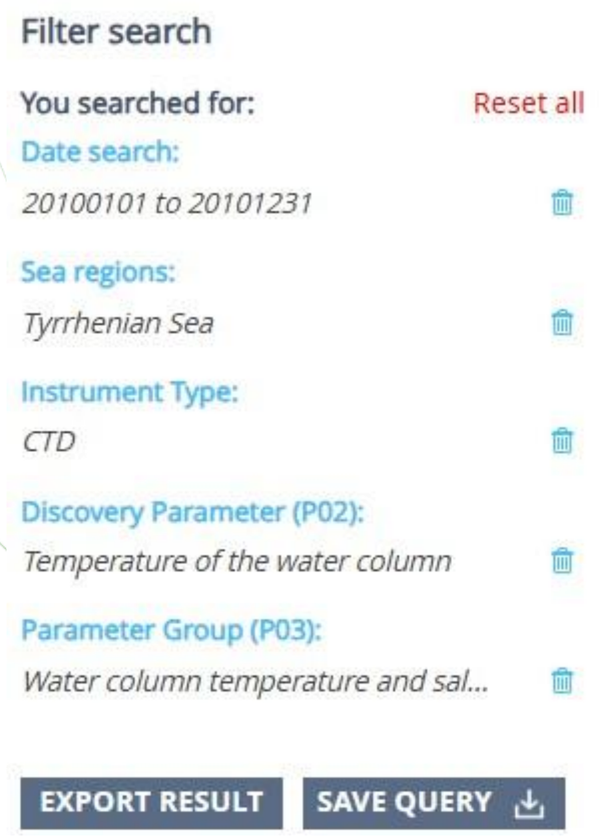
ITINERIS



https://cdi.seadatanet.org/search

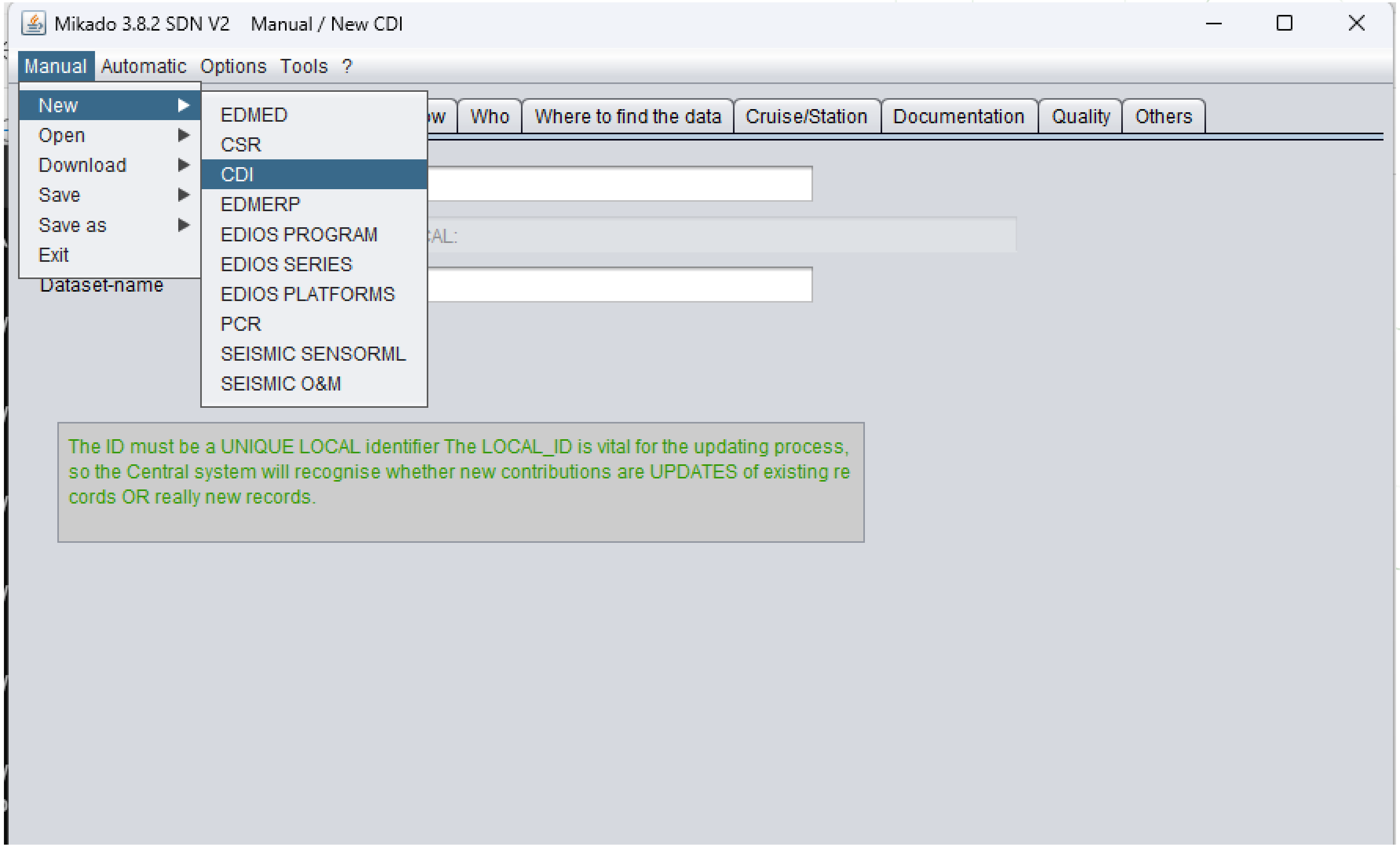
How many datasets are there ?

Temperature of the water column
Tyrrhenian Sea
CTD
2010



Exercise

Creating a CDI - Common Data Index



Exercise

NEMO file conversion software

Files in different ASCII

File in SeaDataNet format

NEMO file conversion software

ITINERIS

ODV standard format

```
//
//<sdn_reference xlink:href="http://seadata.bsh.de/cgi-csr/XML/xmlDownload_V2.pl?edmo=486&identifier=8100070" xlink:role="isObservedBy" xlink:type="SDN:L23::CSR"/>
//<sdn_reference xlink:href="http://vocab.nerc.ac.uk/collection/C17/current/35AY" xlink:role="isObservedBy" xlink:type="SDN:L23::NVS2CON"/>
//<sdn_reference xlink:href="http://seadatanet.maris2.nl/v_cdi_v3/print_xml.asp?edmo=486&identifier=FI35199810007_00001_D09" xlink:role="isDescribedBy" xlink:type="SDN:L23::CDI"
sdn:scope="486:FI35199810007_00001_D09"/>
//SDN_parameter_mapping
//<subject>SDN:LOCAL:time_ISO8601</subject><object>SDN:P01::DTUT8601</object><units>SDN:P06::TISO</units>
//<subject>SDN:LOCAL:Depth</subject><object>SDN:P01::ADEPZZ01</object><units>SDN:P06::ULAA</units>
//<subject>SDN:LOCAL:Sea Level</subject><object>SDN:P01::ASLVZZ01</object><units>SDN:P06::ULAA</units>
//<subject>SDN:LOCAL:Temperature</subject><object>SDN:P01::TEMPPR01</object><units>SDN:P06::UPAA</units>
//<subject>SDN:LOCAL:Pressure</subject><object>SDN:P01::PRESPR01</object><units>SDN:P06::UPDB</units>
//
Cruise  Station Type    yyyy-mm-ddThh:mm:ss.sss Longitude [degrees_east]        Latitude [degrees_north]        LOCAL_CDI_ID    EDMO_code       Bot. Depth [m]  time_ISO8601 [yyyy-mm-ddThh:mm:ss.sss]
        QV:SEADATANET   Depth [m]       QV:SEADATANET   Sea Level [Metres]      QV:SEADATANET   Temperature [Degrees Celsius]   QV:SEADATANET   Pressure [Decibars]     QV:SEADATANET
SUVA 1  1       *       1998-07-21T09:30:00.000 +178.453500     -18.142500      FI35199810007_00001_D09 486             1998-07-21T09:30:00.000 1       16.5    1       0.644 1       22.87   1
15.654  1
                                                                        1998-07-21T09:40:00.000 1       16.5    1       0.618 1       22.96   1       15.615 1
                                                                        1998-07-21T09:50:00.000 1       16.5    1       0.594 1       22.96   1       15.579 1
                                                                        1998-07-21T10:00:00.000 1       16.5    1       0.577 1       23.00   1       15.553 1
                                                                        1998-07-21T10:10:00.000 1       16.5    1       0.555 1       23.08   1       15.521 1
```

External links
Semantic description of parameters
Data Section

NEMO file conversion software

Input ASCII files can be:

– Vertical profiles: the reference parameter is DEPTH or PRESSURE, increasing, same position (lat , lon) for the whole profile

– Time series: the reference parameter is increasing DATE-TIME, same position (lat , lon) for all time series

– Trajectories: the reference parameter is PRESSURE DEPTH, position change on each data line

NEMO file conversion software

• NEMO can read almost all ASCII formats and translate them into SeaDataNet formats

• NEMO users describe the format of the input files ->NEMO is able to find the necessary information for SeaDataNet formats

• Mandatory prerequisite: the set of input files must be homogeneous
– be located in the same position: same line in the file, same position on the line or same column if in CSV format
– be in the same format

NEMO file conversion software

Files that cannot be converted by NEMO

• Binary format: like EXCEL, WORD …

– The file must first be reformatted into a text file

• Files that do not meet NEMO prerequisites

– be located in the same position: same line in the file, same position on the line or same column if in CSV format

– be in the same format

• Files that are not:

– Vertical profiles (with depth or pressure as vertical reference)

– Time series (with time as reference)

– Trajectories (with latitude, longitude and time as reference

Running NEMO software

- **Download NEMO:** https://www.seadatanet.org/Software/NEMO/Download-NEMO-2.1.1

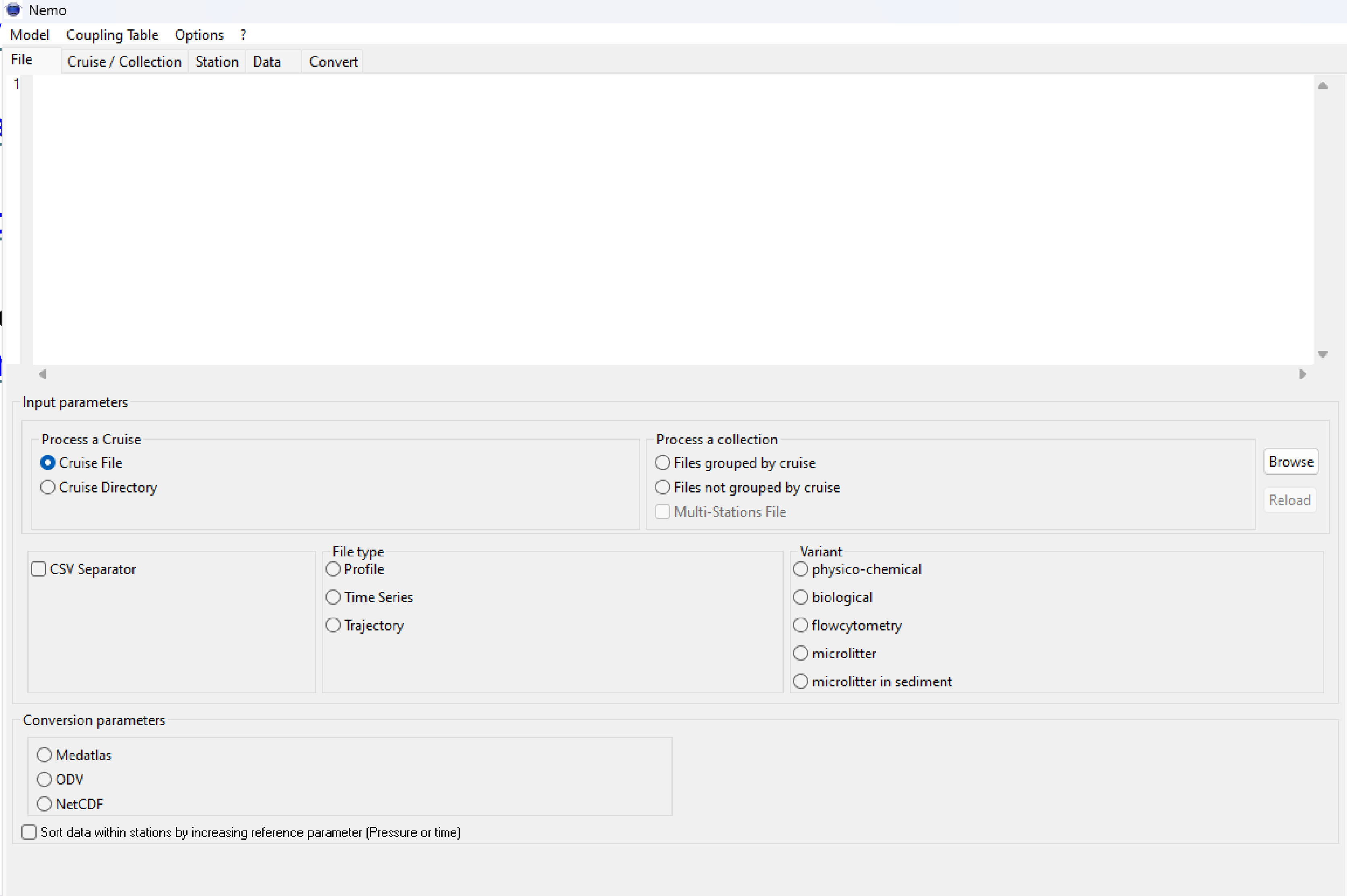
- **Install NEMO:** https://www.seadatanet.org/content/download/7899/file/sdn_Nemo_UserManual.pdf

- **Download example file:** https://www.seadatanet.org/content/download/695/file/NEMO_examples.zip

- **Create an ODV file starting from the Example file available on the site:** https://www.seadatanet.org/content/download/695/file/NEMO_examples.zip\examples\time_series\input data\TSU01001.txt

Running NEMO software

- **Download NEMO:** https://www
- **Install NEMO:** https://www.sea
- **Download example file:** https:
- **Create an ODV file starting fr**
  https://www.seadatanet.org/co
  \input data\TSU01001.txt



Exercise

OCTOPUS file validation software

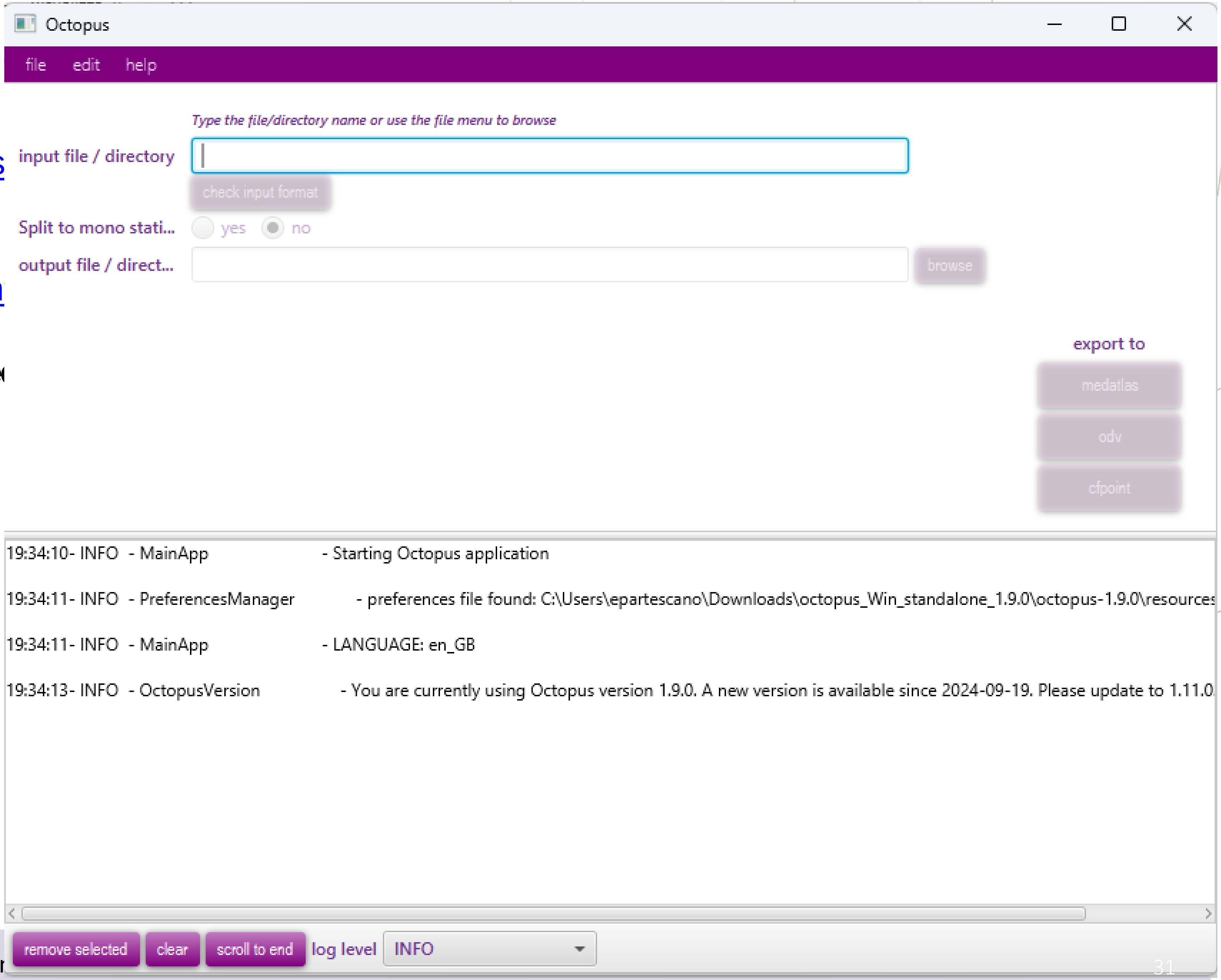
- **Download OCTOPUS:** https://www.seadatanet.org/Software/OCTOPUS/Download-Octopus-1.11.0
- **Install OCTOPUS:** https://www.seadatanet.org/content/download/698/file/SDN_OCTOPUS_UserManual.pdf
- **Validate the ODV file created with NEMO**

OCTOPUS file validati

- **Download OCTOPUS:** https

- **Install OCTOPUS:** https://www.seadatanet.org/con

- **Validate the ODV file create**



ITINERIS

THANKS!

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”

Finanziato dall'Unione europea NextGenerationEU
Ministero dell’Università e della Ricerca
Italiadomani