



SeaDataNet

The SeaDataNet infrastructure
contribution to marine biological
studies

Leda Pecci – ENEA (Italy), Simona Simoncelli – INGV (Italy)

EGU Conference, Vienna, Austria, 8-13April 2018

sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataNet is a comprehensive Pan-European semi-distributed marine data infrastructure, providing access to multidisciplinary, integrated marine and ocean data and products of standardised quality, services, as well as an overview of marine organisations, research and monitoring activities related to the sea.

Physical oceanography

Chemistry

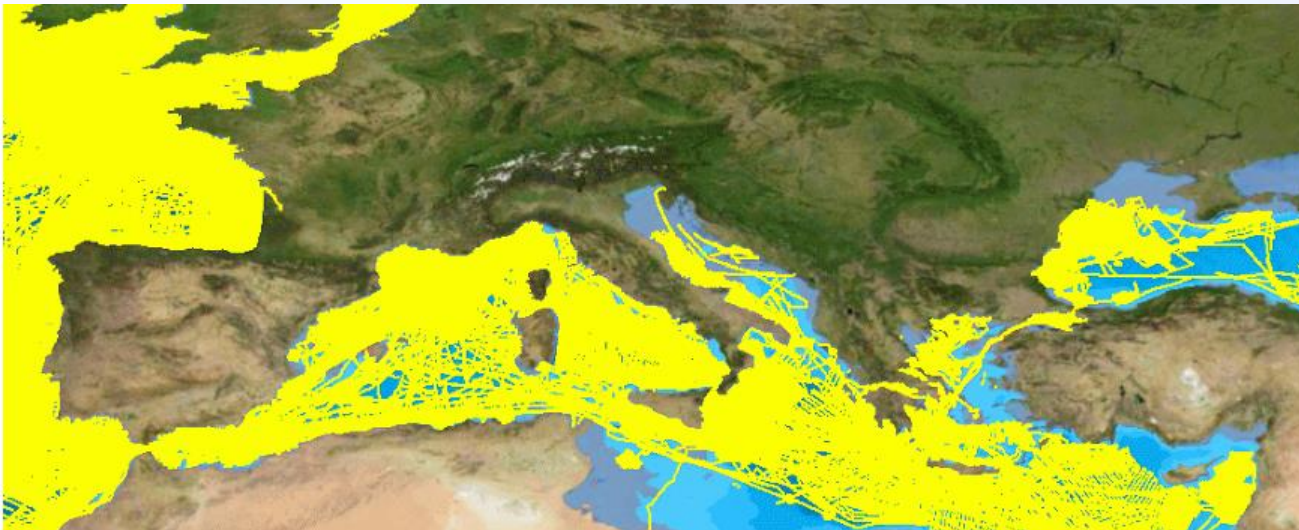
Geophysics

Marine Geology

Biology

Bathymetry

Meteorology



Selection of data along tracks

sdn-userdesk@seadatanet.org – www.seadatanet.org



EGU Conference, Vienna, Austria, 8-13 April 2018

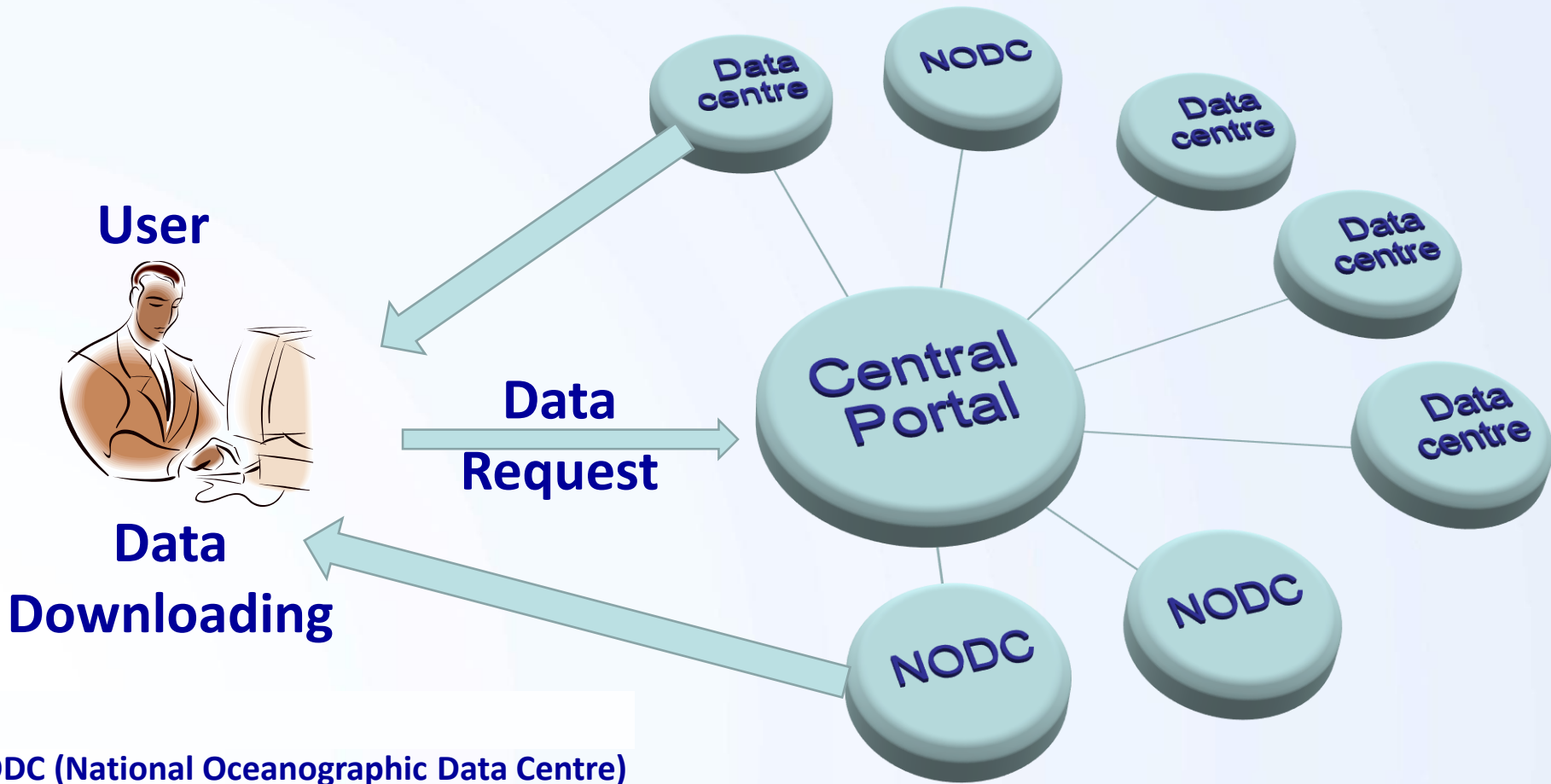
- **Origins**
- **Architecture**
- **Data services**
- **Metadata services**
- **Data products**
- **Vocabulary services**
- **Software tools**
- **Main on going activity**
- **The challenges for the marine biological studies**
- **How SeaDataNet supports marine biological studies**
- **The highlights**
- **SeaDataNet standards and tools in other EU projects**
- **IMDIS conference**



SeaDataNet started in 1990s and has been developing over the years thanks to EU funded projects:

90	Metadata directories Medar/MedAtlas
2002-2005	Sea-Search (FP5)
2006-2011	SeaDataNet (FP6)
2011-2015	SeaDataNet II (FP7)
2016-2020	SeaDataCloud (H2020)

→ a single access for a wide range of data of different types





Discovery, visualization, access and download








PAN-EUROPEAN INFRASTRUCTURE FOR
OCEAN & MARINE DATA MANAGEMENT

SEADATANET COMMON DATA INDEX (CDI) V3

TOOLS


  

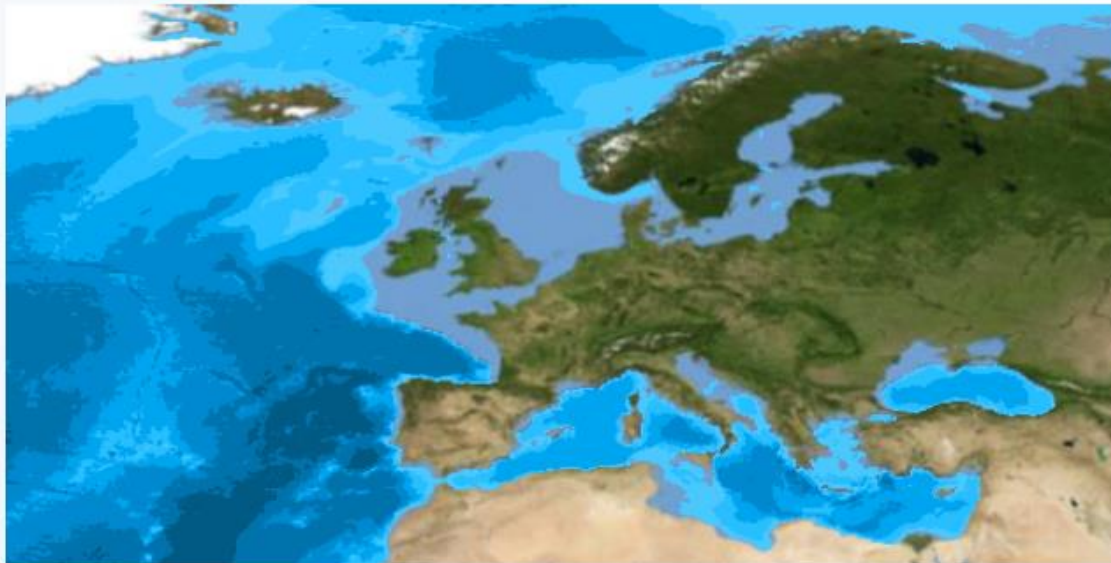

  

ENLARGE **HELP**

POSITION **INDEX**

 Datasets **0**

BASKET **RESET**



LAYER CONTROL

Grid Lines

Regional sea

Regional sea labels

Main sea

Main sea labels

Bathymetry

Blue Marble

World

LAT/LONG

Upper-left Lower-right

SEARCH

Free search

SEARCH **CLEAR** **?**

<http://www.seadatanet.org>

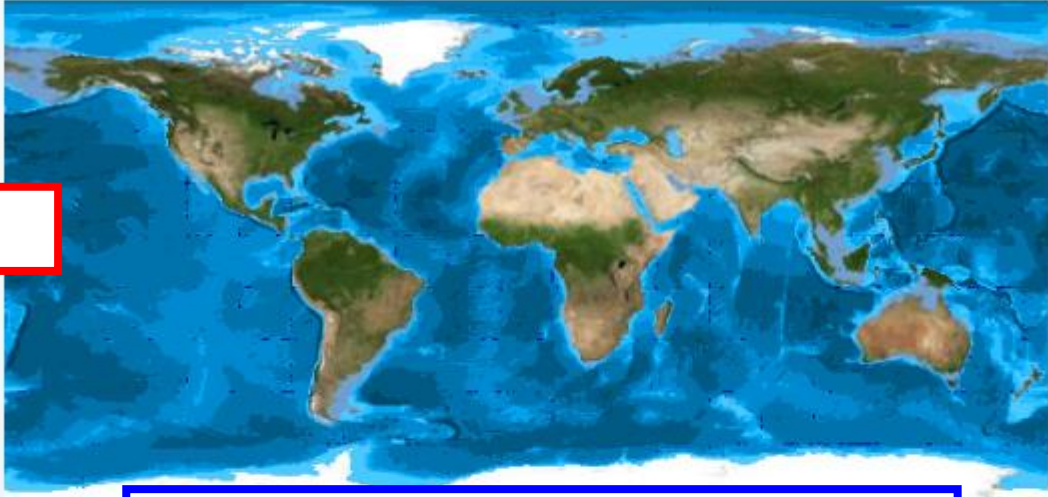
TOOLS



Map tools

POSITION INDEX

Datasets 0
BASKET RESET



Data discovery interface

LAYER CONTROL

- Grid Lines
- Regional sea labels
- Main sea labels
- Bathymetry
- Blue Marble
- World

LAT/LONG

Upper-left Lower-right

SEARCH

Free search

Disciplines - Topics

Discipline

Cruise

Parameter

Country

Instrument

Platform

Acoustic noise in the water column
Air pressure
Air temperature

.....



SDN provides useful information to know which organisations operate in marine environment, what they do and where → chances for future collaborations in research or in the private sector





EGU Conference, Vienna, Austria, 8-13 April 2018

Metadata Services

EDMO Organisations

European Directory of Marine Organisations (EDMO)

Organisation details

Details: PRIMER - CENTRE DE BRITCHE, 2020, France, 102 02 81 22 45 48, 102 02 81 22 45 48.

Organisation profile: The Centre PRIMER of Britche is the main recipient of the ship PRIMER... 100 vessels... marine engineering technology... 100 vessels... PRIMER (CO) (SUMER) Scientific Information System for the SEA (IPRIMCO) (1.1.1.1) (1.1.1.1)

COMPLIANT

ISO

INSPIRE

Platform Name	Cruise Name	From	To
ALBA	ALBA_01	07.08.2015	28.08.2015
ALBA	ALBA_02	13.10.2015	08.11.2015
ALBA	ALBA_03	28.08.2015	18.10.2015
ALBA	ALBA_04	01.08.2015	09.07.2015
ALBA	ALBA_05	08.05.2015	29.05.2015
ALBA	ALBA_06	28.04.2015	30.05.2015
ALBA	ALBA_07	15.03.2015	17.04.2015
ALBA	ALBA_08	04.03.2015	16.03.2015
ALBA	ALBA_09	21.02.2015	16.03.2015
ALBA	ALBA_10	05.02.2015	16.02.2015

CSR Research cruises

EDMERP Projects

European Directory of Marine Environmental Research Projects (EDMERP)

Project Name	Start Date	End Date	Status
1001	2015-01-01	2015-12-31	Completed
1002	2015-01-01	2015-12-31	Completed
1003	2015-01-01	2015-12-31	Completed
1004	2015-01-01	2015-12-31	Completed
1005	2015-01-01	2015-12-31	Completed
1006	2015-01-01	2015-12-31	Completed
1007	2015-01-01	2015-12-31	Completed
1008	2015-01-01	2015-12-31	Completed
1009	2015-01-01	2015-12-31	Completed
1010	2015-01-01	2015-12-31	Completed
1011	2015-01-01	2015-12-31	Completed
1012	2015-01-01	2015-12-31	Completed
1013	2015-01-01	2015-12-31	Completed
1014	2015-01-01	2015-12-31	Completed
1015	2015-01-01	2015-12-31	Completed
1016	2015-01-01	2015-12-31	Completed
1017	2015-01-01	2015-12-31	Completed
1018	2015-01-01	2015-12-31	Completed
1019	2015-01-01	2015-12-31	Completed
1020	2015-01-01	2015-12-31	Completed

European Directory of Marine Observing Systems (EDIOS)

System Name	Start Date	End Date	Status
1001	2015-01-01	2015-12-31	Completed
1002	2015-01-01	2015-12-31	Completed
1003	2015-01-01	2015-12-31	Completed
1004	2015-01-01	2015-12-31	Completed
1005	2015-01-01	2015-12-31	Completed
1006	2015-01-01	2015-12-31	Completed
1007	2015-01-01	2015-12-31	Completed
1008	2015-01-01	2015-12-31	Completed
1009	2015-01-01	2015-12-31	Completed
1010	2015-01-01	2015-12-31	Completed
1011	2015-01-01	2015-12-31	Completed
1012	2015-01-01	2015-12-31	Completed
1013	2015-01-01	2015-12-31	Completed
1014	2015-01-01	2015-12-31	Completed
1015	2015-01-01	2015-12-31	Completed
1016	2015-01-01	2015-12-31	Completed
1017	2015-01-01	2015-12-31	Completed
1018	2015-01-01	2015-12-31	Completed
1019	2015-01-01	2015-12-31	Completed
1020	2015-01-01	2015-12-31	Completed

EDIOS Observing programmes

European Directory of Marine Data Index (CDI)

Data Set Name	Start Date	End Date	Status
1001	2015-01-01	2015-12-31	Completed
1002	2015-01-01	2015-12-31	Completed
1003	2015-01-01	2015-12-31	Completed
1004	2015-01-01	2015-12-31	Completed
1005	2015-01-01	2015-12-31	Completed
1006	2015-01-01	2015-12-31	Completed
1007	2015-01-01	2015-12-31	Completed
1008	2015-01-01	2015-12-31	Completed
1009	2015-01-01	2015-12-31	Completed
1010	2015-01-01	2015-12-31	Completed
1011	2015-01-01	2015-12-31	Completed
1012	2015-01-01	2015-12-31	Completed
1013	2015-01-01	2015-12-31	Completed
1014	2015-01-01	2015-12-31	Completed
1015	2015-01-01	2015-12-31	Completed
1016	2015-01-01	2015-12-31	Completed
1017	2015-01-01	2015-12-31	Completed
1018	2015-01-01	2015-12-31	Completed
1019	2015-01-01	2015-12-31	Completed
1020	2015-01-01	2015-12-31	Completed

CDI Data index

European Directory of Marine Environmental Data (EDMED)

Data Set Name	Start Date	End Date	Status
1001	2015-01-01	2015-12-31	Completed
1002	2015-01-01	2015-12-31	Completed
1003	2015-01-01	2015-12-31	Completed
1004	2015-01-01	2015-12-31	Completed
1005	2015-01-01	2015-12-31	Completed
1006	2015-01-01	2015-12-31	Completed
1007	2015-01-01	2015-12-31	Completed
1008	2015-01-01	2015-12-31	Completed
1009	2015-01-01	2015-12-31	Completed
1010	2015-01-01	2015-12-31	Completed
1011	2015-01-01	2015-12-31	Completed
1012	2015-01-01	2015-12-31	Completed
1013	2015-01-01	2015-12-31	Completed
1014	2015-01-01	2015-12-31	Completed
1015	2015-01-01	2015-12-31	Completed
1016	2015-01-01	2015-12-31	Completed
1017	2015-01-01	2015-12-31	Completed
1018	2015-01-01	2015-12-31	Completed
1019	2015-01-01	2015-12-31	Completed
1020	2015-01-01	2015-12-31	Completed

EDMED Data sets

SERVICES

ACCESS PRODUCTS

Download the SeaDataNet aggregated datasets : ODV collections of all SeaDataNet measurements of temperature and salinity by sea basins, or the SeaDataNet climatologies : regional gridded field products based on the aggregated datasets



SEARCH DATA



BROWSE DATA



DOWNLOAD SOFTWARE



LOOK-UP VOCABULARIES



ACCESS PRODUCTS



ACCESS METADATA CATALOGUES



HOW TO CONTRIBUTE?

PRODUCTS

SeaDataNet provides aggregated datasets (ODV collections of all SeaDataNet measurements of temperature and salinity by sea basins) and climatologies (regional gridded field products based on the aggregated datasets) for all the European sea basins.

[Read more](#)

Aggregated datasets

Climatologies

Documentation

Catalogue

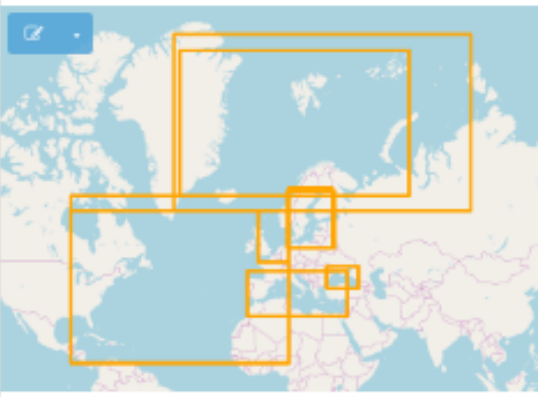
Historical data
collections of all T
and S measurements
within SeaDataNet
covering all EU sea
basins (DOI)

gridded
climatologies
(DOI)

reports describing
products'
characteristics and
quality (DOI)

Product Catalogue

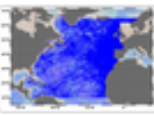
Search ... Q



Reset filters

CATALOG MY DOWNLOADS
Results 1 to 17 on 17 : 20 by page -
Sort by : Popularity -

NORTH ATLANTIC OCEAN - TEMPERATURE AND SALINITY OBSERVATION COLLECTION V1.1

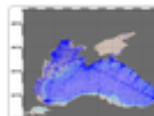


SeaDataNet Temperature and Salinity historical data collection, including revised quality flags after quality control with ODV. For data access please register at <http://www.marine-id.org>. The dataset format is ODV binary collections. You can read, analyse and...

Source: Seadatanet

🔍
🔄
⬇️

BLACK SEA - TEMPERATURE AND SALINITY OBSERVATION COLLECTION V2

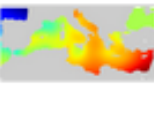


The Black Sea historical dataset includes all open access temperature and salinity in situ data from the Black Sea and Sea of Azov for period 1868-2014. The data were retrieved from the SeaDataNet infrastructure in the mid of 2015. Data quality has been analysed and checked...

Source: Seadatanet

🔍
🔄
⬇️

MEDITERRANEAN SEA - TEMPERATURE AND SALINITY CLIMATOLOGY V1.1

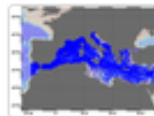


Mediterranean Sea Climatology computed from the SeaDataNet V1.1 aggregated dataset. The version used for the DIVA software is the 4.6.9. The period covers 1900-2013. For data access please register at <http://www.marine-id.org> ...

Source: Seadatanet

🔍
🔄
⬇️

MEDITERRANEAN SEA - TEMPERATURE AND SALINITY OBSERVATION COLLECTION V1.1



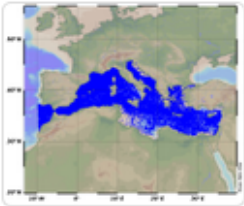
SeaDataNet Temperature and Salinity historical data collection contains all open access temperature and salinity in situ data retrieved from SeaDataNet infrastructure at the end of 2013. The data span between -9.25 and 37 degrees of longitude, thus including an Atlantic ...

Source: Seadatanet

🔍
🔄
⬇️




Product Catalogue

MEDITERRANEAN SEA - TEMPERATURE AND SALINITY OBSERVATION COLLECTION V2



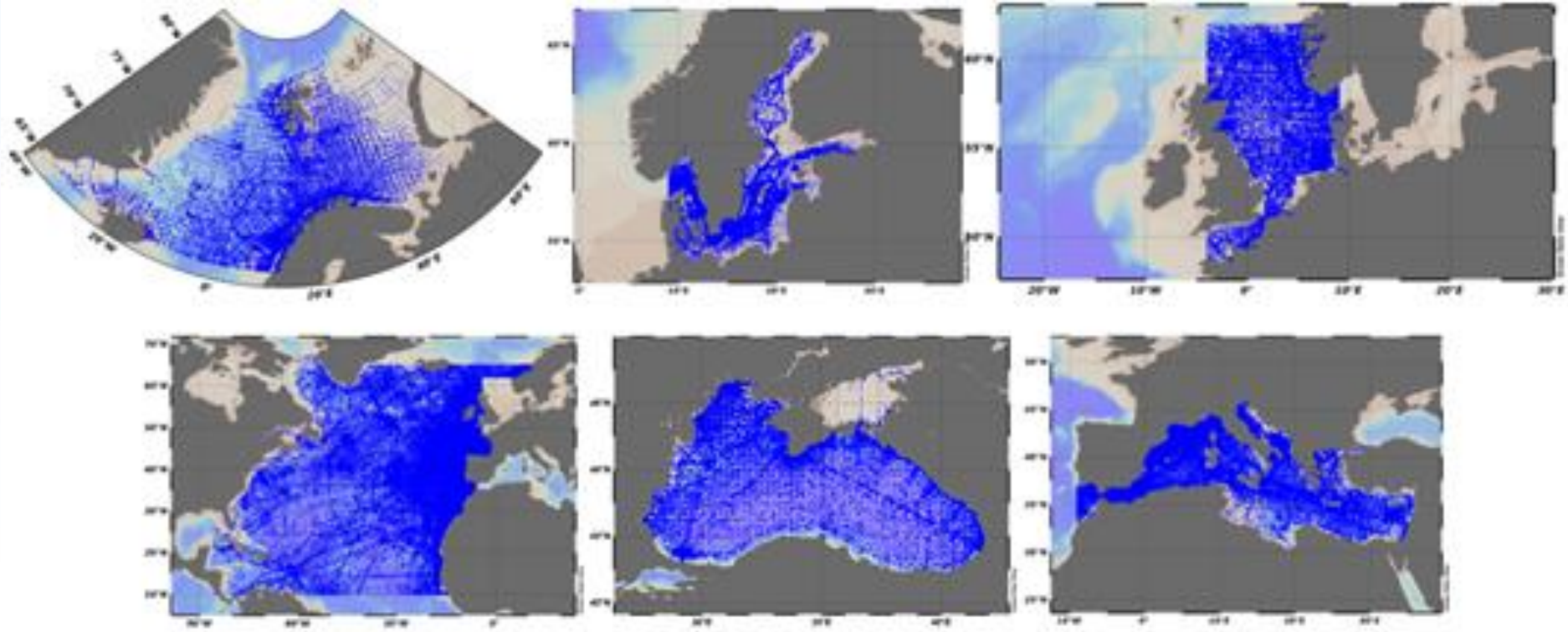
SeaDataNet Temperature and Salinity historical data collection for the Mediterranean Sea contains all open access temperature and salinity in situ data retrieved from SeaDataNet infrastructure at the end of 2014. The data span between -9.25 and 37 ...

Source: Seadatanet

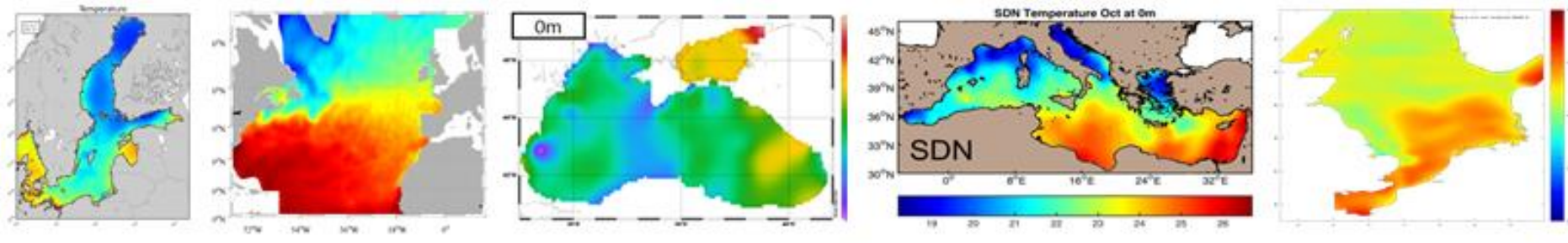
  

↑
↑
↑
Download
Viewing tools **Ocean Browser**
and **Oceanotron**
Metadata record (DOI)

Availability of aggregated dataset 1900-2014




OceanBrowser



SDN provides temperature and salinity climatologies, based on the aggregated datasets, for all the European sea basins produced using DIVA software

Controlled vocabularies used in all metadatabases and data formats (interoperability) organised with international governance, user interfaces and web services

BODC WEBSERVICES V2 (LIBRARIES) CL12

Library	Thesaurus	Title	Alt Title	Version	Members	Modified
C16		SeaDataNet sea areas	SDN sea areas	9	127	11/7/2012 2:00:06 AM
C17		ICES Platform Codes	ICES Platforms	709	5571	3/13/2018 2:00:03 AM
C19		SeaVoX salt and fresh water body gazetteer	SeaVoX water bodies	17	263	2/21/2018 2:00:03 AM
C32		International Standards Organisation countries	ISO countries	7	251	1/14/2016 2:00:02 AM
C34		Activity purpose categories	Purpose categories	4	22	8/27/2011 3:00:05 AM
C35		European Nature Information System Level 3 Habitats	EUNIS3 Habitats	1	56	2/19/2010 2:01:37 AM
C36		Monitoring activity legislative drivers	Monitoring drivers	8	91	6/21/2017 3:00:03 AM
C37		Ten-degree Marsden Squares	Marsden-10	3	612	1/9/2009 2:00:05 AM
C38		SeaDataNet Ports Gazetteer	SeaDataNet Ports	61	4912	12/5/2017 2:00:02 AM
C39		World Meteorological Organisation sea	WMO sea states	1	10	9/30/2009 3:01:08 AM

Software Tools

To create metadata CDI,
CSR, EDMO, EDIOS,
EDMERP

To convert data file

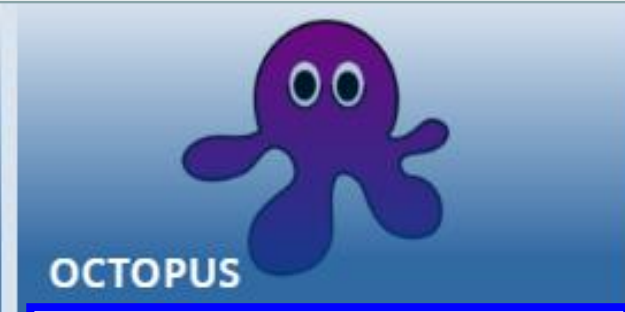
To convert to the
internal formats



MIKADO



NEMO



OCTOPUS

To present and analyse data

To make available data in
data centres



ODV



DIVA



DOWNLOAD MANAGER

To generate the spatial
objects for CDI files



ENDSANDBENDS



SeaDataCloud project activities

This project has received funding from the European Union's Horizon 2020 Research Infrastructures programme, under the grant agreement No 730960".

Upgrading and innovating existing services for users and data providers:

- Advancing the CDI service by adopting cloud
- Introducing 'Linked Data principle' to catalogues for semantic web
- Adding transformation facility for INSPIRE compliance



Developing new services for users and data providers:

- SWE Ingestion service for Real Time data streams
- Brokerage service for mutual exchange with international data networks
- Virtual Research Environment (VRE) with advanced services: subsetting, online ODV, DIVA, and visualisation

Challenges for biological marine data



EGU Conference, Vienna, Austria, 8-13 April 2018

One of the 17 objectives that the 193 member states of the United Nations adopted in the 2030 Agenda for Sustainable Development is **“To conserve and sustainably use the world’s oceans, seas and marine resources”**.



United Nations Development Programme - UNDP

Managing this kind of data requires to face different issues:

- Marine observing systems are very fragmented
- Data is taken from very heterogeneous resources



How SeaDataNet supports marine biological studies

SeaDataNet and biological data



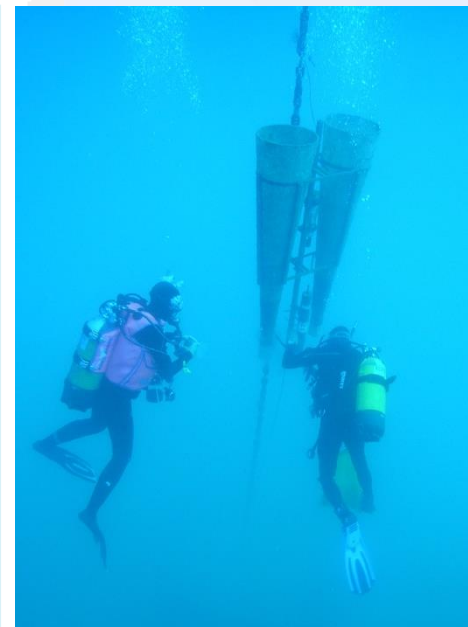
More than 350.000 data sets

The SDN formats for data and metadata are interoperable with biological data presents to initiatives like (Eur)OBIS and GBIF (Global Biodiversity International Facility).

SeaDataNet and biological data

Some kind of biological parameter groups available

PER PARAMETER GROUP + -	
PER PARAMETER GROUP	DATASETS
Pigments	296684
Carbon, nitrogen and phosphorus	185975
Nutrients	183716
Dissolved gases	174799
Water column temperature and salinity	171728
Administration and dimensions	103791
Optical properties	54944
Carbonate system	33815
Suspended particulate material	31252
Other physical oceanographic measurements	23275
Rock and sediment biota	18947
Pollution	13808
Birds, mammals and reptiles	12151
Metal and metalloid concentrations	12070
Biota composition	11911



Credit: A. Bordone (ENEA)



Credit: C. Papucci

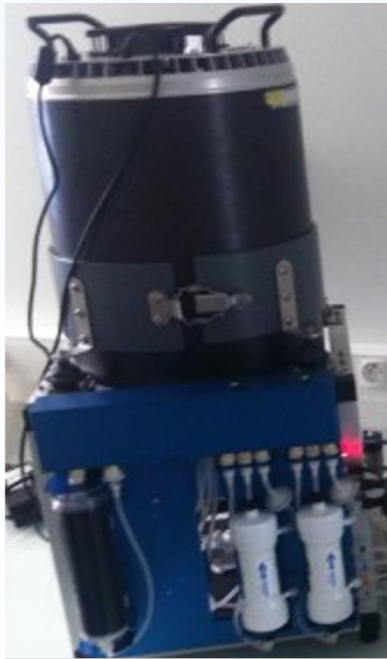
SeaDataNet and biological data



EGU Conference, Vienna, Austria, 8-13 April 2018

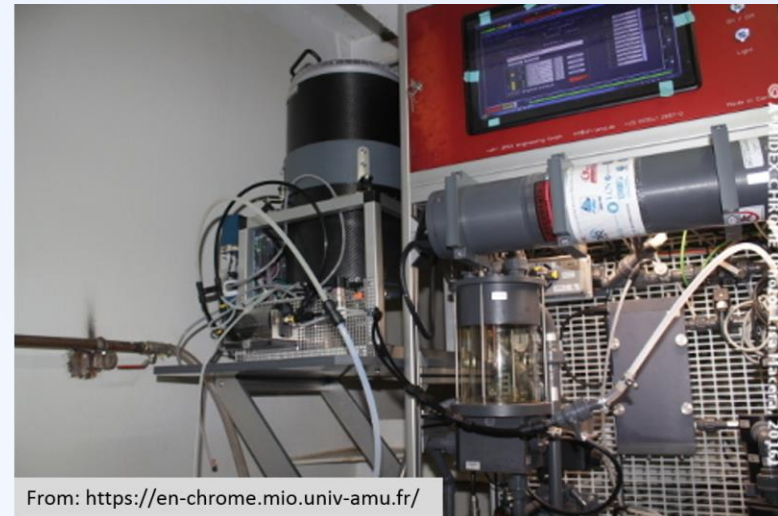
New biological data management development

SDN is increasing the different types of biological manageable data by adding a new instrument



From: <https://en-chrome.mio.univ-amu.fr/>

Flow Cytometry data



From: <https://en-chrome.mio.univ-amu.fr/>

New terms of the common vocabularies were set-up, according to the users and data producers needs, the list “SeaDataCloud Flow Cytometry Standardised Cluster Names (F02)” is now available

The highlights

- Easy to use for end-users and data providers
- 110 Data centres providing data and metadata
- More than 2.100.000 ocean data sets available
- Vocabulary governance and services
- Standard QA-QC procedures, method for checking possible duplicates
- Standards and interoperability solutions widely recognized by the international community, beyond European borders.

SeaDataNet is present in the ODIP project and it collaborates with the existing global infrastructures such as the IOC-IODE – Ocean Data Portal (ODP), GEOSS and the International Council for Science World Data System (ICSUWDS).



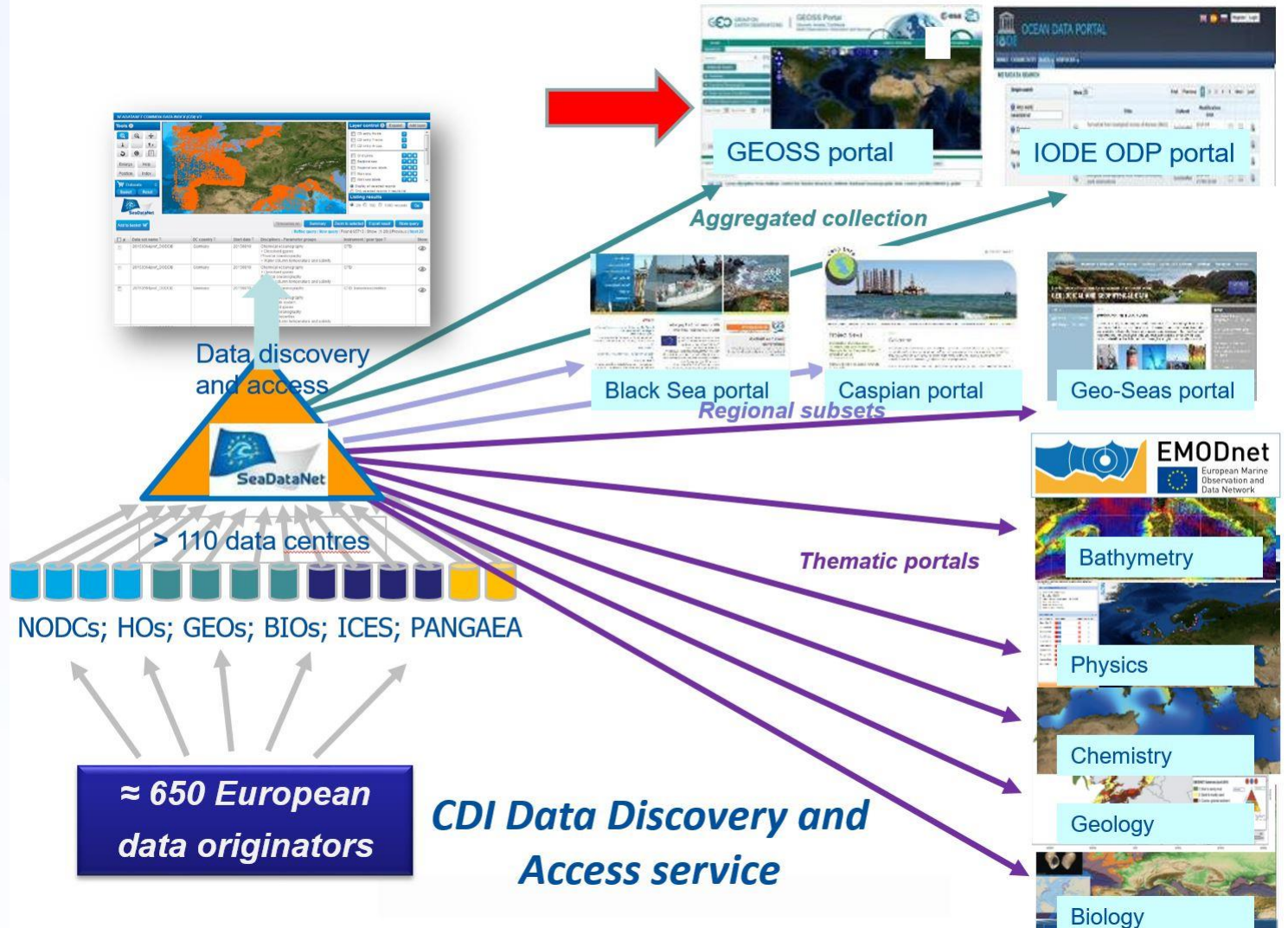
Australian Government



Cooperation and involvement

- **Copernicus Marine Environmental Monitoring Services (CMEMS):** providing long-term archives and standards
- **Marine Strategy Framework Directive (MSFD):** providing infrastructure, standards and data collections for several indicators
- **Large ocean monitoring systems (EuroGOOS, AtlantOS, Euro-ARGO, JERICO-Next, EuroFleets, ..):** providing standards and validation + long-term archiving services
- **Ocean Data Interoperability Platform (ODIP):** exploring and demonstrating common standards and interoperability with leading data management infrastructures in USA and Australia
- **GEOSS - EuroGEOSS:** feeding GEOSS portal with SeaDataNet in-situ data collections from large community of European data holders (> 100 data centres; >600 data originators)
- **European Open Science Cloud (EOSC):** shaping the pilot Blue Cloud
- **European Marine Observation and Data Network (EMODnet):** driving and serving many EMODnet thematic portals

CDI service driving and serving many portals and communities



Barcelona, 5-7 November, 2018

imdis.seadatanet.org

Organised in the frame of SeaDataCloud project funded by the EU Horizon 2020 Research Infrastructures programme

4 plenary sessions :

1. Data services and tools in ocean science
2. Technical developments for marine information and data management
3. Marine environmental infrastructures for observation data (data management and access)
4. Data products, information and knowledge

Submit your abstract before **30th April 2018**