



# **SeaDataNet – pan-European infrastructure for ocean and marine data management and its relation to EMODNet and GEOSS**

**By**

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**Istanbul – Turkey, 16 November 2011, GEO VIII**



**Supported by the European Commission**





**EU FP5**  
**EU FP6**  
**EU FP7**

**2002 - 2005**  
**2006 - 2011**  
**2011 - 2015**

SeaDataNet has set up and is operating a pan-European infrastructure for managing marine and ocean data by connecting National Oceanographic Data Centres (NODC's) and oceanographic data focal points from 35 coastal states in Europe

# Portal with harmonised services, data products and tools for users and data centres



**SeaDataNet**

**Pan-European infrastructure for Ocean & Marine Data Management**



[Home](#) [Overview](#) [Metadata](#) [Data Access](#) [Products](#) [Standards & Software](#) [Education](#) [Meetings](#) [Publications](#) [Partners](#) [Links](#) [Extranet](#)

SeaDataNet

**SeaDataNet**

SeaDataNet has federated open digital repositories to manage, access and share data, information, products and knowledge originating from oceanographic fleets, new automatic observation systems and space sensors.

By use of standards for communication and new developments in information technology, in-situ and satellite marine data platforms are providing metadata, data and products as a unique virtual data centre.



The SeaDataNet partnership is assuring the archival and preservation of data for their re-use for new research, retention of unique observational data which is impossible to re-create; enhance existing data available for research projects as well for marine environment management, education, history and other uses

**Tools**

- Site map
- Contact
- All the news
- Links
- Print

**Search**

Advanced search

**News**

» Seadatanet Newsletter n°6 - March 2011

**Content:**

- Foreword
- SeaDataNet - present status and new features
- Geo-Seas project, extending SeaDataNet to marine geology and geophysics
- EMODNet Hydrography and Seabed mapping project
- EMODNet Chemistry project, underpinning the Marine Strategy Framework Directive implementation
- Upgrade Black Sea SCENE project - implementing SeaDataNet in the Black Sea countries
- New versions of SeaDataNet vocabularies and software tools
- SeaDataNet tools - NEMO & Mikado
- Vocabularies in SeaDataNet
- On-line visualization of gridded dataset in SeaDataNet using OceanBrowser
- ODV latest developments

<http://www.seadatanet.org>



# Pan-European Directory Services

The SeaDataNet portal provides overviews of marine organisations in Europe and their engagement in research, scientific cruises, monitoring and data management for European waters and global oceans:

- **EDMO**: European Directory of Marine Organisations (>2200 entries)
- **EDMED**: European Directory of Marine Environmental Data sets (>3000 entries)
- **EDMERP**: European Directory of Marine Environmental Research Projects (>2500 entries)
- **CSR**: Cruise Summary Reports (>31500 entries)
- **EDIOS**: European Directory of Ocean-observing Systems (>270 programmes for the UK alone and many underway for other European countries)

These Directories are maintained by NODCs for their country and published at pan-European level

# Pan-European Directory Services

All these Directories have been harmonised and mutually tuned in format, syntax and semantics (common vocabularies), a common XML editor (MIKADO), online CMS and online user interfaces.

**EDMERP**

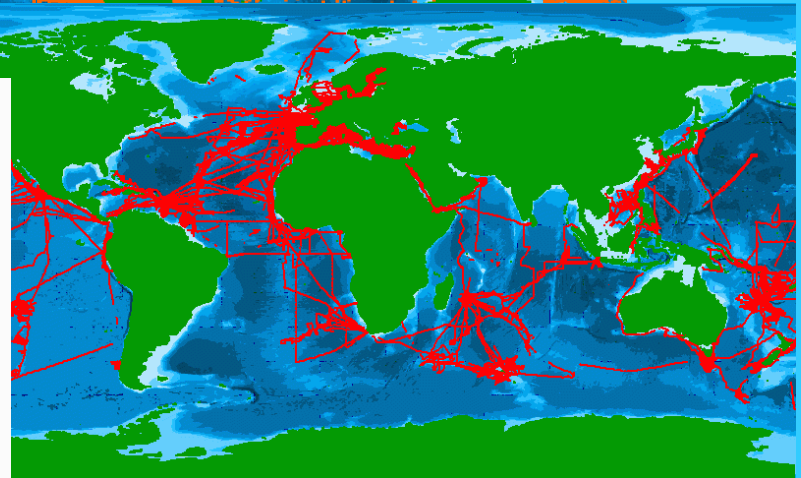
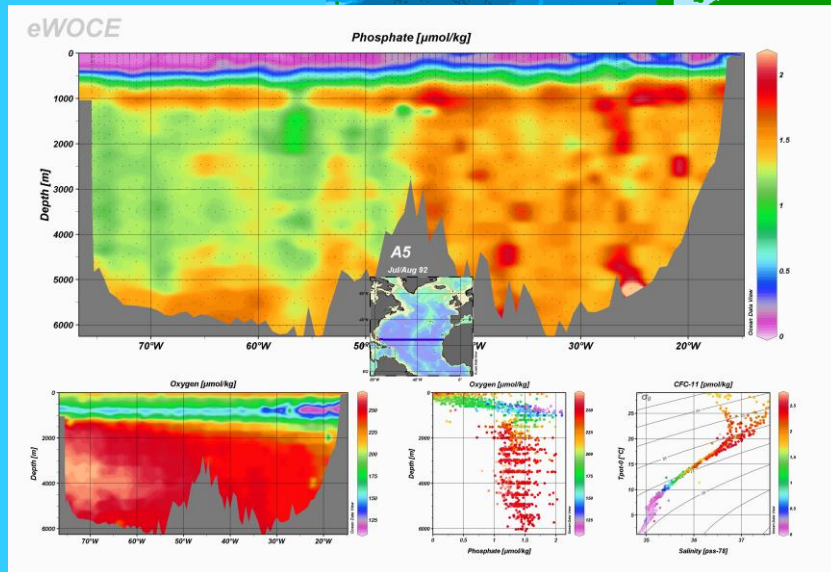
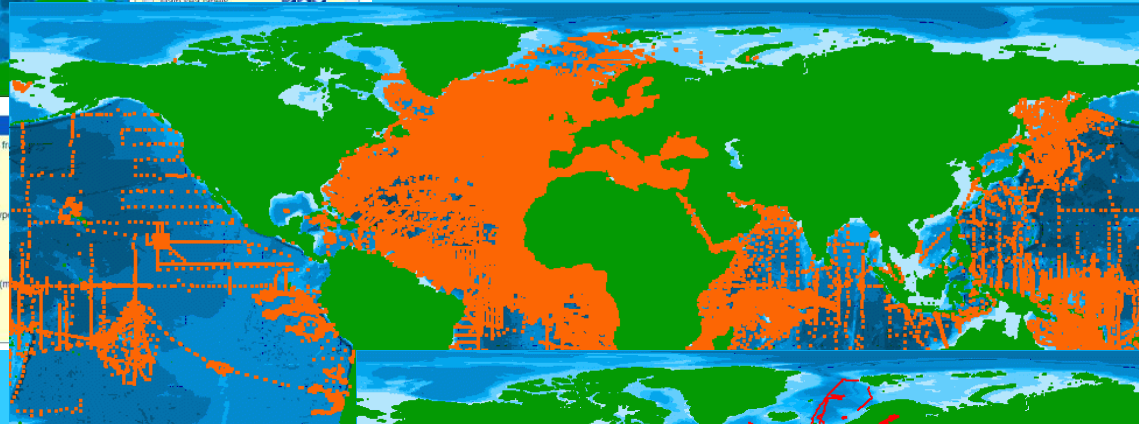
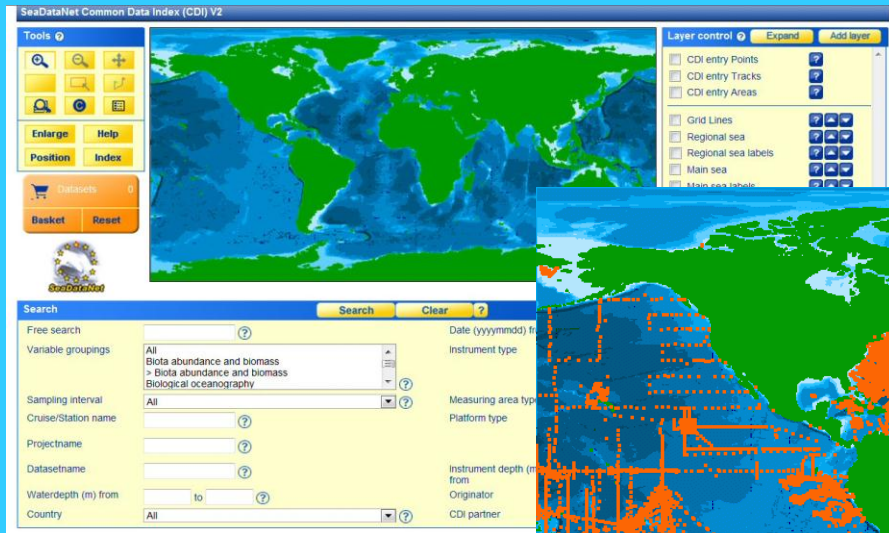
**EDMO**

**CSR**

**EDIOS**

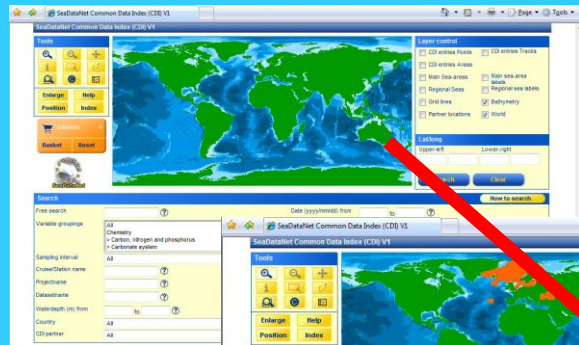
**EDMED**

# SeaDataNet from data discovery to unified access to analysis





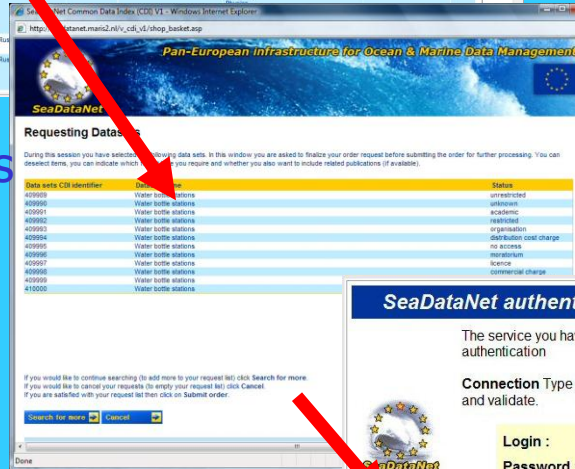
# Common Data Index – Data Discovery and Access Service



Search

Include in Basket

Results



Shopping list

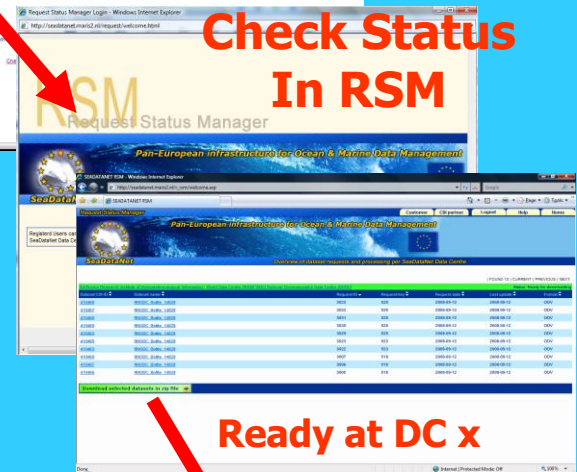


Submit + Authentication



Check Status In RSM

Request Confirmed



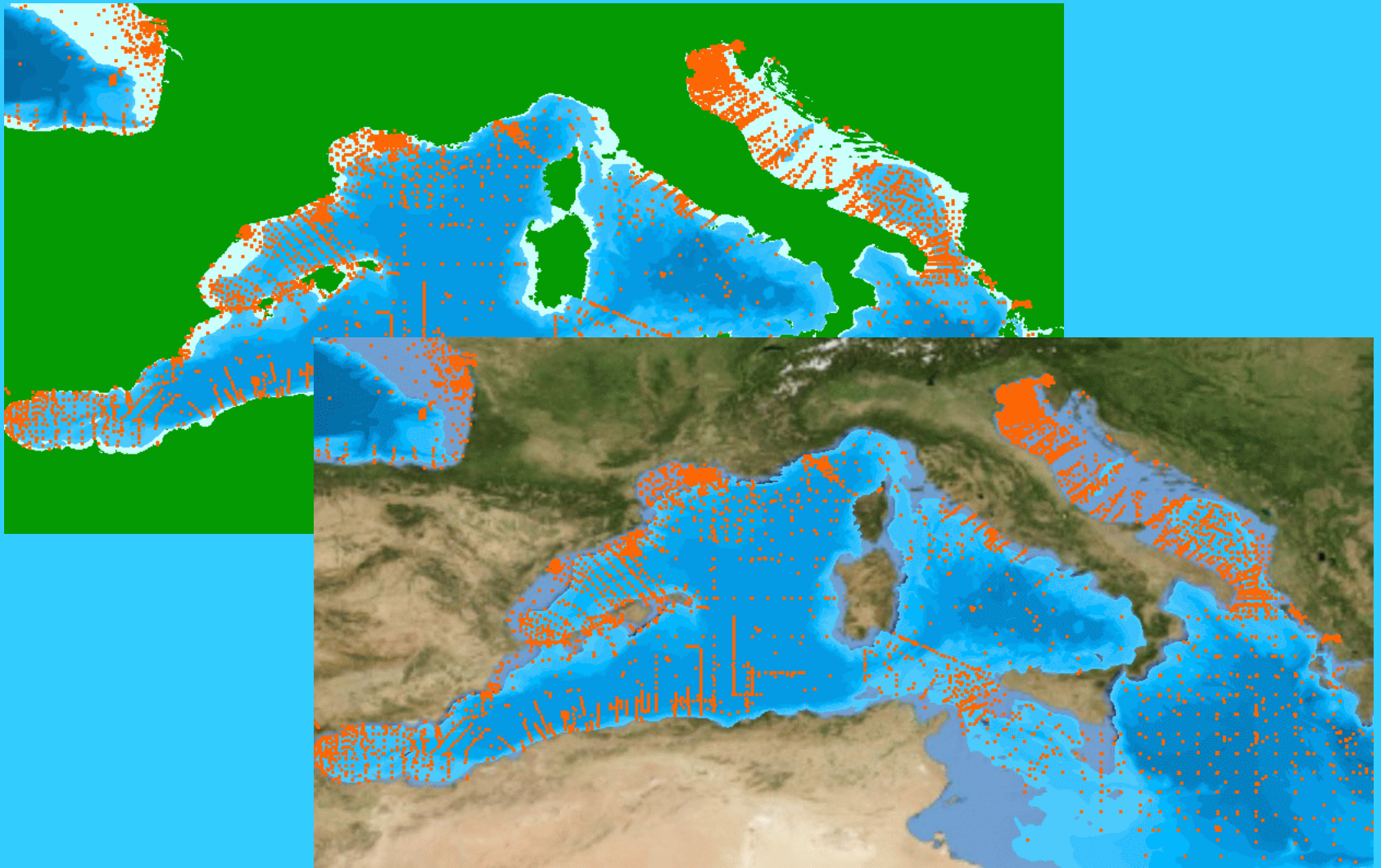
Ready at DC x



Download

**Data** SDN format

# SeaDataNet CDI Search interface



■ Searching for nutrients – results map zoom



# SeaDataNet Viewing services

## ■ Ocean Data View (ODV)

- General data analysis and visualization software
- >10,000 registered users

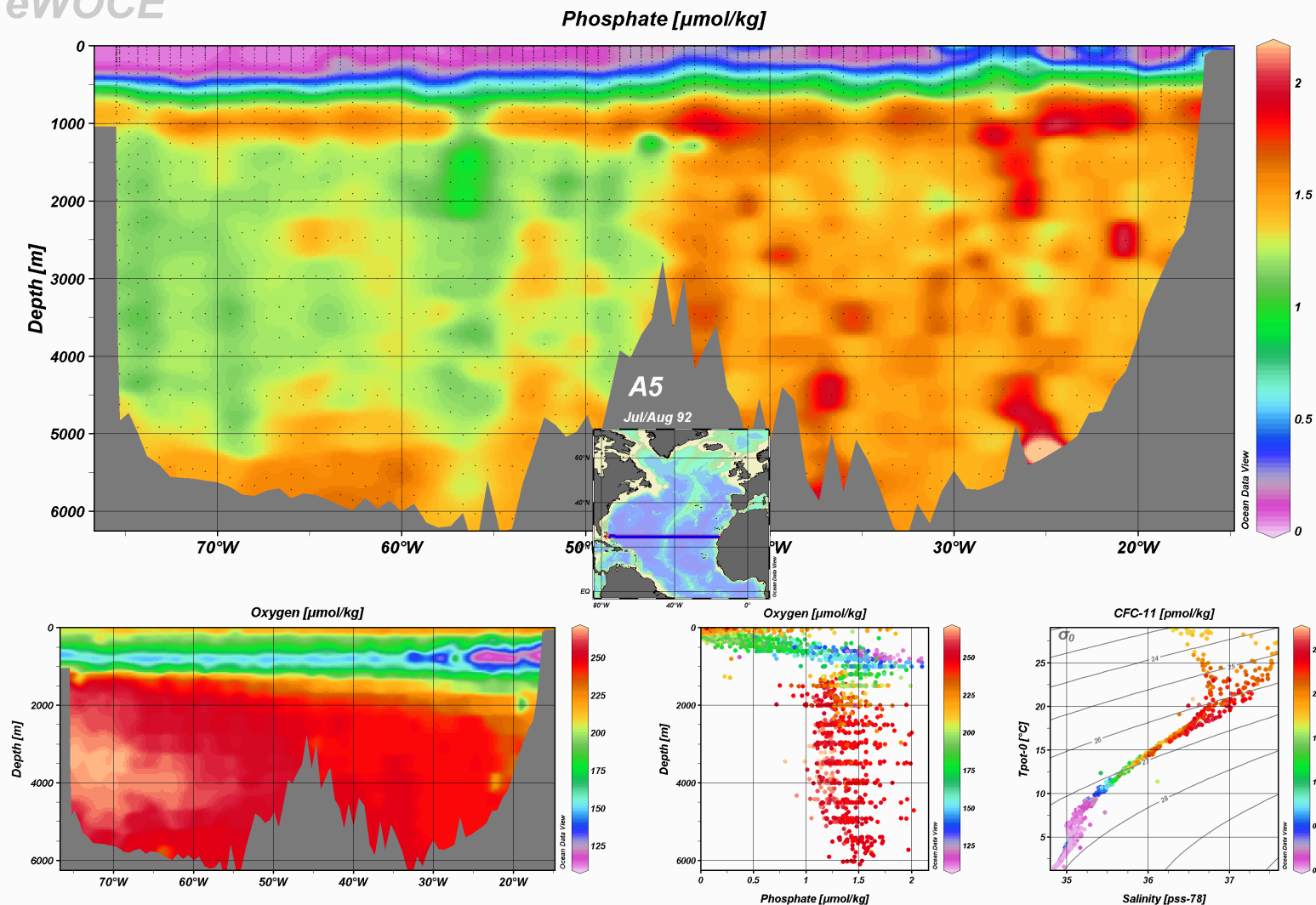
## ■ ODV software upgraded to ODV4 for:

- Extending ODV's graphical display capabilities and interactive controls for automatic and visual quality control and data quality flagging
- Seamless connection to SeaDataNet output: SDN ODV4 data formats, quality flag scale
- Integration of DIVA gridding software
- Important tool for the SeaDataNet regional Data Products

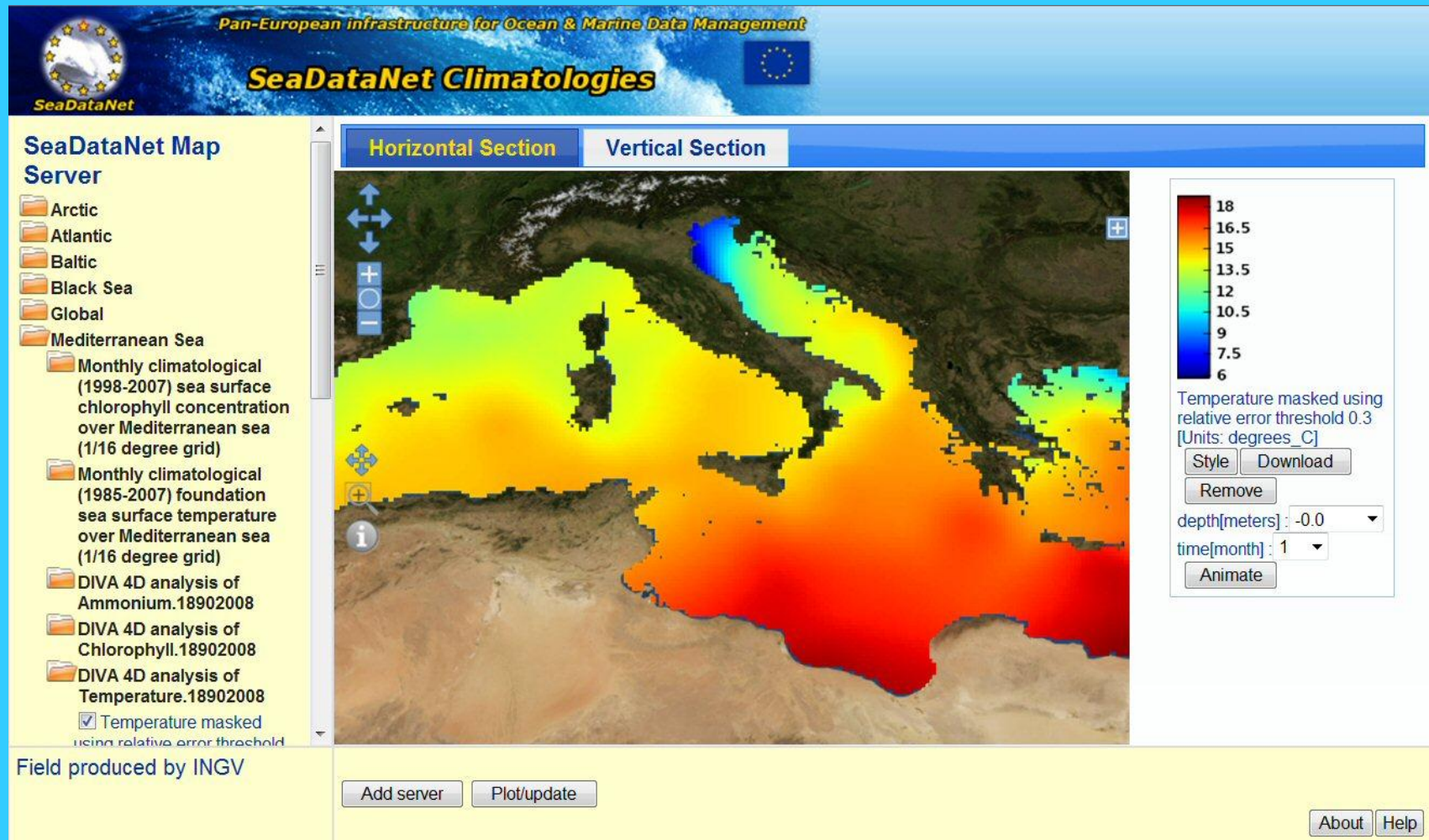
## ■ **DIVA** software (Data-Interpolating Variational Analysis) allows to spatially interpolate observations on a regular grid in an optimal way. The analysis is performed on a finite element grid allowing for a spatial variable resolution and a good representation of the coastline and isobaths.

# SeaDataNet Viewing services – ODV + DIVA

eWOCE



# Regional Products services



Climatologies and interpolated data products for the Arctic seas, Atlantic Ocean, Baltic sea, Mediteranean sea and the Black Sea regions. Statistical output in NetCDF files, that are visible via WMS through ***Ocean Browser***



# Cross sector involvement

- SeaDataNet cooperates and provides services for many other European and international groups and projects, contributing and safeguarding good data management. Examples:
  - **EuroGOOS**, maintaining the European Directory of Ocean observing systems (EDIOS) and quality controlling and archiving long-term data series. See [www.edios.org](http://www.edios.org)
  - **GMES Marine Core Services** for streamlining the provision of long-term archives for optimising marine forecast services; there is an MoU formulating the cooperation between **MyOcean** and **SeaDataNet**
  - **POGO**, collecting and providing information on ocean-going research vessels, and their operators, planned and completed cruises. See [www.pogo-oceancruises.org](http://www.pogo-oceancruises.org)
  - Services for the international oil & gas industry for metocean data (**SIMORC**). See [www.simorc.org](http://www.simorc.org)

# SeaDataNet Expansion

- SeaDataNet standards and tools are being adopted by other EU-funded projects:
  - **Up-Grade Black Sea SCENE project**, (2009 – 2011) involving 6 NODCs and many other data holding institutes from the 6 Black Sea countries, to provide metadata and data access and to strengthen their national NODC networks. EU-funding 3.4 Million Euro.
  - **CASPINFO project**, (2009 – 2011) involving 12 institutes and private industry from the Caspian Sea region, to provide metadata and data access and to build their capacity for data management and user services. EU-funding 0.8 Million Euro.
  - **Geo-Seas project**, (2009-2012) involving 24 geological and geophysical data centres from 16 European countries (EuroGeoSurveys), to provide metadata and data access. EU-funding 4.9 Million Euro.
  - **EuroFleets project**, (2009-2012) involving 24 research institutes and data centres from 17 European countries, to optimise the management of research vessels and to streamline the flow of data from the research cruises to the data centre infrastructure. EU-funding 7.2 Million Euro.
  - **JERICO project**, (2011-2015) involving 27 institutes from 17 European countries, to develop better coordination between the coastal observatories responsible for physical and bio-chemistry parameters as well as to develop improved procedures for streamlining the flow of data from the monitoring stations to the data centre infrastructure. EU-funding 6.5 Million Euro.
- In each project several SeaDataNet partners are participating for transfer of knowledge & expertise, to secure interoperability and to achieve crossfertilisation leading to upgrading of the SeaDataNet standards and tools as well as enriching of the services.




# Geo-Seas

*a pan-European network for marine  
geoscientific data linking 26 marine  
geoscience data centres from  
17 coastal countries*








# GEO-SEAS COMMON DATA INDEX (CDI) V2

Cart: 0 Dataset(s)
Proceed to check out
Reset basket
Export
Summary
Hide map
?

[Reset all steps](#) > [Rock and sediment chemistry](#) > [sediment grabs](#) > [Marine geology](#) > [Rock and sediment physical properties](#) > [German Oceanographic Datacentre \(NODC\)](#)

**Tools**


- Search
- Map
- Layers
- Legend
- Full Screen
- Print
- Home
- Enlarge
- Position
- Index



**Layer control**

- ☐ CDI entries
- ☐ Points
- ☐ CDI entries
- ☐ Areas
- ☐ Main Sea-areas
- ☐ Regional Seas
- ☐ Partner locations
- ☒ Display all selected records
- ☐ Only selected records in results list
- [Zoom to selected](#)





# GEO-SEAS COMMON DATA INDEX (CDI) V2

Cart: 0 Dataset(s)
Proceed to check out
Reset basket
Export
Summary
Show on map
?

[Reset all steps](#)

**Search by:**

[Add to basket](#)
20 50 100 Records
[Go](#)
| Found 31089 | Show (1-20) | Previous | [Next 20](#)

**Geographical Box**

- point (339)
- Parameter categories
- Anthropogenic contamination (339)

**Time period**

- 20000148sed

**Measuring area type**

- point (27684)
- surface (2828)
- curve (577)

**Parameter categories**

- Rock and sediment chemistry (16669)
- Administration and dimensions (10650)
- Water column (10276)
- temperature and salinity (10274)
- Dissolved gases (10270)
- Carbonate system (10200)
- [More](#)

**Disciplines**

- Marine geology (30700)
- Terrestrial (30562)
- Chemical oceanography (16857)
- Administration and dimensions (10650)
- physical oceanography (10276)
- [More](#)

**Instrument / gear type**

- unconsolidated sediment corers (6974)

#	Data set name	Variables measured	Instrument / gear type	Show
<input type="checkbox"/>	20100037sed_MUDAB	Chemical oceanography > PCBs and organic micropollutants > Carbon, nitrogen and phosphorus Environment > Anthropogenic contamination Marine geology > Rock and sediment physical properties Terrestrial > Rock and sediment physical properties	sediment grabs	<a href="#">Show</a>
<input type="checkbox"/>	20100037sed_MUDAB	Chemical oceanography > PCBs and organic micropollutants > Carbon, nitrogen and phosphorus Environment > Anthropogenic contamination Marine geology > Rock and sediment physical properties Terrestrial > Rock and sediment physical properties		
<input type="checkbox"/>	20100037sed_MUDAB	Chemical oceanography > PCBs and organic micropollutants > Carbon, nitrogen and phosphorus Environment > Anthropogenic contamination Marine geology > Rock and sediment physical properties Terrestrial > Rock and sediment physical properties		
<input type="checkbox"/>	20100037sed_MUDAB	Chemical oceanography > PCBs and organic micropollutants > Carbon, nitrogen and phosphorus Environment > Anthropogenic contamination Marine geology > Rock and sediment physical properties Terrestrial > Rock and sediment physical properties		

**DETAILS**

**WHAT?**

Data set name: 20100037sed\_MUDAB

Discipline: Chemical oceanography  
Environment  
Marine geology  
Terrestrial

Category: Anthropogenic contamination  
Carbon, nitrogen and phosphorus  
PCBs and organic micropollutants  
Rock and sediment chemistry  
Rock and sediment physical properties

Variables measured: Concentration of other organic contaminants in sediment samples  
Concentration of polychlorobiphenyls (PCBs) in sediment samples  
Metal concentrations in sediment (deprecated to 'Inorganic chemical composition of sediment or rocks')  
Particulate total and organic carbon concentrations in the water column  
Sediment grain size parameters

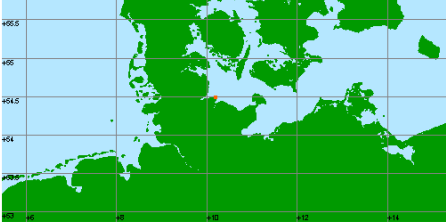
Abstract: Sediment data: General chemical, Grain size, HCH, Metals/ Elements, Nutrients, PCBs, Pesticide, TBT

Data format: Ocean Data View ASCII input **Version 0.4**

Data set creation date: 20100208

WHERE?

Map



Latitude 1: 54.46  
Longitude 1: 10.25  
Datum: World Geodetic System 84  
Measuring area type: point

WHEN?

Start date: 20080609  
Start time: 08:40:00  
End date: 20080609  
End time: 08:40:00

# European Marine Observation and Data Network



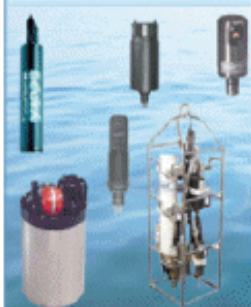
EMODnet



European Marine  
Observation and  
Data Network

## Essential Components of an Observation Network

Sensors to measure continuously and autonomously physical, chemical and biological parameters



- salinity, temperature
- turbidity, oxygen
- chlorophyll, nutrients
- pH, alkalinity
- bathymetry
- primary production

Platforms or structures anchored on the seabed, floating in the water column or drifting at the sea surface, and remote sensing from satellites.



- buoys, floats
- gliders
- mooring
- AUVs, lander
- FerryBox
- cabled networks
- remote sensing
- living Argo

Sampling and consecutive laboratory analyses from research ships, or shore, including water, sediments and biota (phytoplankton, bacteria, zooplankton, fish)



- inorganic trace compounds
- gases, e.g. CO<sub>2</sub>, CH<sub>4</sub>, DMS
- organic micropollutants
- abundance & function of biota
- food web
- HABs

Communication systems to transfer in real-time data from sensors to the network and to the land stations



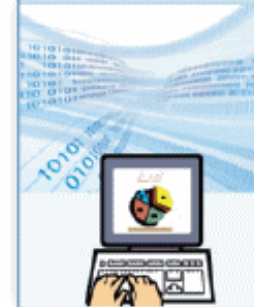
- satcom
- GSM, GPRS
- fibre optics
- acoustics

Data collection and management system for direct control of data quality, and data storage systems to enable data analysis and use for model applications



- data bases
- quality control
- data standards

Software and web based information tools to analyse data for trends, compliance to EU directives, to distribute and disseminate data to end users



- analysis
- Presentation
- web
- GIS

- SeaDataNet has qualified itself as leading infrastructure for the EMODNet data management component and is leading several preparatory EMODNet projects:
  - **Chemistry** – focus on the groups of chemicals required for monitoring the MSFD for establishing Good Environmental Status – cooperation with EEA, ICES and Regional Conventions
  - **Hydrography** – to produce and deliver a higher resolution digital bathymetry for European seas
  - **Physics** – together with MyOcean and EuroGOOS Regions to give wide access to operational metocean data, real-time and archives
- The **Geology** lot is producing harmonised seabed maps (WMS). The SeaDataNet infrastructure is adopted via the Geo-Seas project to give overview and access to the underlying geological and geophysical data sets.
- SeaDataNet is data partner in the **Biology** lot and a closer technical relation is being developed in the ongoing SeaDataNet II project.



**EMODnet** European Marine Observation and Data Network

**Pilot portal for Chemistry**  
Data Discovery and Access Service

**Tools** ?

Enlarge Help  
Position Index

Datasets: 0  
Basket Reset

**Layer control** ? Expand Add layer

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

☒ Display all selected records  
☐ Only selected records in results list

**Listing results**

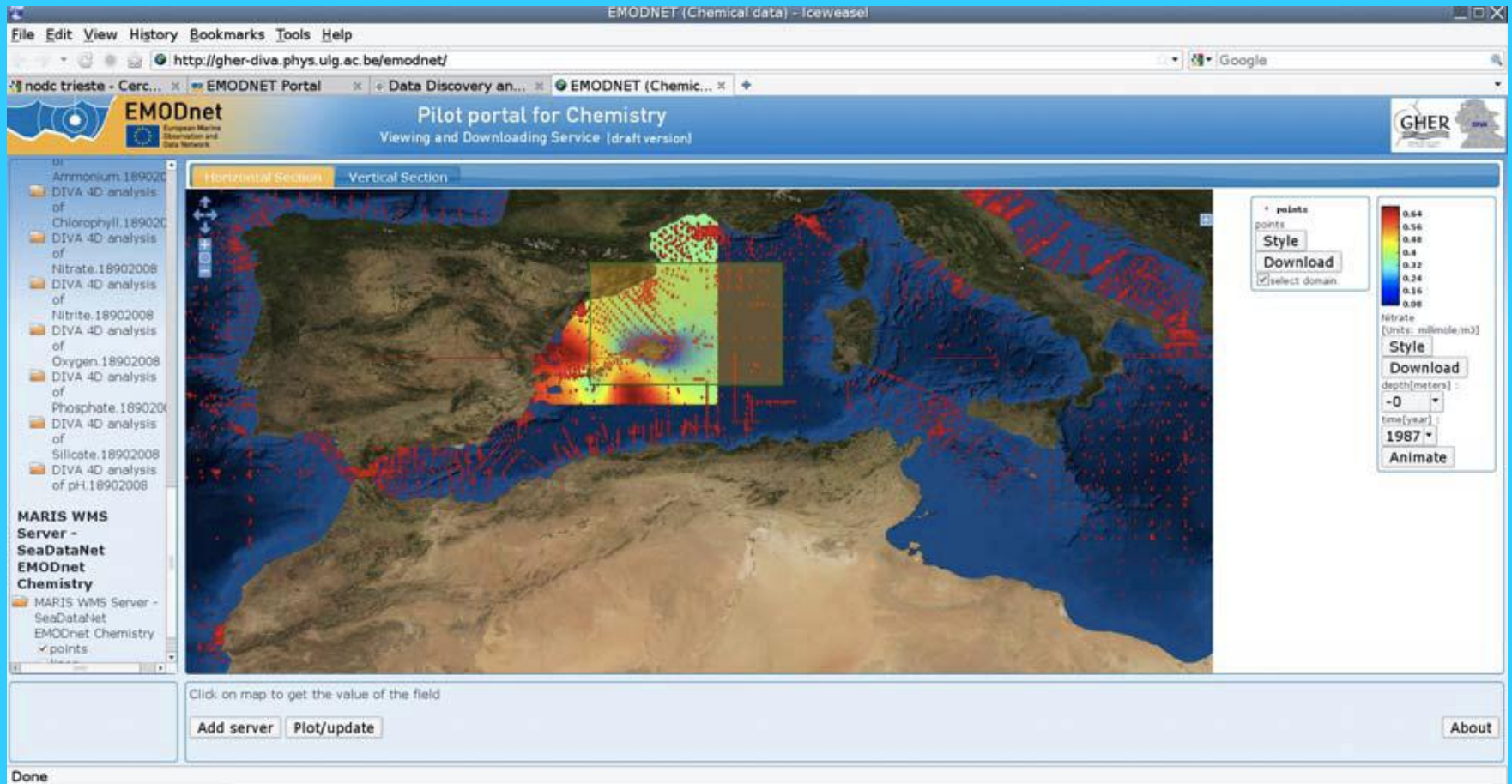
☒ 20 ☐ 50 ☐ 100 records **Go**

**Add to basket** **Summary** **Zoom to selected** [Export result](#) | [Store query](#) | [Refine query](#) | [New query](#) | Found 49783 | Show (1-20) | Previous | [Next 20](#)

#	Data set name	Country	Start date	Variables measured	Instrument / gear type	Show
<input type="checkbox"/>	CTD_Krapec1 data set	Bulgaria	20100903	Chemical oceanography > Nutrients > Carbon, nitrogen and phosphorus > Dissolved gases Physical oceanography > Water column temperature and salinity	CTD, spectrophotometers	
<input type="checkbox"/>	CTD_Sozopol data set	Bulgaria	20100904	Chemical oceanography > Nutrients > Carbon, nitrogen and phosphorus > Dissolved gases Physical oceanography > Water column temperature and salinity	CTD, spectrophotometers	
<input type="checkbox"/>	CTD_Albona data set	Bulgaria	20100903	Chemical oceanography > Nutrients > Carbon, nitrogen and phosphorus > Dissolved gases	CTD, spectrophotometers	

*CDI service with overview of chemistry data sets for the Black Sea region*

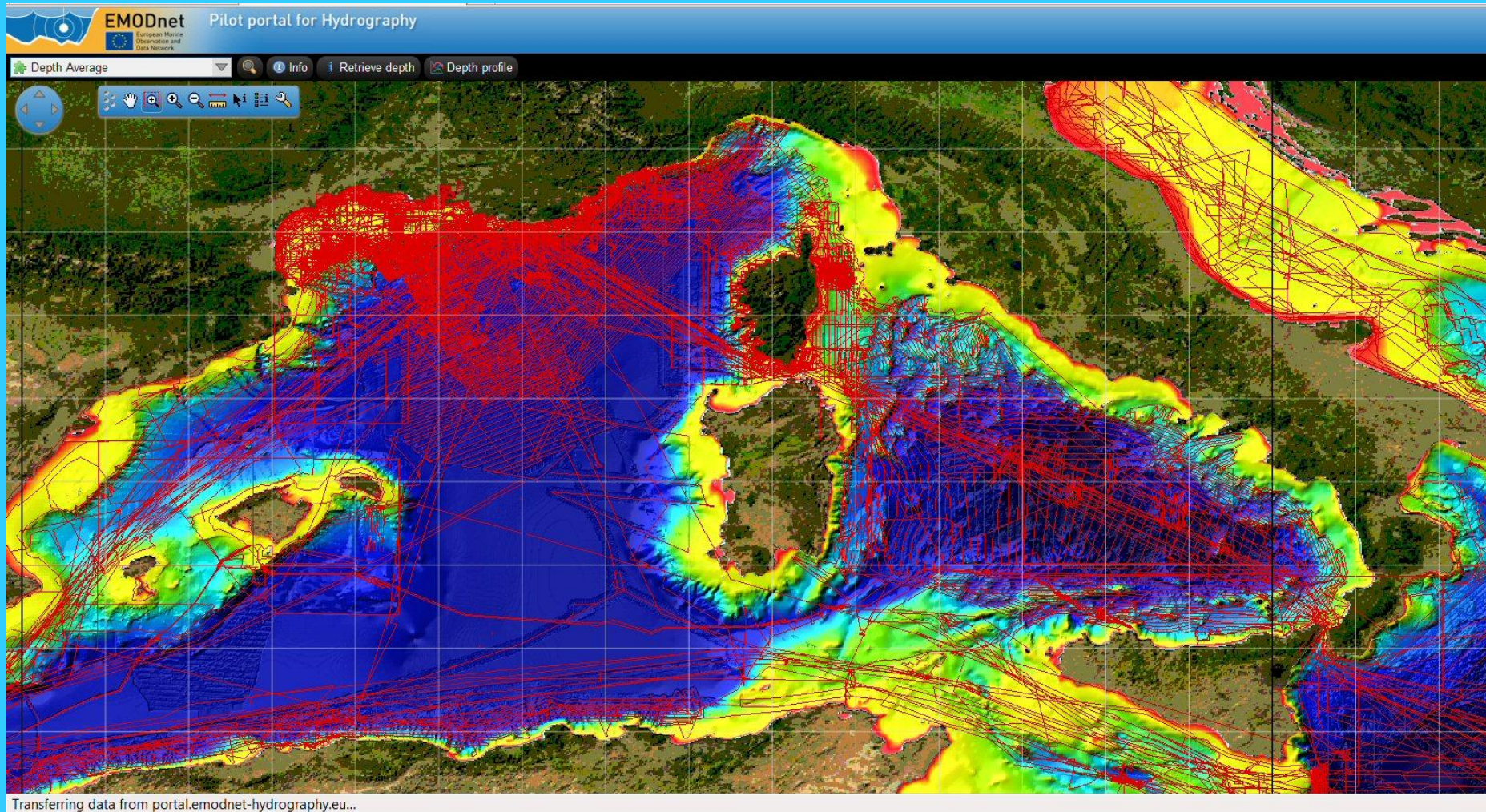
# EMODNet Chemistry



*Viewing service for Nitrate distribution in the Balearic spot  
with overlay of CDI data sets*



# EMODNet Hydrography



*Viewing service with digital bathymetry and overlay of CDI data sets*

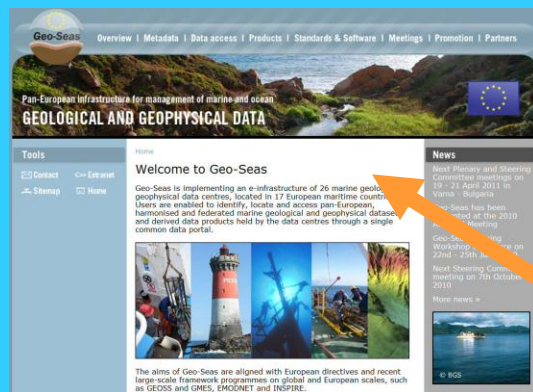


# EMODNet effects

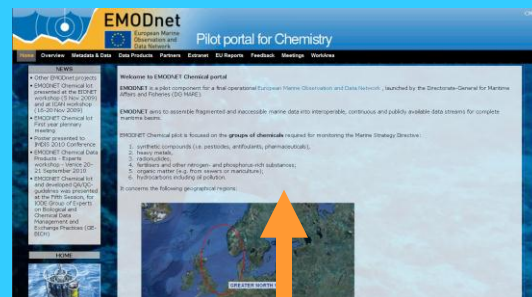


- The EMODNet pilots and associated research projects stimulate a wider uptake of SeaDataNet standards and contribute to enriching the standards and services
- Moreover the pilots encourage an expansion of the SeaDataNet infrastructure. At present already 65 data centres are connected and more underway.
- The EMODNet pilots set requirements for making SeaDataNet data products and upgraded services which are fit for purpose for specific user communities
- This includes including traceability between data products and associated underlying basic data sets for possible re-analysis and confidence
- EMODNet is management and policy driven which also provides an excellent opportunity for SeaDataNet to upgrade its status from project to sustained operational infrastructure, while keeping research projects for innovations .

# CDI Service as common service in many projects



[www.geo-seas.eu](http://www.geo-seas.eu)



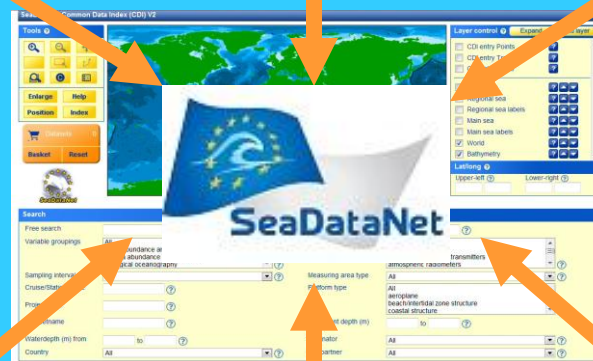
[www.emodnet-chemistry.eu](http://www.emodnet-chemistry.eu)



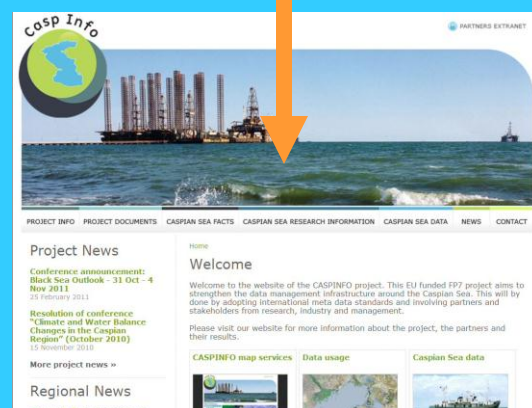
[www.blackseascene.net](http://www.blackseascene.net)



[www.emodnet-hydrography.eu](http://www.emodnet-hydrography.eu)



SeaDataNet CDI Service

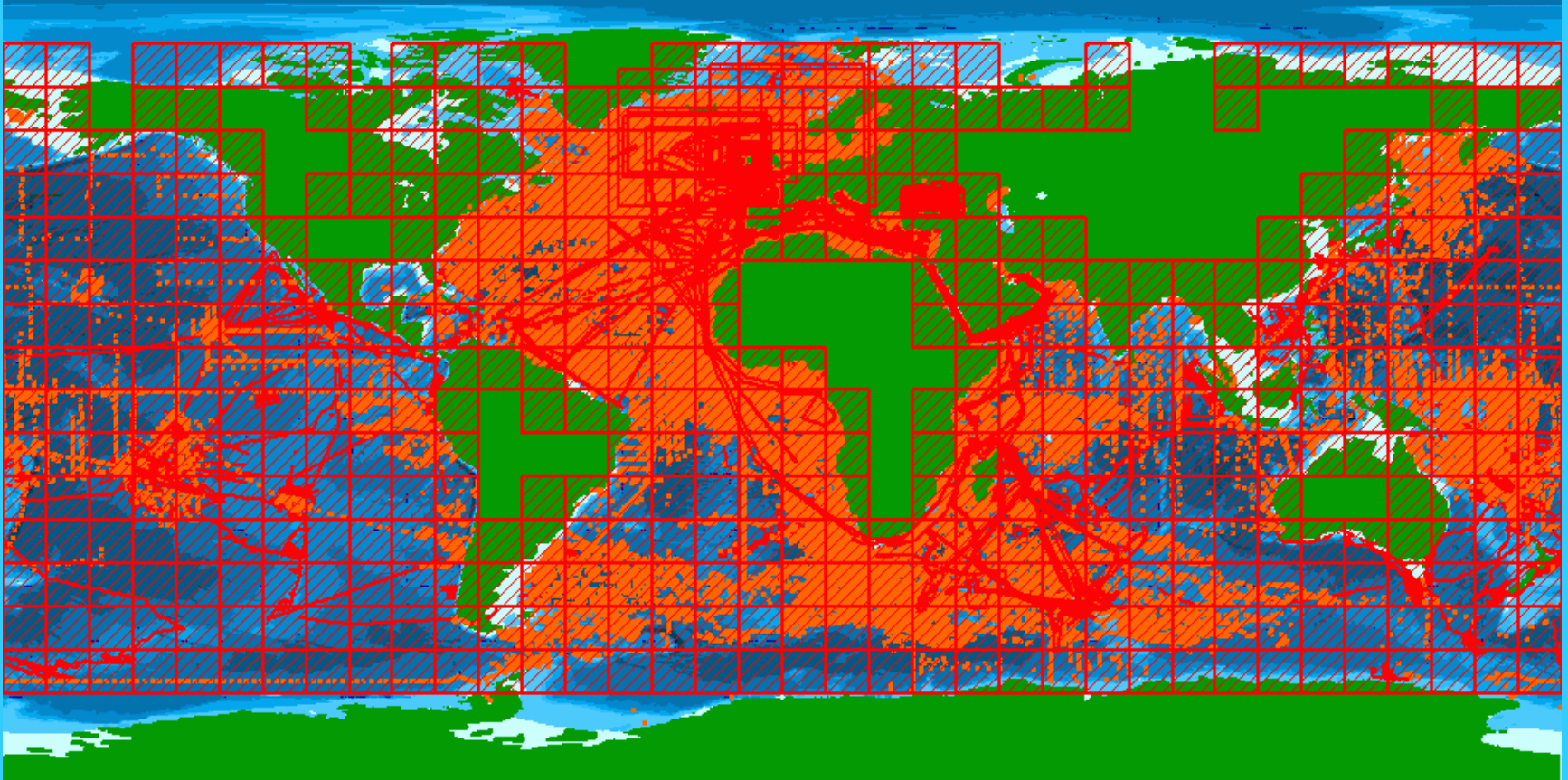


[www.caspinfo.net](http://www.caspinfo.net)



[www.emodnet-physics.eu](http://www.emodnet-physics.eu)

# CDI – Data Coverage – November 2011



**> 1 million** CDI entries from **29** countries and **65** data centres and **379** originators for physics, chemistry, geology, geophysics, bathymetry and biology; years **1800 – 2011**; **88%** unrestricted or under SeaDataNet licence



# SeaDataNet – GEOSS portal via EuroGEOSS Broker



# CDI - INSPIRE compliance - GEOSS

- CS-W service established on top of the CDI portal to deliver INSPIRE compliant SeaDataNet references, aggregated by discipline and by data centre, using EuroGEOSS brokerage service, powered by GI-Cat



■ THANK YOU

■ VISIT: [WWW.SEADATANET.ORG](http://WWW.SEADATANET.ORG)