



# **EMODnet Lot 3 – Chemical data**

## **SECOND INTERIM REPORT**

**Version 1.0**

**From 4/6/2010 to 4/12/2010**

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Due date of deliverable: *4<sup>th</sup> December 2010*

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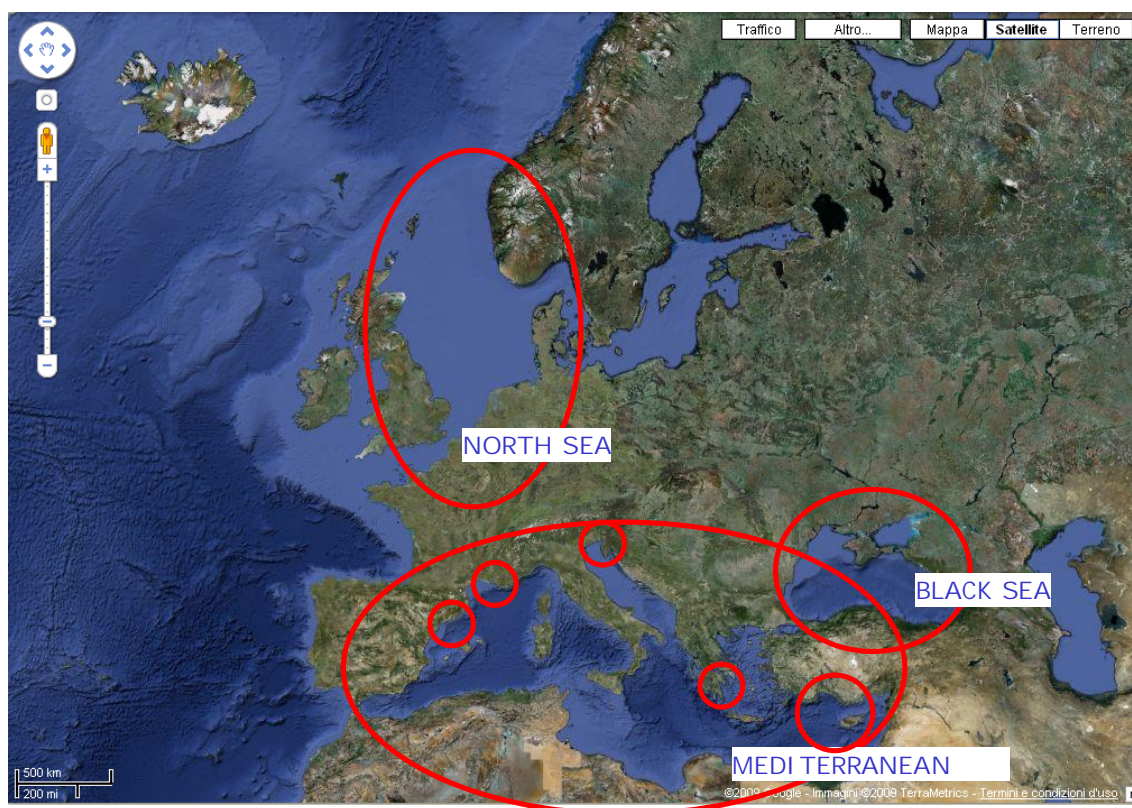
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## INTRODUCTION

EMODnet Chemical pilot is undertaken by **25 partners** representing the SeaDataNet network of Data Centres, selected on their geographical coverage and specific expertise. These Data Centres already manage a large volume of relevant data sets and can enlarge the available data collections with relevant data sets from a number of data holders in their country. Moreover the SeaDataNet partnership includes ICES, which acts as data centre for monitoring data for OSPAR, HELCOM and EIONET, and that brought in this volume of data sets.

The EMODnet Chemical tender asks for data sets from the **Greater North Sea** and the **Black Sea** region. However, we planned to expand the pilot regions with **five spots from the Mediterranean** (Balearic Sea, Gulf of Lion, North Adriatic Sea, Gulf of Athens and NE Levantine basin).



EMODnet Chemical pilot is focused on the **groups of chemicals** required for monitoring the Marine Strategy Directive:

1. synthetic compounds (i.e. pesticides, anti foulants, pharmaceuticals),
2. heavy metals,
3. radio nuclides;
4. fertilisers and other nitrogen- and phosphorus-rich substances;
5. organic matter (e.g. from sewers or mariculture);
6. hydrocarbons including oil pollution.



This Second Interim Report describes the activities carried out during the first six months of second year of EMODnet chemical pilot ( 4<sup>th</sup> of June 2010 – 3<sup>rd</sup> of December 2010 ), the deliverables produced by each work package as specified in the Technical Tender Form for Lot 3 – Chemical Data and any deviation from the project tender.

Based on SeaDataNet experience, the following strategy was proposed as approach for the EMODnet pilots:

- Develop a high-end dedicated portal, outfitted with a powerful spatial database, that is complemented with WMS, WFS and WCS services (OGC) to serve users and to provide layers for e.g. the other EMODnet portals, the prototype European Atlas of the Seas, and the broad-scale European Marine Habitats map;
- Provide data sets for producing interpolated maps with specific resolution for each geographical region, that are loaded and integrated afterwards into the portals' spatial database;
- Include a metadata discovery service in the portal, by adopting the SeaDataNet CDI metadata standard, that inter alia gives clear information about the background data, the access restrictions and distributors; this also ensures the connection of the EMODnet portals with the SeaDataNet distributed infrastructure.

In fact, EMODnet Chemical lot has used SeaDataNet V1 infrastructure for the technical set-up. This means:

- SDN Standards for background data, metadata and product,
- CDI mechanism to access data with data policy,
- ODV format for background data exchange,
- SDN Security Services for users registrations, and SDN Delivery Services for data access and downloading,
- DIVA software tool to produce gridded data products and error maps as NetCDF files,
- SDN Products catalogue (CAMIOON system) and SDN Products viewing services for free unlimited discovery, access, visualization and downloading of data products.

Nevertheless, during the first year the need of specific instruments to visualise the chemical data was highlighted. In fact, this chemical pilot is focused on a set of parameters showing a non homogeneous spatio-temporal distribution. A specific workshop has been organised to face the issue.

This Second Interim Report is organised into 5 sections, where the progress made in the 5 work packages according to the tender planning of activities is summarised. These are:

- 1 – Project management,
- 2 - Data collection and metadata compilation,
- 3 - QC/QA and products,
- 4 - Technical development and portal operation,
- 5 – Analysis and evaluation.

Some final remarks are given in the final section.

## 1. PROJECT MANAGEMENT (WP1)

During the first six months of the second year of EMODnet chemical pilot (4<sup>th</sup> of June 2010 – 3<sup>rd</sup> of December 2010), corresponding to the Test and Monitor phase, the project management activities continued. In particular, the following meetings were organised:

- 4<sup>th</sup> Coordination group meeting, 05-06 July 2010, Trieste (Italy);
- Expert Group meeting, 20-21 September 2010, Venice (Italy);
- 5<sup>th</sup> Coordination group meeting, 21 September 2010, Venice (Italy).

A report and/or action list is available in EMODnet Extranet for each event.

Moreover, OGS and representatives from the Chemical lot participated to:

- Third six-monthly progress meeting for ur-EMODNET preparatory actions, 29 November 2010, Brussels.

Finally, OGS with the contribution of all partners edited and revised the First Interim Report. Then were distributed the expected payments to each partner, when the relevant invoice or debit note was received.

### About Venice Experts meeting

The expert meeting was organized inviting the coordination group and experts on data management, on marine chemistry and contaminants fields. The aim was to discuss what kind of products could be produced with data coming from EMODnet Chemistry data collection and the way to validate products. People that attended at meeting were:

- |                                 |   |
|---------------------------------|---|
| - Alessandra Giorgetti          | OGS   |
| - Matteo Vinci                  | OGS   |
| - Alberto Brosich               | OGS   |
| - Dick Schaap                   | MARIS   |
| - Mark Charlesworth             | NERC-BODC   |
| - Anders Windelin               | NERI  |
| - Eugeny Godin                  | MHI   |
| - Sissy Iona                    | HCMR  |
| - Gilbert Maudire               | IFREMER   |
| - Charles Troupin               | Ulg   |
| - Simon Claus                   | VLIZ  |
| - Rob Fryer                     | Marine lab in Scotland  |
| - Shepherd Iain<br>General MARE | Shepherd Iain, European Commission; Directorate-  |
| - Pyhälä Minna                  | HELCOM Helsinki Commission  |
| - Volodymyr Myroshnychenko      | BSC Commission for the Protection of the Black Sea<br>Against Pollution Permanent Secretariat |

- Beken Çolpan                                  Marmara Research Center of Turkish Scientific and Technological Council, TUBITAK
- Michael Angelidis                          UNEP/MAP - MEDPOL Programme Officer

Presentations are available in the EMODnet Chemical portal at:

[http://www.emodnet-chemistry.eu/portal/portal/emodnet/Meetings/CMSPortletWindow\\_27?action=2&uri=%2Fdefault%2Fnews%2Fpresentation\\_venice.html](http://www.emodnet-chemistry.eu/portal/portal/emodnet/Meetings/CMSPortletWindow_27?action=2&uri=%2Fdefault%2Fnews%2Fpresentation_venice.html)

The meeting was organized in a first session where a general introduction about the EMODnet Chemistry was given.

The session continued with the Regional Task Leaders for the three regions of interest. They described the situation of the data harvesting, the available data distribution in space and time and the metadata compilation.

Then the experts and the representative of Marine Conventions invited presented their activities and started open discussions about: chemical data and metadata availability and harvesting, data and metadata normalization, data analysis and possible products generation.

The open discussions were focused on :

- Review and discussion on EMODnet Chemical data and products availability;
- Review how to move from data to products, what kind of products can be done with EMODnet Chemical data;
- Best way of answering users needs from different sectors.

A summary of Experts feedback:

- Was suggested to take care of the “friendly” and “easy to use” approach of product viewing interface. The last updates of the viewing services described on the technical development of this report section followed these criteria.
- Was highlighted to show in a clear way how the products have been compiled and the datasets used. This will be done by the adoption of Camioon products metadata catalogue.
- There was long discussion about the kind of products to provide to users. Two main kind of products were discussed:
  - Interpolated maps for data with a suitable spatial coverage;
  - Not interpolated products for the other kind of data.

All the parameters measured in the water column seem to have typically a spatial coverage suitable to provide interpolated maps.

The situation is different especially for data from Biota and Sediment matrixes. These have a spatial distribution too sparse or limited to coastal areas, not suitable to make standard Diva analysis. The discussion brought to some conclusions. To manage properly this situation the Chemical lot will need to make a good work of analysis, normalization and metadata collection in order to obtain homogeneous datasets well

described. Then the idea is to show stations on maps linked to plots that describes the time series of measurements for each parameter considered. A first prototype of this kind of products was already presented during the November 2010 progress report in Bruxelles and is described in technical development section of this report.

- Was highlighted to be careful to collect and provide the best metadata available describing for example: sediment fraction measured, dry/wet weights measurements, measurement methodology. This in order to help a correct comparison between homogeneous sets of data and analyses. The continuous update of SDN common vocabularies helps to manage this.

A synthesis of the general conclusions from the action list of Expert workshop is:

- To show data availability maps. The matrix “Variables VS Marine regions” described in the technical development section could be a good answer to this.
- Standard Diva Interpolated maps will be produced for parameters with suitable data coverage, measured on basin scale.
- For parameters with a spatial coverage like:
  - coastal points repeated in time
  - datasets with fragmented coverage

the common idea is to show station maps linked to plots of measured time series.

About the issue several time suggested to aggregate products and present graphs on demand the point of view of the coordination group was more focused on consistency of analysis and products meaning than on the difficulty of the technical development.

More than one time was proposed to the Chemistry Lot to provide a “more interactive” approach for users. The proposals were to provide services able to generate "on demand" maps by a free choice of datasets of interest.

Several discussions of the coordination group about this were done. The conclusions were focused on the issue that data managed by the Chemistry Lot are too "sensitive" for this kind of approach. In fact these data are already very much sensitive to analyze and to interpret for the expert that works in the Chemical Oceanography field. Furthermore the feedback from the experts about this was that we must pay attention on the meaning of products that we obtain. One of the benefits of the pre-prepared products approach is the possibility to quality-check them before to let them available.

Talking about the technical point of view the generation of graphics on-the-fly is certainly a desirable capability. It allows close interaction with the underlying data set (for example, adjusting the scale of the time series to make graphs directly comparable to data from another source). This capability would require low-latency machine-to-machine access to the data set. The current system is build on machine-to-human interaction. The SeaDataNet 2 proposal is specifically addresses on this issue. If funded it will provide the machine-to-machine infrastructure which is required to generate aggregated products and graphs on demand. Of course, despite the reachable technical upgrade about on-demand products, we always must find the way to keep the eyes on the quality of possible dynamically generated products. This to prevent wrong or dubious conclusions.

## 2. DATA COLLECTION AND METADATA COMPILATION (WP2)

The contribution to data collection and metadata compilation by each EMODnet partner was presented at the Bruxelles progress meeting.

The overview of the progress on data collection and metadata compilation in the three regions is given here.

Based on MSFD requirement, on the data distribution in time and space (as time series geographically representative), a set of chemicals was selected from the 8 groups in the 3 matrices (water column, sediment, biota), to make a set of 17 selected parameters for product generation in the three regions. All these parameters were mapped to SeaDataNet vocabularies (mainly P021 for CDI and P061 for units, and P011 for ODV) as reported in the following tables.

	water column			
EMNC	Chemical group	Parameter	SDN P021 CODE	SDN PARAMETERS P021 TERM
C1	Pesticides	Dichlorodiphenyltrichloroethane (DDT)	PEWB	Pesticide concentrations in water bodies
C2	Pesticides	Hexachlorobenzene (HCB)	PEWB	Pesticide concentrations in water bodies
C3	Antifoulants	Tributyltin (TBT)	WCOC	Concentration of other organic contaminants in the water column
C4	Antifoulants	Triphenyltin (TPT)	WCOC	Concentration of other organic contaminants in the water column
C5	Pharmaceuticals	Oxytetracycline (C <sub>22</sub> H <sub>24</sub> N <sub>2</sub> O <sub>9</sub> )	PHWB	Pharmaceutical concentrations in water bodies
C6	Heavy metals	Mercury (Hg)	MTWD	Dissolved metal concentrations in the water column
C6	Heavy metals	Mercury (Hg)	MTWT	Total metal concentrations in the water column
C6	Heavy metals	Mercury (Hg)	MTWP	particulate metal concentrations in the water column
C7	Heavy metals	Cadmium (Cd)	MTWD	Dissolved metal concentrations in the water column
C7	Heavy metals	Cadmium (Cd)	MTWT	Total metal concentrations in the water column
C7	Heavy metals	Cadmium (Cd)	MTWP	particulate metal concentrations in the water column
C8	Heavy metals	Lead (Pb)	MTWD	Dissolved metal concentrations in the water column
C8	Heavy metals	Lead (Pb)	MTWT	Total metal concentrations in the water column
C8	Heavy metals	Lead (Pb)	MTWP	particulate metal concentrations in the water column
C9	Hydrocarbons	Anthracene (C <sub>14</sub> H <sub>10</sub> )	PCHW	column
C10	Hydrocarbons	Fluoranthene (C <sub>16</sub> H <sub>10</sub> )	PCHW	column
C11	Radionuclides	Tritium	WRAD	Radioactivity in the water column
C12	Radionuclides	Cesium 137	WRAD	Radioactivity in the water column
C13	Radionuclides	Plutonium 239	WRAD	Radioactivity in the water column
C14	Fertilisers/Nitrogen	Nitrate (NO <sub>3</sub> )	NTRA	Nitrate concentration parameters in the water column
C15	Fertilisers/Phosphorus	Phosphate (PO <sub>4</sub> )	PHOS	Phosphate concentration parameters in the water column
C16	Organic matter	Organic Carbon (C)	CORG	Particulate total and organic carbon concentrations in the water column
C17	Organic matter	Organic Nitrogen (N)	NTOT	Particulate total and organic nitrogen concentrations in the water column

	sediment			
EMNC	Chemical group	Parameter	SDN P021 CODE	SDN PARAMETERS P021 TERM
C1	Pesticides	Dichlorodiphenyltrichloroethane (DDT)	PESD	Pesticide concentrations in sediment
C2	Pesticides	Hexachlorobenzene (HCB)	PESD	Pesticide concentrations in sediment
C3	Antifoulants	Tributyltin (TBT)	SCOC	Concentration of other organic contaminants in sediment samples
C4	Antifoulants	Triphenyltin (TPT)	SCOC	Concentration of other organic contaminants in sediment samples
C5	Pharmaceuticals	Oxytetracycline (C <sub>22</sub> H <sub>24</sub> N <sub>2</sub> O <sub>9</sub> )	PHSE	Pharmaceutical concentrations in sediments
C6	Heavy metals	Mercury (Hg)	MTSD	Metal concentrations in sediment
C7	Heavy metals	Cadmium (Cd)	MTSD	Metal concentrations in sediment
C8	Heavy metals	Lead (Pb)	MTSD	Metal concentrations in sediment
C9	Hydrocarbons	Anthracene (C <sub>14</sub> H <sub>10</sub> )	SCAH	sediment samples
C10	Hydrocarbons	Fluoranthene (C <sub>16</sub> H <sub>10</sub> )	SCAH	sediment samples
C11	Radionuclides	Tritium	SRAD	Radioactivity in sediment
C12	Radionuclides	Cesium 137	SRAD	Radioactivity in sediment
C13	Radionuclides	Plutonium 239	SRAD	Radioactivity in sediment
C16	Organic matter	Organic Carbon (C)	CBSD	Carbon concentrations in sediment
C17	Organic matter	Organic Nitrogen (N)	NTSD	Nitrogen concentrations in sediment
C14	Fertilisers/Nitrogen			
C15	Fertilisers/Phosphorus			

	biota			
EMNC	Chemical group	Parameter	SDN P021 CODE	SDN PARAMETERS P021 TERM
C1	Pesticides	Dichlorodiphenyltrichloroethane (DDT)	PEBI	Pesticide concentrations in biota
C2	Pesticides	Hexachlorobenzene (HCB)	PEBI	Pesticide concentrations in biota
C3	Antifoulants	Tributyltin (TBT)	BCOC	Concentration of other organic contaminants in biota
C4	Antifoulants	Triphenyltin (TPT)	BCOC	Concentration of other organic contaminants in biota
C5	Pharmaceuticals	Oxytetracycline (C <sub>22</sub> H <sub>24</sub> N <sub>2</sub> O <sub>9</sub> )	PHBI	Pharmaceutical concentrations in biota
C6	Heavy metals	Mercury (Hg)	BCMT	Metal concentrations in biota
C7	Heavy metals	Cadmium (Cd)	BCMT	Metal concentrations in biota
C8	Heavy metals	Lead (Pb)	BCMT	Metal concentrations in biota
C9	Hydrocarbons	Anthracene (C <sub>14</sub> H <sub>10</sub> )	BCAH	Concentration of polycyclic aromatic hydrocarbons
C10	Hydrocarbons	Fluoranthene (C <sub>16</sub> H <sub>10</sub> )	BCAH	Concentration of polycyclic aromatic hydrocarbons
C11	Radionuclides	Tritium	BRAD	Radioactivity in biota
C12	Radionuclides	Cesium 137	BRAD	Radioactivity in biota
C13	Radionuclides	Plutonium 239	BRAD	Radioactivity in biota
C14	Fertilisers/Nitrogen			
C15	Fertilisers/Phosphorus			
C16	Organic matter			
C17	Organic matter			

Data collection started with nutrients in the water column, was then extended to all other selected chemicals in the water column (organic matter – DOC and TN, ...), and to synthetic compounds, hydrocarbons and heavy metals in the sediments and biota (considering the target species MYTILUS). This was the target for 3 regions, but at the data distribution is very different. This is mainly depending by the historical background on the geographic area that has a strong impact on present data monitoring and data management activity.

All partners produced ODV files and sent them to the regional task leaders (NERI, MHI, and HCMR). Besides, all partners produced the CDI entries to link the collected data to EMODnet CDI User interface.

## 2.1 DATA COLLECTION IN THE NORTH SEA – REGIONAL DATA POOL

A lot of the data concerning the EMODnet chemical parameters are also available in the ICES database DOME. Therefore an extraction from DOME to the regional data pool (EMODnet Chemical Buffer Database) has been done. The Greater North Sea partners only have to report additional datasets (except nutrients). For this purpose ICES distributed to all partners in the region a worksheet with the content of the database per submitting institute, per parameter and per matrix in order to determine what additional data had not already been included. The handling of duplicates in a systematic and operational way is beyond the scope of the EMODNET Chemical pilot and it has been included in the context of the SeaDataNet II proposal, where it is intended to tackle the issue for all nodes in the distributed network.

The boundaries for the area covered are the following:

Name	Language Name	Source
	English	North Sea (preferred) ICES ( <a href="http://www.ices.dk/aboutus/icesareas.asp">http://www.ices.dk/aboutus/icesareas.asp</a> )
<b>PlaceType</b>	ICES Ecoregion	
<b>Latitude</b>	56° 56' 47.5" N (56.9465°)	
<b>Longitude</b>	3° 2' 35.3" E (3.0431°)	
<b>Source</b>	ICES ( <a href="http://www.ices.dk/aboutus/icesareas.asp">http://www.ices.dk/aboutus/icesareas.asp</a> )	
<b>Relation</b>	Part of <a href="#">ICES Ecoregions (General Region)</a> [ <a href="#">View Hierarchy</a> ]	

Map



The EMODnet Chemical Buffer database (North Sea regional data pool) was initially created from ICES database (DOME). The buffer aggregates all the data from the regional partners. All the data will be used to produce the products, even restricted data. However these will be treated as restricted in case of user requests. All metadata will be included in SeaDataNet infrastructure (CDI User Interface).



A short overview of the EMODnet Chemical data collection for the Greater North Sea with collected samples per parameter per matrix is shown in the table (status November 2010):

<u>Parameter Group</u>	<u>Parameter</u>	<u>WATER COLUMN</u>	<u>SEDIMENT</u>	<u>BIOTA</u>
Pesticides	Dichlorodiphenyltrichloroethane (DDT)	1.317	1.219	14.233
Pesticides	Hexachlorobenzene (HCB)	609	1.260	16.843
Antifoulants	Tributyltin (TBT)	510	894	1.513
Antifoulants	Triphenyltin (TPT)	125	378	182
Pharmaceuticals	Oxytetracycline (C <sub>22</sub> H <sub>24</sub> N <sub>2</sub> O <sub>9</sub> )	Not in the CBD database at the moment		
Heavy metals	Mercury (Hg)	1.783	6.685	67.042
Heavy metals	Cadmium (Cd)	3.217	6.695	58.378
Heavy metals	Lead (Pb)	1.178	4.771	57.775
Hydrocarbons	Anthracene (C <sub>14</sub> H <sub>10</sub> )	166	11.977	1.502
Hydrocarbons	Fluoranthene (C <sub>16</sub> H <sub>10</sub> )	228	8.856	1.630
Radionuclides	Tritium	Not in the CBD database at the moment		
Radionuclides	Cesium 137	Not in the CBD database at the moment		
Radionuclides	Plutonium 239	Not in the CBD database at the moment		
Nutrients	Nitrate (NO <sub>3</sub> )	77.654	0	0
Nutrients	Phosphate (PO <sub>4</sub> )	90.811	0	0
Organic matter	Organic Carbon (C)	25.169	54.422	0
Organic matter	Organic Carbon (N)	0	735	0

The first EMODnet Chemistry goal is to collect data and show reliable and useful interpolated maps. A remark about the possibility to generate and provide maps to users brought to do an analysis about data spatial and temporal distribution.

This analysis highlighted that:

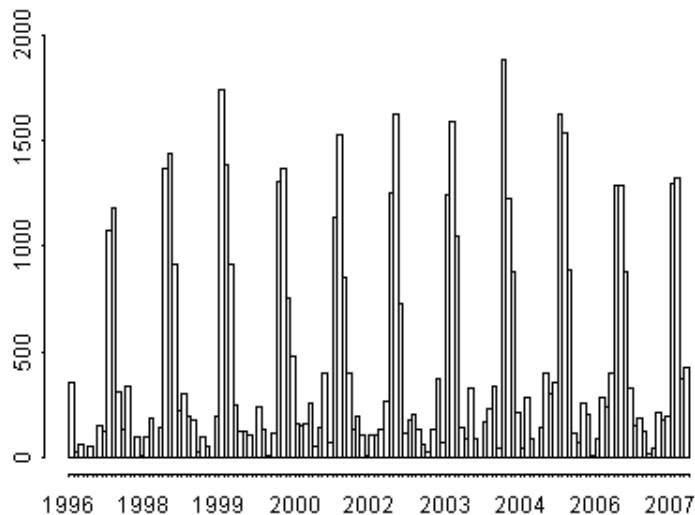
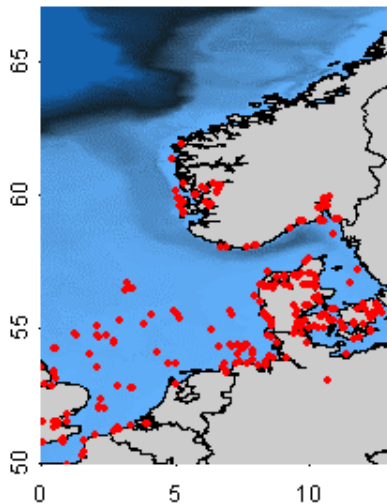
- in the biota matrix data collection there are many different species and items measured (liver, muscles ...)
- in the sediment matrix there are different grain size categories
- a lot of the measurements from biota and sediment matrix are few coastal stations with repeated measurements during time

The previous situations bring to manage small, homogeneous datasets without a good spatial coverage to provide interpolated maps. To illustrate the highlighted points some analysis on data spatial and temporal distribution are shown.

**Matrix Biota** – spatial and temporal coverage analysis for North Sea:

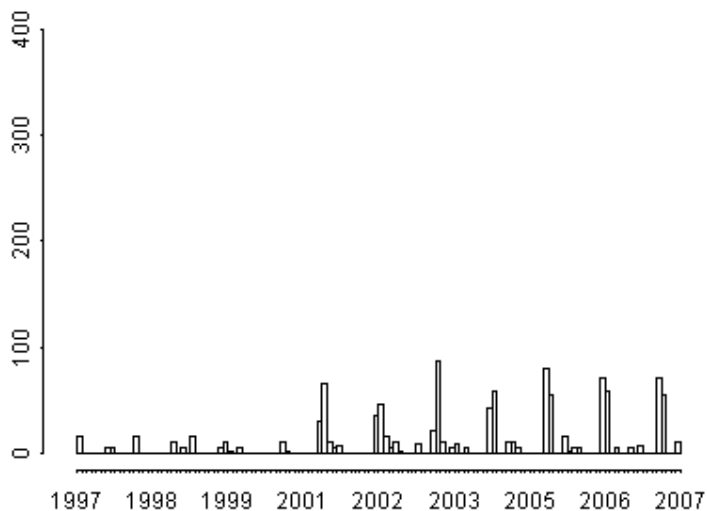
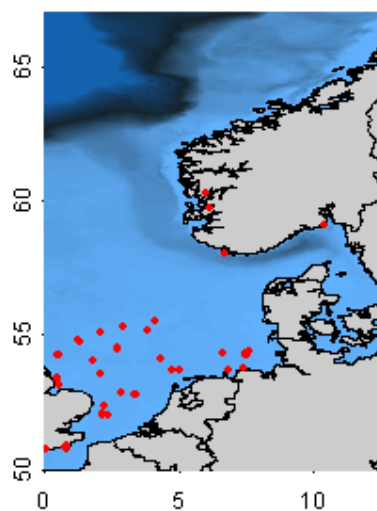
Overall data distribution: the spatial distribution map of samples on the left and the temporal distribution plot on the right are both good.

MATRIX: BIOTA



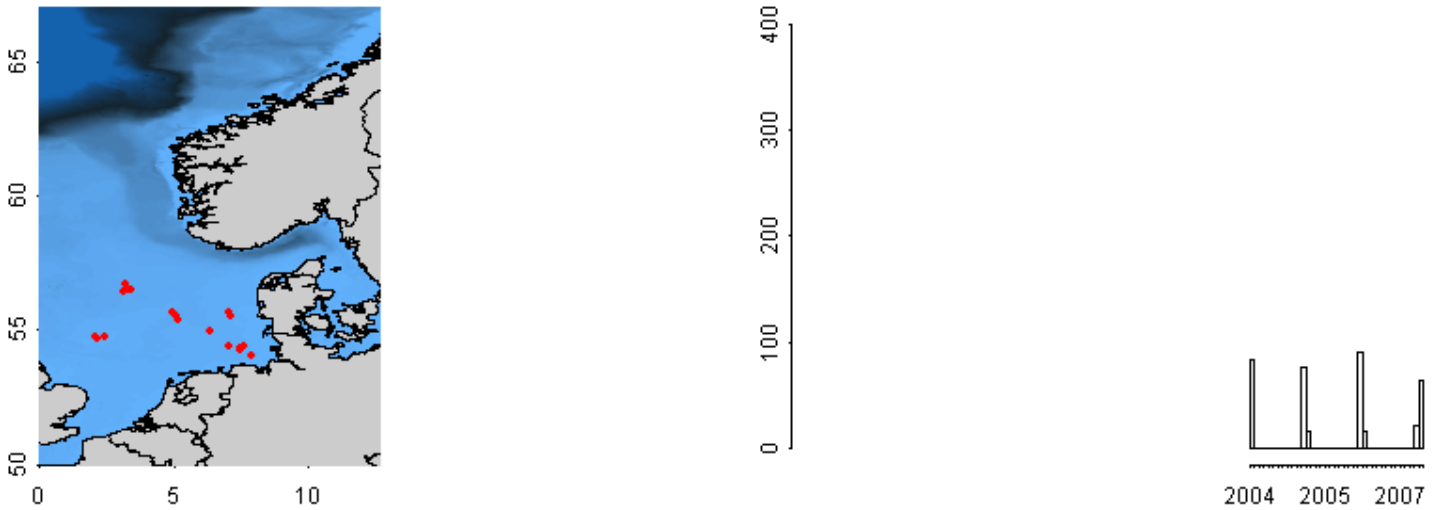
Limanda limanda liver measurements data distribution: the spatial distribution of samples on map on the left is not good, the temporal distribution plot on the right could be better.

PB in LI Limanda limanda Biota



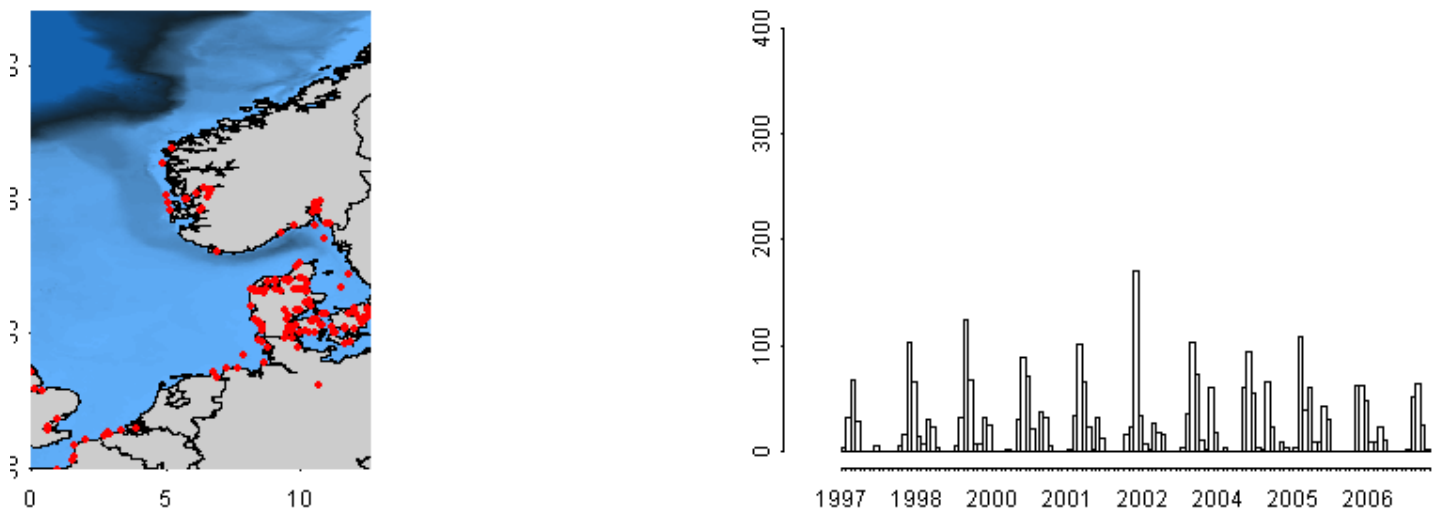
*Limanda limanda* muscle measurements data distribution: the spatial distribution map of samples on the left and the temporal distribution plot on the right are not good.

**PB in MU *Limanda limanda* Biota**



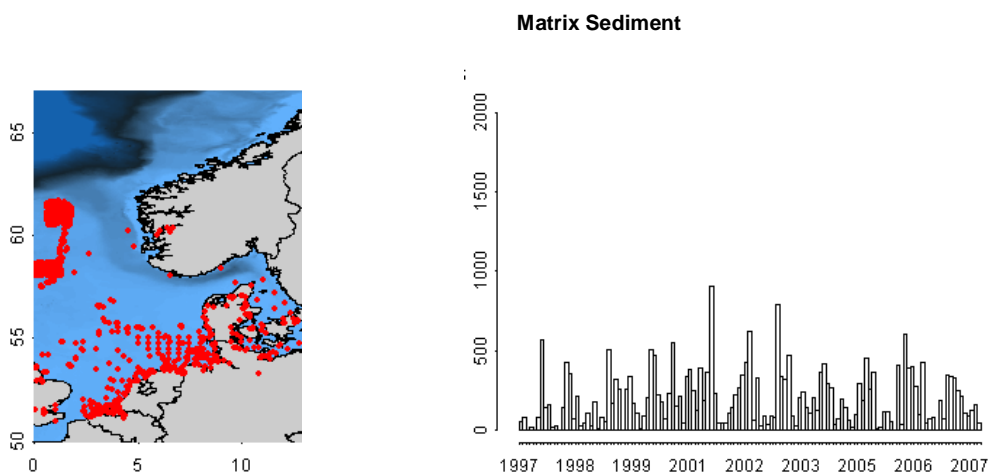
*Mytilus edulis* soft part measurements data distribution : the : the spatial distribution map of samples on the left shows only coastal stations with a poor coverage on the entire basin, the temporal distribution plot on the right is good.

**PB in SB *Mytilus edulis* Biota**

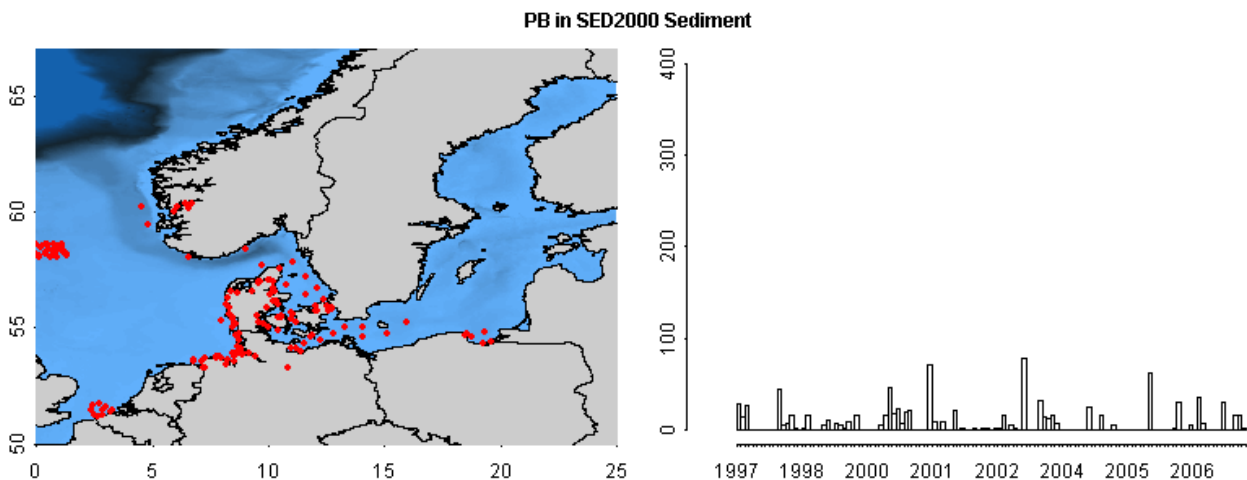


**Matrix Sediment** – spatial and temporal coverage analysis for North Sea:

Overall data distribution: the spatial distribution map of samples on the left and the temporal distribution plot on the right are both good.



Sediment fraction 2000 ( $\mu\text{m}$ ) data distribution: the spatial distribution map of samples on the left shows only coastal stations with a poor coverage on the entire basin, the temporal distribution plot on the right could be better.



## 2.2 DATA COLLECTION IN THE BLACK SEA

The data collected and used so far for the analyses for the Black Sea region are summarised in the following table (status at November 2010):

Nr00	Partner	Country	Total profiles	Measurements									
				O2	PO4	Total P	PH	Alk	SIO3	NO2	NO3	NH4	Total N
13	RIHMI-WDC	RU	904	5343	3680	3	3404	635	2469	1654	280	33	14
14	SIO-RAS	RU	147	888	837	249	226	286	855	311	361	876	152
15	MHI	UA	2500	16946	877	306	127	839	379	2361	2601	436	488
16	IO-BAS	BG	124	865	277	703	248	0	0	0	0	0	0
17	NIMRD	RO	2268	9995	6548	0	0	0	10207	6892	7729	5275	0
18	TSU-DNA	GE	10	20	25	0	0	0	0	27	30	29	27
	Yug NIRO	UA	215	1265	365	0	0	0	122	39	0	0	0
	Mb UHMI	UA	144	745	214	0	0	64	118	0	0	0	0
	Ukr SCES	UA	1916	3587	1578	819	1456	0	0	1155	549	0	836
	<b>TOTAL</b>		<b>8228</b>	<b>39654</b>	<b>14401</b>	<b>2080</b>	<b>5461</b>	<b>1824</b>	<b>14150</b>	<b>12439</b>	<b>11550</b>	<b>6649</b>	<b>1517</b>

Nr	Partner	Country	Total profiles	Measurements							Heavy metals in sediments
				DDT	Pb	Hg	Cd	Cs-137	Cs-134	Sr-90	
14	RIHMI-WDC	RU	398	98	100	100	100	0	0	0	0
15	MHI	UA	1267	0	0	0	0	422	422	423	75
18	TSU-DNA	GE		0	0	0	0	0	0	0	349
	<b>TOTAL</b>		<b>1665</b>	<b>98</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>422</b>	<b>422</b>	<b>423</b>	<b>424</b>

This overview lists the data sets that have become available to the central pool for the Black Sea at MHI per November 2010. In the meantime the gathering of data and the population of the SeaDataNet infrastructure with more Black Sea data centres, more data sets and more CDI metadata continues. This is mostly done in the framework of the Upgrade Black Sea SCENE project that is coordinated by MARIS.

The present CDI inventory for the Black Sea region as included in the Annex illustrates that further progress has been made till February 2011. In a number of cases the data sets are restricted by their data centres. Therefore the data centres will be requested to release these relevant data sets for internal analysis within the EMODNet Chemistry project.

Furthermore the Black Sea Commission Secretariate has been asked to evaluate in how far the inventory for the Black Sea region is now complete. From this evaluation it comes forward that all Black Sea countries are involved with several institutes, but that relevant data sets from the following institutes are still missing in the inventory:

The included data centres IO BAS (Bulgaria), IMS METU (Turkey), UKRSCES (Ukraine), MHI (Ukraine), IFR (Bulgaria) and General Ecology Laboratory (Bulgaria) manage more data for period 2000-2010 and should be urged to bring these forward;

Additional data sources should be found at:

Russia:

Southern Branch of the Shirshov Institute of Oceanology, Gelendzhiko

State Oceanographic Institute – SOI (also UBSS partner but not in Summary)

Turkey:

Istanbul University (is implementing MoE monitoring program in the Black Sea during last 5 years)

Ukraine:

Southern Scientific Research Institute of Marine Fisheries and Oceanography –  
YugNIRO

Ukrainian Hydrometeorological Institute - Marine Branch - UHI- MB

Romania:

GeoEcomar

Delta Danube Institute

Georgia:

Batumi Institute

Fortunately all these mentioned data centres, except for the Batumi Institute, are partners in the Upgrade Black Sea SCENE project and underway with connecting to the infrastructure and/or with further population of the CDI service.

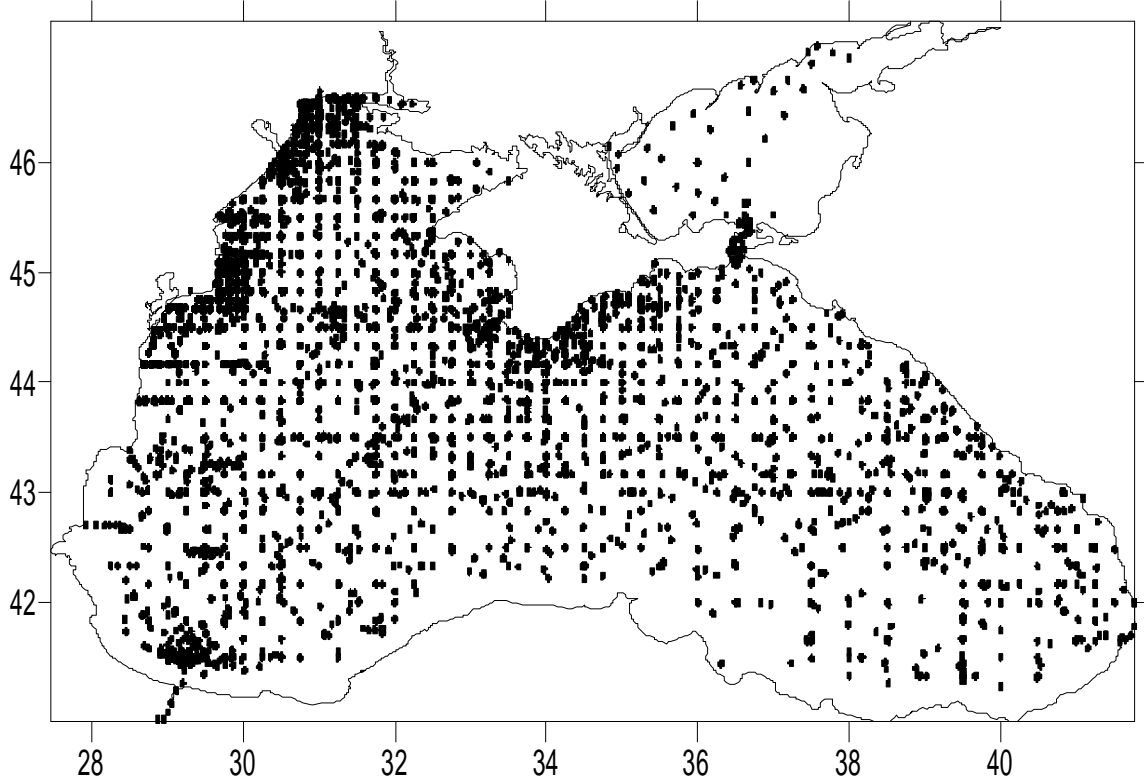
These institutes will be urged by MARIS as part of the Upgrade Black Sea SCENE project to focus on the EMODNet Chemistry parameters and to complete the Black Sea overview and make their relevant data sets available to MHI for inclusion in the EMODNet analyses and data products.

About the Black Sea data source the situation is the following. For Ukraine, Russia and Georgia we are informed that there is no exact difference between “research” and “environment” agencies. Indeed the data are mostly from “research” agencies because “environment” (non-governmental) agencies have no proper equipment to measure chemical elements and pollutants in seawater.

Specifically about Ukraine only UkrSCES can be considered as environment agency and it is a component of the governmental ecological structure. A part of the Black Sea data are from them. At the moment, as presented during the last meeting in Bruxelles, this data are passing the quality check procedure.

Still in Ukraine there is an ecological station under Odessa National University located on Zmeiny island. It is not a research agency either. Black Sea data pool plan to receive data from it within 2011. Besides this they hope to get some additional data from the institutions participating in BlackSeaScene Upgrade Project in 2011.

Black Sea spatial distribution of profiles:





## 2.3 DATA COLLECTION IN THE MEDITERRANEAN SEA

In the Mediterranean Sea 5 spots were identified:

- Balearic Sea
- Gulf of Lion
- North Adriatic Sea
- Gulf of Athens
- NE Levantine basin

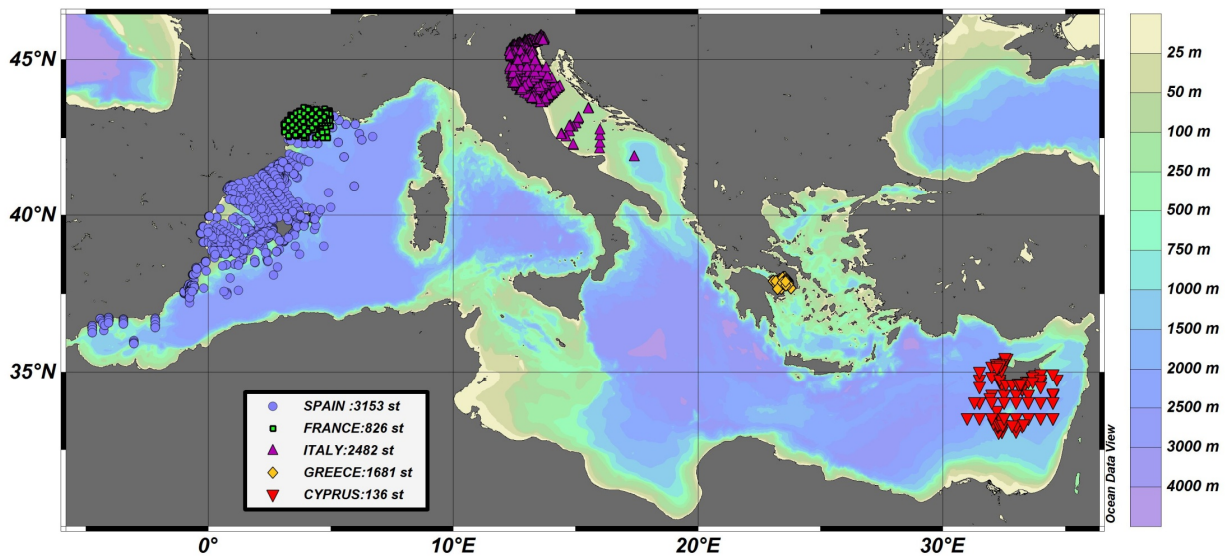
The data collected for the water column in 5 spots of the Mediterranean Sea are summarized in the 5 column of the following table (status at November 2010):

PARAMETERS	SPAIN: 3153 st	FRANCE: 826 st	ITALY: 2482 st	GREECE: 1681 st	CYPRUS: 136 st
<b>FERTILISERS</b>					
NTRA [millimole/m3] NITRATE (C14)	2532	435	1706	1668	101
PHOS [millimole/m3] PHOSHATE (C15)	2518	512	1542	1665	102
<b>ORGANIC MATTER</b>					
TOCW [millimole/m3] TOTAL ORGANIC CARBON (C16)				274	
<b>Particulate Organic Carbon (C16)</b>					
POCP [milligram/m3] PARTICULATE ORGANIC CARBON/POC		56			
PC1P [millimole/m3] PARTICULATE ORGANIC CARBON/POC			360	629	
<b>Dissolved Organic Carbon (C17)</b>					
CORG [millimole/m3] Dissolved Organic Carbon		56	367		
<b>Particulate Organic Nitrogen (C17)</b>					
PONP [milligram/m3] PARTICULATE ORGANIC NITROGEN		42			
PN1P [millimole/m3] PARTICULATE ORGANIC NITROGEN		17			
<b>Dissolved Organic Nitrogen (C17)</b>					
NORG [millimole/m3] DISSOLVED ORGANIC NITROGEN		57			
<b>HEAVY METALS</b>					
Dissolved Cd [ng/l] (C7)				701	
Dissolved Pd [ng/l] (C8)				702	
Suspended Cd [ng/l] (C7)				486	
Suspended Pd [ng/l] (C8)				550	
<b>RADIONUCLIDES</b>					
Cesium 137 [mBq/l] (C12)					15

The data collected for Biota Matrix of the Mediterranean Sea in the following table (at the moment only Greece supplied Biota matrix data):

Parameters	Cyprus	Greece	France	Italy	Spain
Heavy Metal					
Cd (C7)*		133 samples *			
Pd (C8)*		21 samples *			
Pesticides					
DDT (C1)*		74 samples			
HCB (C2)*		54 samples			

Mediterranean Sea spatial data distribution for water column stations:



### Synthesis about spatial and temporal distribution analysis on the water column:

A well detailed analysis showing temporal and spatial distribution of collected measurements, provided by Mediterranean Regional Task Leader, was presented in Bruxelles at progress meeting of end November 2010. The presentation is now available on the extranet of dedicated portal.

Here a synthesis about the results of analysis is presented:

- **Spain:** the analysis about measurements spatial and temporal distribution highlighted that the seasonal time scale is the best choice for interpolated products generation.
- **France:** the analysis about measurements spatial and temporal distribution highlighted that the seasonal time scale is the best choice for interpolated products generation.
- **Italy:** The first dataset sent has got an error that doesn't allow the import of all stations. A correct data set has been requested to perform the complete analysis.
- **Greece:** the analysis about measurements spatial and temporal distribution highlighted that the seasonal time scale and selected years are the best choice for interpolated products generation.
- **Cyprus:** the monthly time scale of specific years was chosen for the interpolated products generation.

By seasonal time scale it is meant the division of all available years in four seasons (winter, spring, summer, fall).

As winter are selected the first three months of the year: January, February and March. ( and so on for the rest of the seasons).

In the Cyprus case the data are in a synoptic scale e.g. specific cruises in specific months. So, depending on the data density, highlighted by the spatial and temporal analysis, the products are computed on a monthly scale of specific years.

## 2.4 METADATA COMPILATION

The total CDI inventory for the EMODnet Chemical P021 terms and target areas gives an overview on the data availability through the EMODnet CDI User Interface (as each data profile is identified by a CDI entry).

Partner	Country	Records nb
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	RUSSIAN FEDERATION	38757
British Oceanographic Data Centre (BODC)	UNITED KINGDOM	17594
Bulgarian National Oceanographic Data Centre (BGODC), Institute of Oceanology	BULGARIA	40
Cyprus Oceanographic Data Center, Oceanography Center	CYPRUS	499
Finnish Meteorological Institute (FMI)	FINLAND	2084
Flanders Marine Institute	BELGIUM	1382
German Oceanographic Datacentre (NODC)	GERMANY	16423
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMRH/NODC)	GREECE	19110
IFREMER / IDM/SISMER	FRANCE	35068
Institute of Biology of the Southern Seas, NAS of Ukraine	UKRAINE	5
Institute of Fishery Resources (IFF)	BULGARIA	88
Institute of Marine Sciences, Middle East Technical University	TURKEY	1507
Institute of Oceanography and Fisheries	CROATIA	1477
International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	MALTA	128
Israel Oceanographic and Limnological Research (IOLR)	ISRAEL	3120
Iv.Javakishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO)	GEORGIA	43
Laboratory of Marine Ecology-Central Laboratory of General Ecology	BULGARIA	51
Latvian Institute of Aquatic Ecology	LATVIA	134
Management Unit of the North Sea and Scheldt estuary Mathematical Models, Belgian Marine Data Centre (MUMM-BMDC)	BELGIUM	3146
Marine Hydrophysical Institute	UKRAINE	2050
Marine Institute	IRELAND	4521
National Environmental Research Institute, University of Aarhus, Department of Marine Ecology	DENMARK	116439
National Institute for Marine Research and Development Grigore Antipa	ROMANIA	3374
National Institute of Biology - NIBMarine Biology Station	SLOVENIA	3242
National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences	BULGARIA	50
Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology (NIOO-CEME)	NETHERLANDS	7987
NIOZ Royal Netherlands Institute for Sea Research	NETHERLANDS	4137
Odessa National I.I. Mechnikov University	RUSSIAN FEDERATION	324
OGS, National Institute of Oceanography and Experimental Geophysics, Department of Oceanography	ITALY	38526
P.P. Shirshov Institute of Oceanology, RAS	RUSSIAN FEDERATION	122
Rijkswaterstaat Waterdienst	NETHERLANDS	11132
Scientific - Research Firm "GAMMA"	GEORGIA	308
Sinop University, Fisheries Faculty	TURKEY	32
Spanish Oceanographic Institute	SPAIN	9563
Swedish Meteorological and Hydrological Institute, SMHI	SWEDEN	53662
Ukrainian scientific center of Ecology of Sea (UkrSCES)	UKRAINE	3409
	<b>TOTAL RECORDS</b>	<b>399534</b>

### **3. QC/QA AND PRODUCTS (WP3)**

#### **3.1 QUALITY ASSURANCE AND QUALITY CONTROL STANDARDS**

Ultimately, the usefulness of the data that is collated and distributed through the EMODnet Chemical portal will be largely due to the uniform quality and reliability of these data. The work package is divided into a number of distinct activities, all of which contribute to the overall quality control and assurance of the data in the portal.

#### **3.2 ADOPTING STANDARDS AND PROTOCOLS**

At the outset of the EMODnet Chemical pilot it was stated that existing international standards and best practices would be adopted for the transport and display of data in the portal. By doing this, the partners ensure that they are following the best available knowledge and will most likely contribute to the further refinement of the adopted standards. EMODnet Chemical is using the data formats and vocabularies employed by the established data project “SeaDataNet”.

One of the key areas, from a chemical perspective, has been ensuring the correct mapping and populating of the parameters and methods that make up the SeaDataNet vocabularies. This involves a lot of work and many experts input, as they key to inter-operability is the ability to point to a parameter from 2 distinct places and be confident that it is the same parameter, collected in a comparable way and measured in an acceptable fashion.

In addition, the standards and guidelines from relevant marine conventions (the Black Sea Commission, MEDPOL, Ospam and HELCOM) have been consulted when establishing baseline procedures when choosing matrices, chemical units, methods and other supporting information.

#### **3.3 GUIDELINE DOCUMENTATION**

A basic QC/QA guidance document has been produced for the regional partners

[http://nodc ogs.trieste.it/emodoc/QC\\_Guidelines\\_EMD-Chemical\\_version1.1.doc](http://nodc ogs.trieste.it/emodoc/QC_Guidelines_EMD-Chemical_version1.1.doc)

This should be seen as a first working version, which will be amended and enhanced as the project develops. To many marine chemists this document will appear rudimentary and broad in scope. This is because the guideline is designed to be applicable across 3 marine regions and understandable to non-chemists, as the national data centres that co-ordinate the data collection need to be able to follow the QC process.

The guidelines have been extracted from the ICES working procedures for chemical data, which in turn draws from HELCOM COMBINE manual, OSPAR MON recommendations and specific input from ICES working groups that regularly use the data in assessments. However, it should be noted that in a broader EMODnet setting, many of the checks and criteria are not relevant as the guidelines were largely developed from a northern European perspective.

In 2010 both OSPAR and HELCOM monitoring groups that cover chemical contamination accepted a change in data reporting that originated from the ICES Marine Chemistry Working Group (ICES MCWG). This means that the quality assurance aspect of chemical data which are largely dealt with at the laboratory/institute will not to be reported at length when transmitting the data elsewhere. The results of QA exercises, reference material tests etc. which currently need to accompany data when it is exchanged will no longer be necessary (although may still be recommendable). The data should now have an uncertainty value and a method of calculating the uncertainty.

The guidelines for this method of data exchange are still being defined and will be updated to the EMODNET Chemical QA/QC guidelines in early 2011.

A placemaker has been made for late in the lifecycle of the project to run a review of the QA/QC of the data referenced under the EMODNET Chemical umbrella. There are a number of possibilities on how to run this and it may be a workshop of regional experts who will critically evaluate the data and meta-data or it might also take the form of a regional review of how well the data that has been reported fulfils the criteria set out in the QA/QC guideline.

At this stage there are no 'automated' checks in place for the data, beyond what the national data centres already perform, however with the documentation in place and with the use of standard formats and vocabularies it is intended to explore how the Ocean Data View (ODV) software may be able to perform some of these functions.

### 3.4 MAPS PRODUCTION

#### Interpolated maps

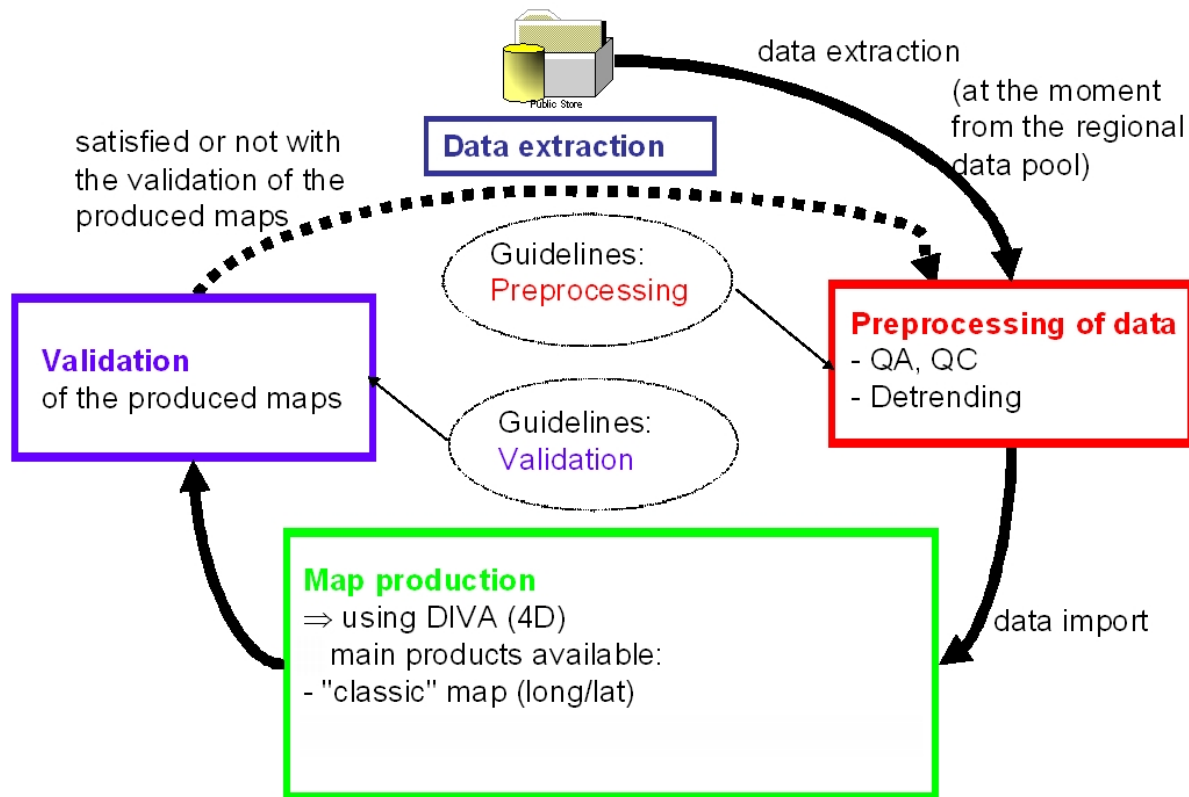
Maps generation started with nutrients in the water column (for the 3 regions), then extended to other chemicals in the water column.

As agreed on the first annual meeting for EMODnet Chemical Lot a small working group have interact with domain experts at their institutes to ask them which products could be useful and how to create them (data and map processing). The guidelines for products was shortly presented at the ur-EMODnet meeting in Copenhagen (25th may 2010) and is available at EMODnet chemical portal.

The aim for the guidelines for the DIVA maps production is to establish a common and documented basis for the maps production with focus on the pre-processing of data and the validation of the produced maps. The guidelines are divided into four steps:

1. Data extraction
2. Pre-processing of data
3. Maps production
4. Validation of the produced maps

The regional task leaders, which are responsible for the regional data pools are recommended to work through the listed processes. The following figure describes the overall concept for the DIVA maps production and is recommended as the working process for the maps production.



Besides, we have to be careful in which map we decide to make, on how to validate the gridded field before showing products, because very strong gradients can appear for a lot of this parameters. Probably we have to consider the data availability, and analyse the data distribution in space and time (gap analysis). At the same time, DIVA computes the error field that can be used to mask interpolated fields over a fixed threshold.

DIVA provides a lot of tools to optimize products and we can use it. In parallel is important to ask the experts opinion to understand which kind of maps that make sense. This is to focus on a number of basic products that we must make available at the EMODnet portal.

### Not Interpolated products

For the Sediments and Biota (considering the target species MYTILUS) matrixes the data distribution analysis highlighted that data coverage is not the best to produce interpolated maps. This because many data are collected as time series of coastal monitoring, with a small number of stations for more or less long time periods. For these two matrixes common alternative products must be decided.



As described in the WP1 activities a specific Expert workshop has been done in Venice to discuss the issue.

The spatial distribution too sparse or limited to coastal areas is clearly not suitable to make standard Diva analysis.

To manage properly this situation the Chemical lot will need to make a good work of analysis, normalization and metadata collection in order to obtain homogeneous datasets well described.

The technical solution commonly agreed was to show the single stations on maps linked to plots pre-calculated by using ODV software that describes the time series of measurements for each parameter considered.

A first prototype of this kind of products was already presented during the November 2010 progress report in Bruxelles and is described in technical development section of this report.

The EMODnet Chemical portal give access to all the integrated maps of selected parameters produced at regional level, through the EMODnet Data Products Viewing and Downloading Service and the EMODnet Data Products Discovery Service Catalogue.

### **From Venice expert meeting discussions**

The possibility to do DIVA calculations using time and length along coastline as variables was suggested for variables located along the coastline. This idea was later dropped for several reasons.

Among others DIVA and the product viewer would need to be adapted to generate and visualize such products. In some cases this would be quite a significant adaptation.

Several questions remain also open: how to avoid an erroneous interpolation between two adjacent bays which are largely disconnected when the problem is reduced to only one spatial dimension? How can data which are not exactly at the coastline be included? They would probably need to be excluded from the analysis.

For the DIVA products we have decided to show only the gridded field where the expected error does not exceed a given threshold. For parameters where data are only available near the coastline, the offshore analysis will be masked. This approach will be quite similar to performing the analysis only at the coastline, but with the benefit that the real topography is taken into account and that all data can be used.

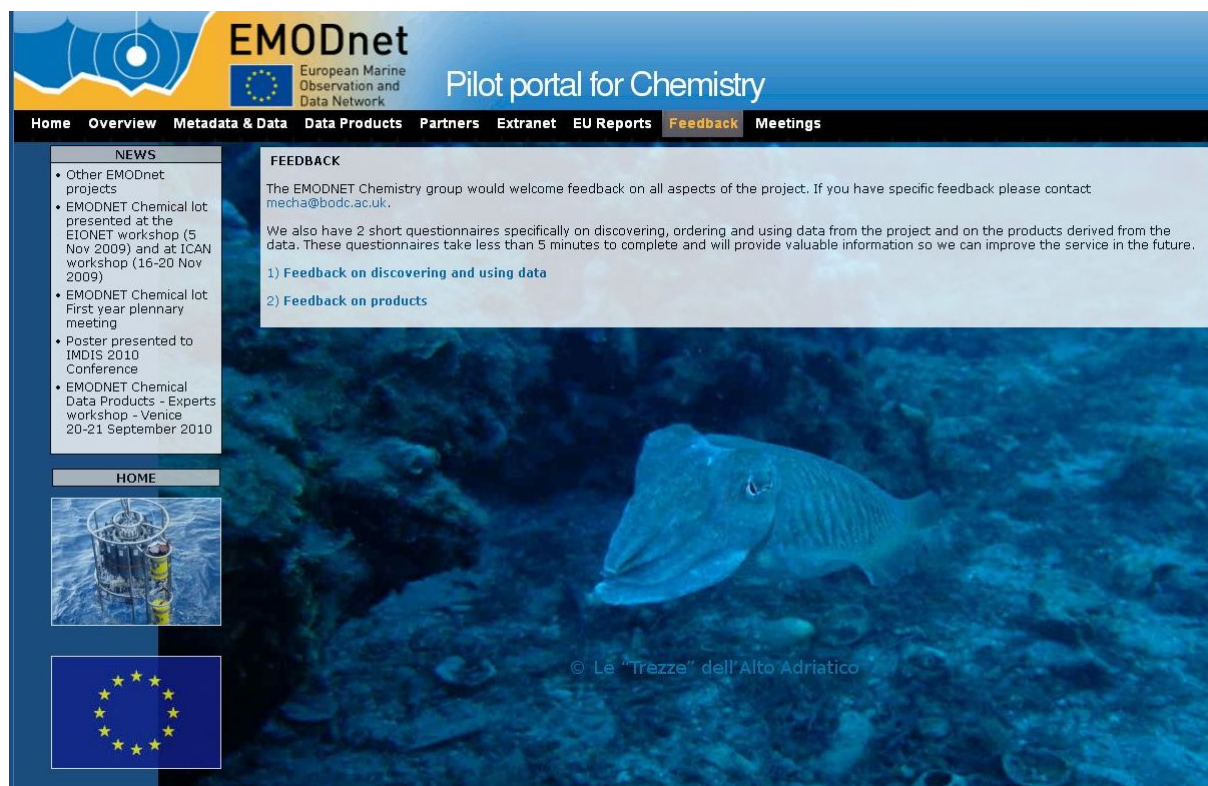
## 4. TECHNICAL DEVELOPMENT AND PORTAL OPERATION (WP4)

EMODnet Chemical pilot project technical developments included in the first six months of the second year some upgrading activities.

### Feedback

First of them (October 2010) was to fill the portal with the feedback link set up by Mark E. Charlesworth (NERC-BODC) using the software 'Survey Monkey'. This link lets to users and experts to fulfil two short on-line questionnaires about:

- data discovering and using (users can suggest about CDI interface, the obtained results, data format, used criteria for search data)
- products (the suggestions are given about data product characteristics, accuracy of contaminant's representation, how to improve the portal)



The screenshot shows the EMODnet Pilot portal for Chemistry Feedback page. The header includes the EMODnet logo and the text 'European Marine Observation and Data Network'. The navigation menu includes links for Home, Overview, Metadata & Data, Data Products, Partners, Extranet, EU Reports, Feedback, and Meetings. The main content area is titled 'FEEDBACK' and contains the following text:

The EMODNET Chemistry group would welcome feedback on all aspects of the project. If you have specific feedback please contact [mecha@bodc.ac.uk](mailto:mecha@bodc.ac.uk).

We also have 2 short questionnaires specifically on discovering, ordering and using data from the project and on the products derived from the data. These questionnaires take less than 5 minutes to complete and will provide valuable information so we can improve the service in the future.

- 1) [Feedback on discovering and using data](#)
- 2) [Feedback on products](#)

The page also includes a 'NEWS' section on the left with several bullet points, a 'HOME' section with a small image of a research vessel, and a footer with the European Union flag and the text '© Le "Trezze" dell'Alto Adriatico'.

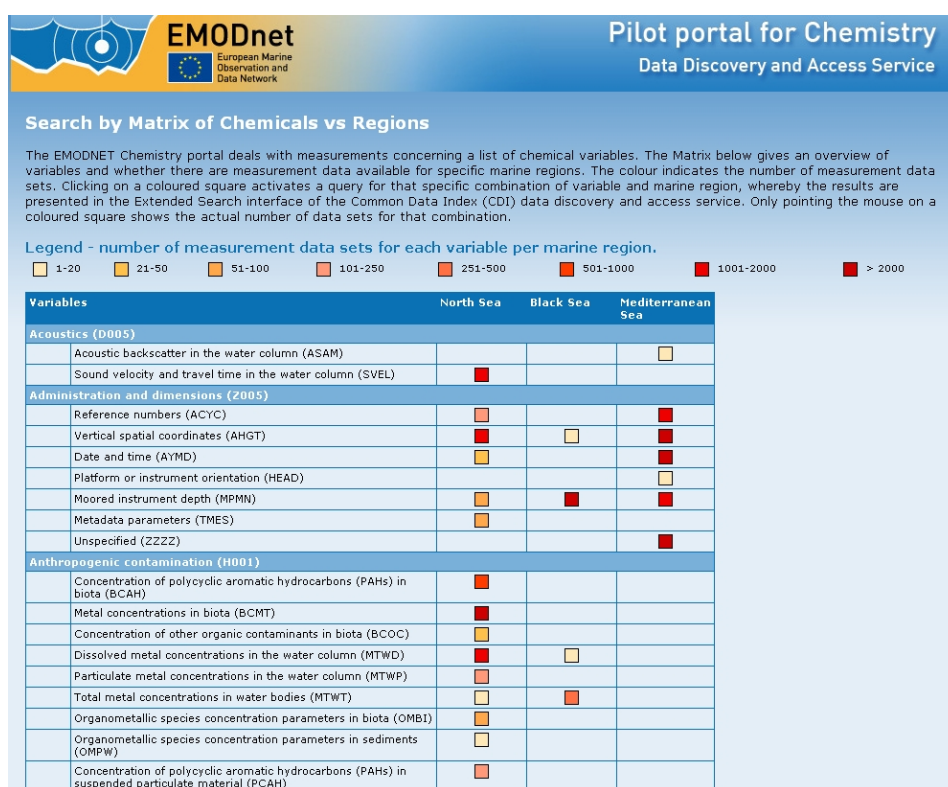
*EMODNET Pilot: Feedback page.*

A more detailed description about this action is given on the next chapter "Analysis and evaluation"

## Matrix Variables Vs Regions

A new metadata discovery service called “CDI matrix Variables VS Regions” was set-up from Maris (November 2010). This to show in a clear way the data availability in the 3 regions of interest per each parameter considered. The matrix is linked directly to the CDI discovery service in order to help the users to search data in which are interested in.

The image below gives an overview of “CDI matrix Variables VS Regions”. The matrix shows variables and whether there are measurement data available for specific marine regions. Colours indicate the number of measurements. Clicking on a coloured square activates a query for that specific combination of variable and marine region, whereby the results are presented in the Extended Search interface of the Common Data Index (CDI) data discovery and access service. Only pointing the mouse on a coloured square shows the actual number of data sets for that combination.



The screenshot displays the EMODnet Pilot portal for Chemistry Common Data Index (CDI) V2. The interface is divided into several sections:

- Search by Matrix of Chemicals vs Regions:** A section explaining the search functionality and a legend for the number of measurement data sets (1-20, 21-50, 51-100, 101-250, 251-500).
- Variables:** A list of variables categorized by region (North Sea), including Acoustics (SBRD), Administration and dimensions (Z005), Anthropogenic contamination (H001), and various chemical and physical parameters.
- Map:** A world map showing the location of data sets, with a red arrow pointing from a specific data set in the table to its location on the map.
- Data Table:** A table listing data sets with columns for Data set name, Country, Start date, Variables measured, and Instrument / gear type. The table shows several entries for 'RNODC\_Bottle\_9808' from the Russian Federation, with start dates ranging from 19770414 to 19770424.

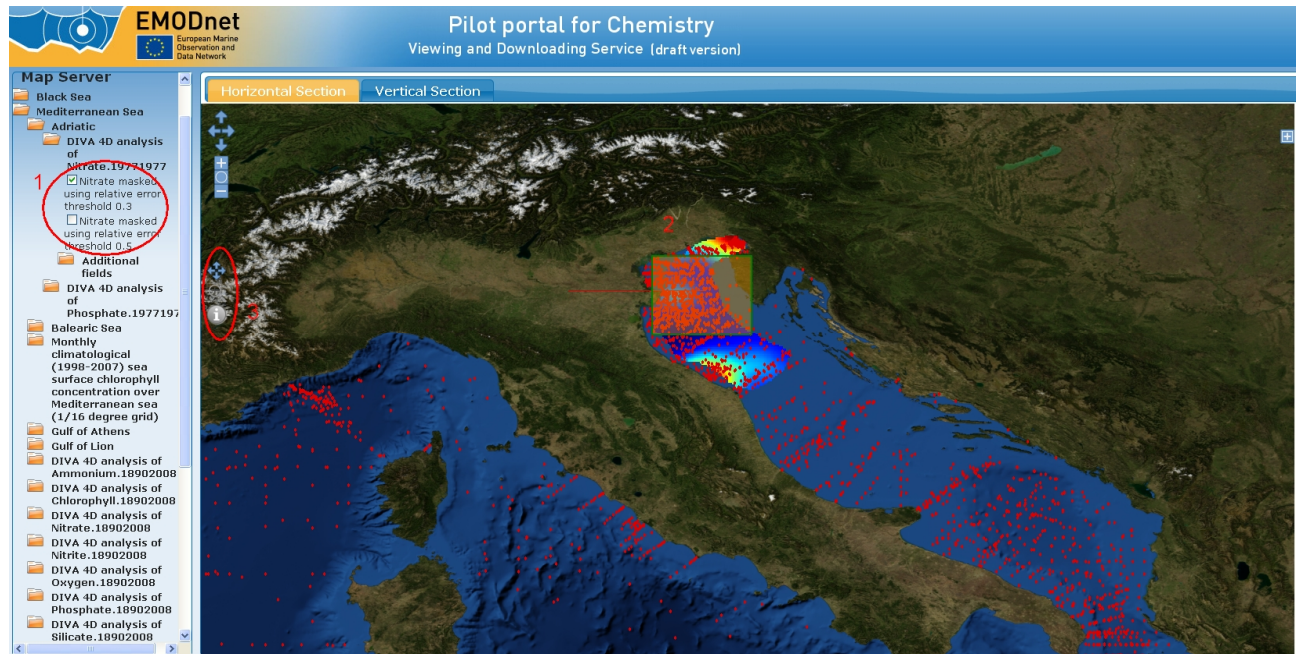
*New CDI discovery service "matrix Variables VS Regions".*

## Ocean Browser

For the Ocean Browser viewing service new features were added during the last month of activities:

- Changed directory structure: 1st level: masked field, 2nd level complete field and other fields;
- Better integration of CDI interface: the location of all available data can be overlaid to the gridded products and zoom level is maintained;
- The interface has now two modes: panning and zooming by drawing an area.





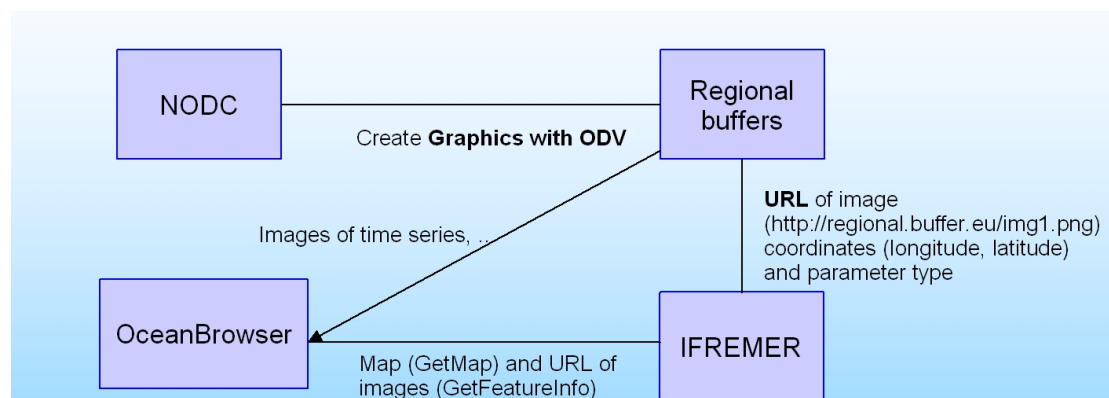
Ocean Browser new feature:

1. *changed structure;*
2. *zoom level maintained adding CDI layer;*
3. *panning and zooming mode.*

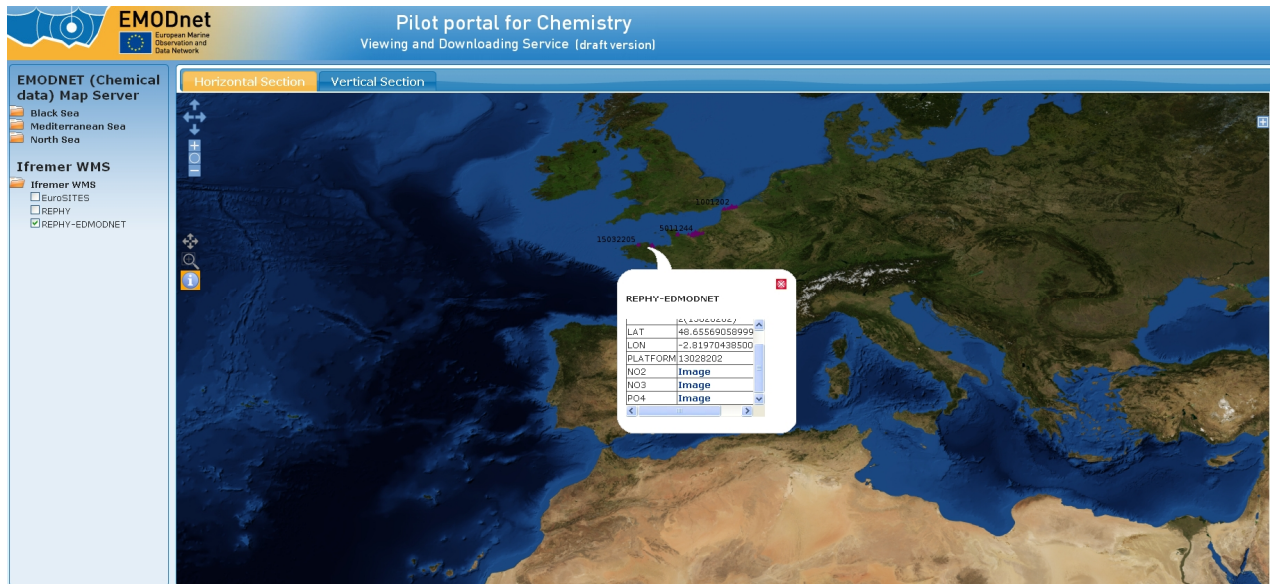
### Ocean Browser & “time series data”

A test link was set up thanks to Gher and Ifremer collaboration to suggest a possible technical solution to visualize “time series data”. The Idea at the moment is to provide time series plots (ODV software) and then to visualize them by the Ocean Browser viewing service:

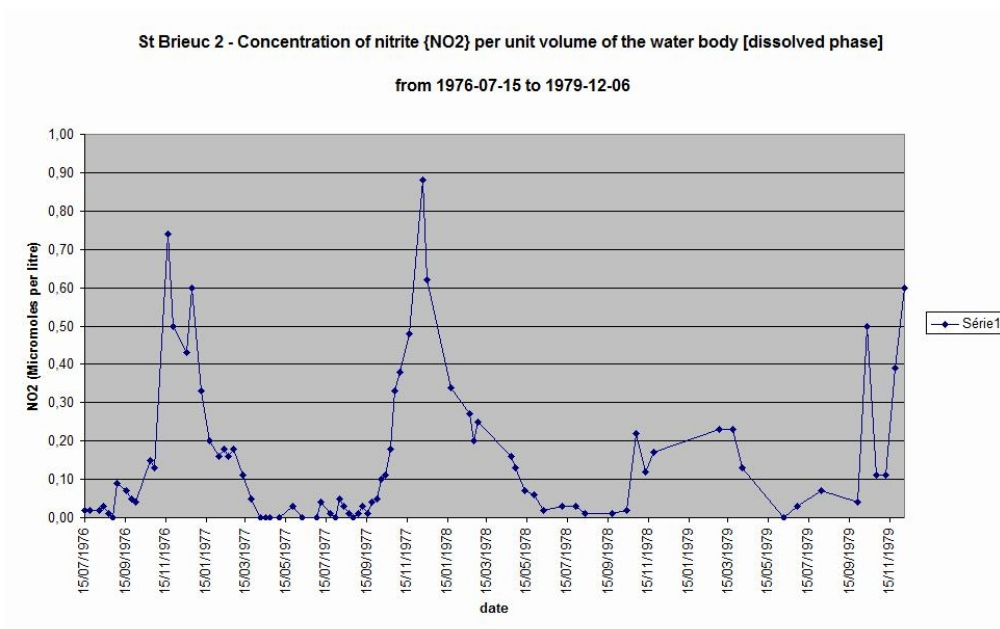
- First step could be to store the images at a centralized place
- Afterwards we will consider to use the regional buffers as a place to store these images (decentralized approach) linked to OceanBrowser



Technical development flow chart

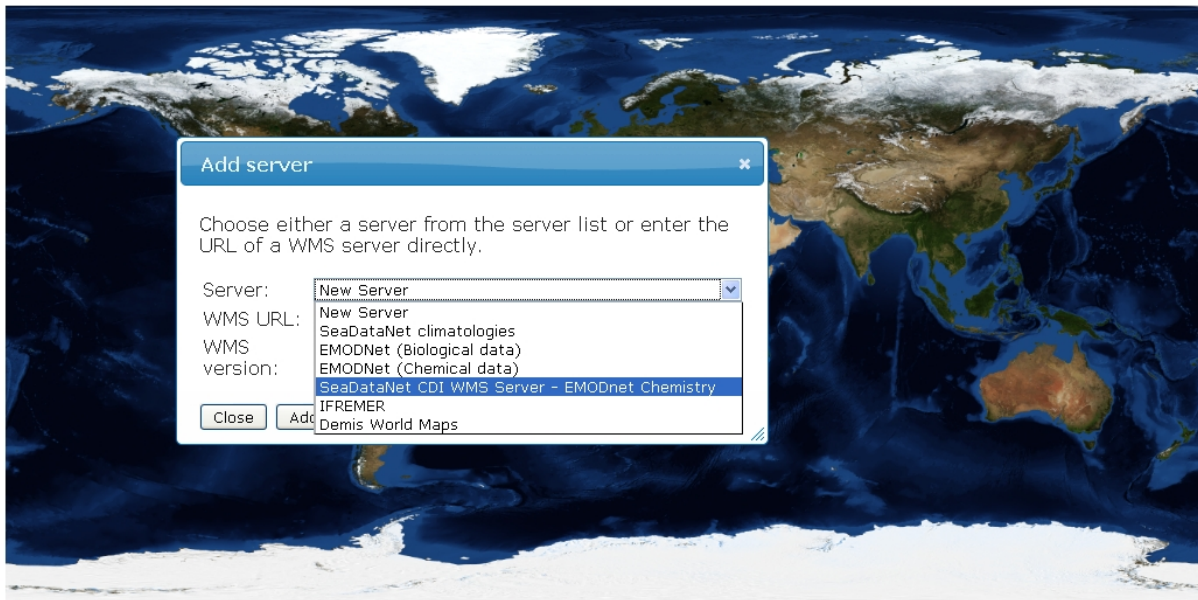


Ocean Browser “time series mode”



Time series Plots linked to Ocean Browser viewing service

The integration with other Web Map Services is possible thanks to the OGC standards compliance. For this reason is possible to query an inventory of layers from other WMS servers and visualize them in the EMODnet Chemical portal together with the chemical data products.



*Integration with other Web Map Services*



## 5. ANALYSIS AND EVALUATION

The main 2 pieces of work within this work package have been to develop on-line questionnaires to gather feedback from users and to calculate statistics on use of the EMODnet chemistry portal and CDI interface.

A specific page on the EMODnet portal has been developed to receive feedback and users may either provide direct feedback to the consortium or can complete a questionnaire. There are 2 questionnaires which are designed for getting feedback from users who discover, download and access data and also users who access the products. They can be accessed from the below links (Ctrl and click)

[Feedback on discovering and using data](#)

[Feedback on products](#)

An example screen shot of the questionnaire for discovering and using data is shown below. The questions are limited to 10 to encourage users to provide feedback and have been designed to get information on how to improve the service and identify and barriers to the provision or use of the data and identify gaps in data which then can be prioritised. Feedback is being collected and a full analysis will be undertaken of the results in the final year.

EMODNET chemistry data user Survey - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.surveymonkey.com/s/326859

Most Visited Getting Started Latest Headlines Customize Links Free Hotmail Water Information Sy... Welcome to GoMOOS Windows Marketplace Windows Media Windows

EMODNET chemistry data user [Exit this survey](#)

1. Default Section

1. How did you find the CDI interface for searching for data?

	Very good	Good	Sufficient	Poor	Very poor
Ease of use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speed of response	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Search criteria	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Suggest Improvements

2. Did you find data suitable for your need?

Yes

Some

No

Please provide further information if you answered 'some' or 'no'

3. Did you receive the data that you requested via the interface within a reasonable time scale?

Yes

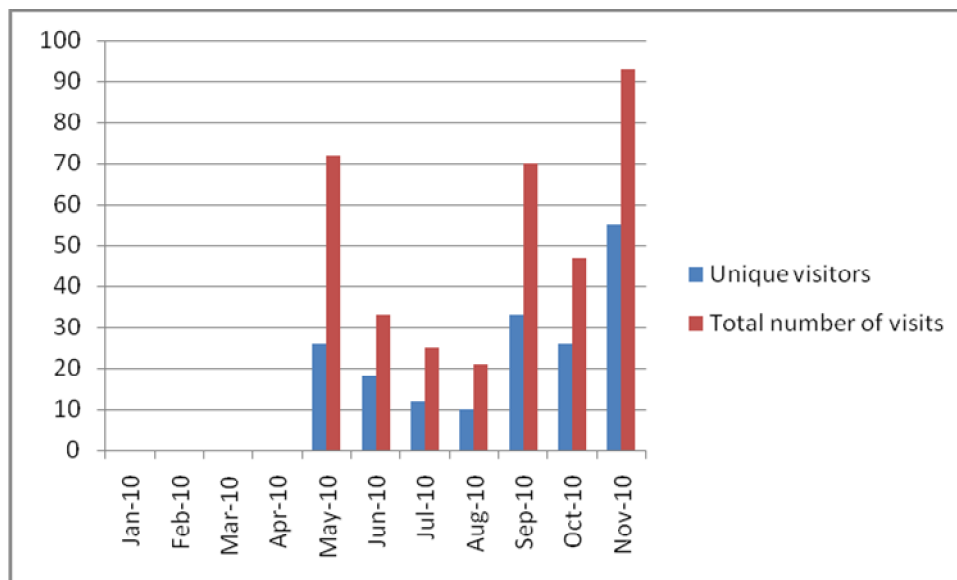
No

Further comment

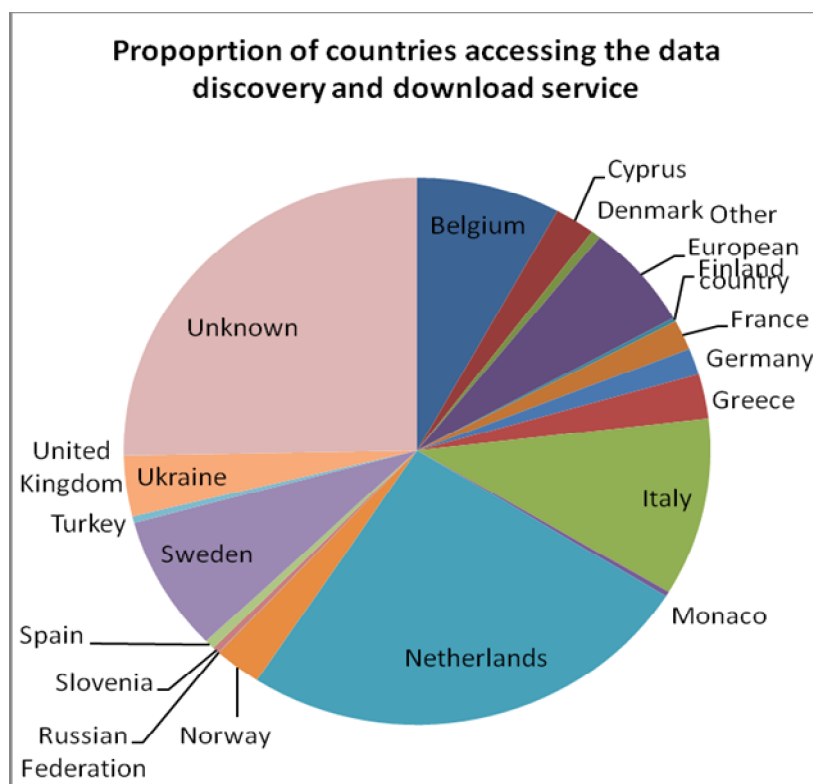
4. Do you feel that the licence conditions for use of the data are reasonable?

Yes

The below figure shows that since the launch of the data discovery service number of visitors have remained fairly stable but shows signs of increasing in the last quarter of 2010. In the later stages of the project users who have registered to download data will be prompted to complete the questionnaires.



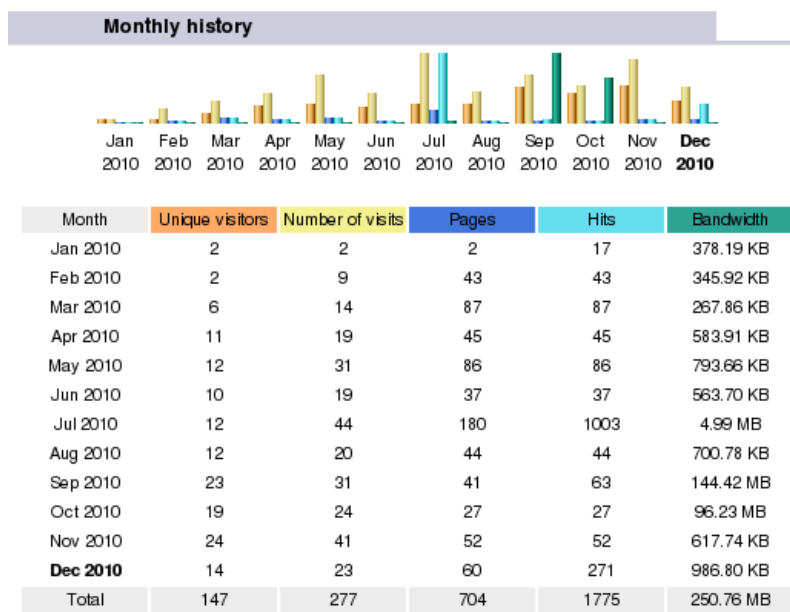
Users from 18 identifiable countries have accessed the data discovery and download service since the launch.



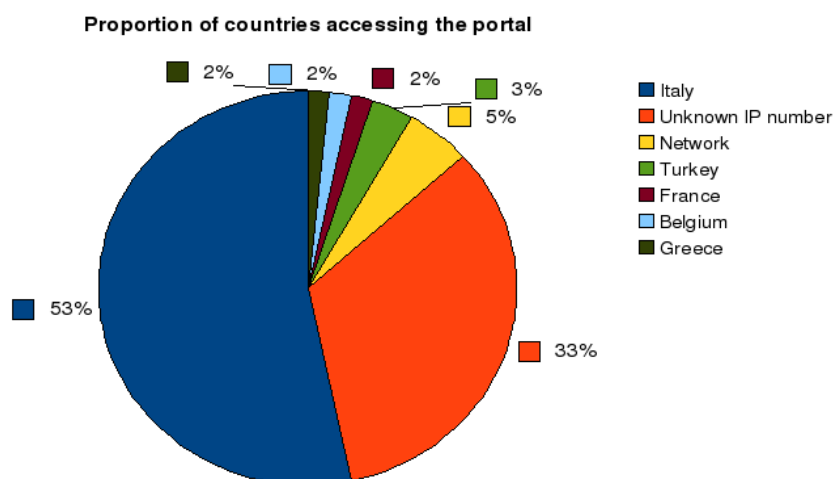
2011 will concentrate on gathering further feedback both from the users and also the consortium to identify any barriers to the provision of data. This will then identify technical

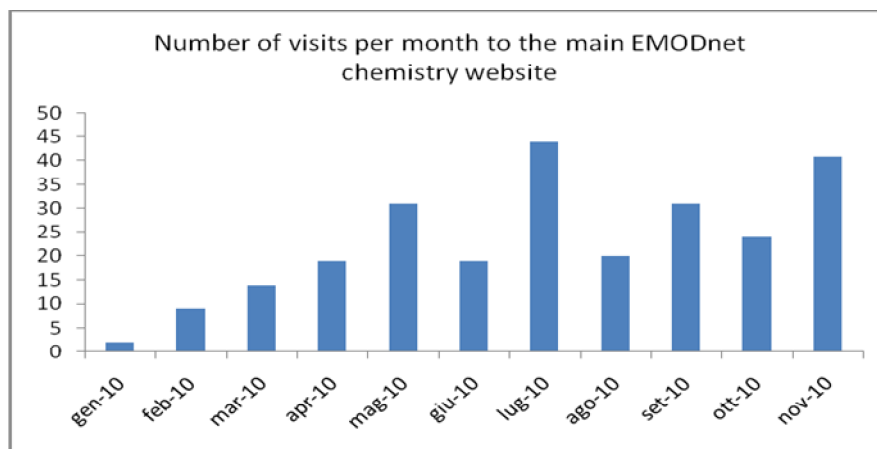
areas which need improvement in the future and also areas where further determinands and/or geographic areas should be concentrated upon. It is expected that use of the portal will increase with further dissemination in the final year.

The figures below show the monthly report of visits of the EMODnet portal. The most visited page is the “Extranet” section: the number of visits has grown since the launch of the area where documents are accessible.



In the following diagram there is the countries list of the visitors. The used criteria are to check the extension of the incoming domain. Main users come from Italy. There are a considerable number of visitors under the label “Unknown IP number”, which are identified only by the number of the internet provider (in this case the country is masked).





*The number of visits to the main EMODnet chemistry website has grown steadily since launch and in November reached 41 visits.*

## 6. CONCLUSIONS

The first year of EMODNET Chemical pilot activity was dedicated to set up the system components (the three internal regional data pools dedicated to the product generation, the SeaDataNet vocabularies used for chemical parameters mapping and their extension to cover all the EMODNET Chemical lot parameters, the portal core services, discovery and viewing systems based on SeaDataNet CDI interface ).

The main difficulties in the EMODNET Chemical pilot are represented by the data complexity management.

The measurements we are dealing with are related to:

- 8 groups of parameters (pesticides, antifoulants, pharmaceuticals, heavy metals , hydrocarbons, radionuclides, fertilisers, organic matter)
- 3 matrices (sediment, water column and biota).

The Chemical Lot is facing the management and standardization of the heterogeneity of data and metadata:

- the sampling (coastal points time series Vs homogenous sampling on basin scale)
- different measurement methods and targets (instrument, method, target species, target basis, grain sizes)

Great attention on the collection and management must be kept. Will be crucial to provide the best metadata available describing for example: sediment fraction measured, dry/wet weights measurements, measurement methodology. This in order to help a correct comparison between homogeneous sets of data and analysis. The continuous update and upgrade of SDN common vocabularies will help to manage this.

It is clear that the use of DIVA standard interpolation is suitable only for the more “classic” sets of parameters measured in the water column.

For the parameters measured in the other two matrixes such as Biota and Sediment the spatial and temporal distribution of available data highlighted the need of a different commonly agreed analysis approach.

An Expert workshop (Venice, September 2010) was organised to deepen the discussion and define the most appropriate way to represent the data. The cooperation with Marine Conventions (OSPAR, HELCOM and BSC) and MEDPOL was crucial for products definition and for the success of the workshop.

The conclusion of the Expert workshop were:

- To show data availability maps. The matrix “Variables VS Marine regions” described in the technical development section could be a good answer to this.
- Standard Diva Interpolated maps will be produced for parameters with suitable data coverage, measured on basin scale.
- For parameters with a spatial coverage like:
  - coastal points repeated in time
  - datasets with fragmented coverage

the common idea is to focus the Chemical lot activity on the need to make a good work of analysis, normalization and metadata collection in order to obtain homogeneous datasets well described. Then the idea is to show stations on maps linked to ODV pre-calculated plots that describe the time series of measurements for each parameter considered.

The next Phase will be focused on:

- Progress with data population, analysis, normalization, products generation and dataset updates;
- Common products generation with the extension to the time series (ODV plots) and technical solutions to link them to the viewing service (WMS);
- SDN infrastructure upgrade to manage data complexity VS adopted standard needs (vocabularies, products metadata).

## 7. ANNEX I – LIST OF ACRONYMS

*BSC Black Sea Commission*

*CAMIOON CAlogue and Management of products of operatIonal OceaNography*

*CDI Common Data Index (SeaDataNet metadata format)*

*DIVA Data Interpolating Variational Analysis*

*DOC Dissolved Organic Carbon*

*DOME Database on Oceanography and Marine Ecosystems*

*EEA European Environmental Agency*

*EU European Union*

*GHER GeoHydrodynamics and Environment Research, University of Liège*

*HCMR Hellenic Centre for Marine Research*

*HELCOM Helsinki Commission (for Baltic marine protection)*

*ICES International Council for the Exploitation of the Sea*

*IFREMER Institut Français de Recherche pour l'Exploitation de la Mer*

*IO-BAS Institute of Oceanology - Bulgarian Academy of Science*

*MARIS Mariene Informatie Service 'MARIS' BV*

*MEDPOL Mediterranean Pollution Monitoring and Research Programme*

*MHI Marine Hydrophysical Institute, Ukraine*

*MSFD Marine Strategy Framework Directive*

*NERC-BODC National Environmental Research Council – British Oceanographic Data Centre*

*NERI-MAR National Environmental Research Institute*

*NetCDF Network Common Data Format*

*NIMRD National Institute for Marine Research and Development “Grigore Antipa”*

*ODV Ocean Data View*

*OGC Open Geospatial Consortium*

*OGS Istituto Nazionale di Oceanografia e di Geofisica Sperimentale*

*OSPAR Oslo/Paris convention (for the Protection of the Marine Environment of the North-East Atlantic)*

*QA/ QC Quality Assurance/ Quality Control*

*RIHMI-WDC All Russian Research Institute of Hydro-meteorological Information – WDC B*

*SDN FP7 EU SeaDataNet project*

*SIO-RAS P.P. Shirshov Institute of Oceanology - Russian Academy of Science*

*TN Total Nitrogen*

*TSU-DNA Iv. Javakhishvili Tbilisi State University*

*WCS Web Coverage Service*

*WFS Web Feature Service*

*WMS Web Map Service*

*XML eXtensible Markup Language*



## 8. ANNEX II – OVERVIEW OF CDI RECORDS INCLUDED IN EMODNET CDI USER INTERFACE

The following table gives an overview of CDI records for EMODNET Chemistry per Data Centre giving the source of data (Originator), the principal activity of the organization and the related legal status. The following codes are used:

### Activity Type

REC	Research	organisations only or mainly established for research purposes
EDU	Education	organisations only or mainly established for education/training, e. g. universities, colleges, schools
IND	Industry	industrial organisations private and public, both manufacturing and industrial services – such as industrial software, design, control, repair, maintenance
OTH	Others	
PAU	Public authorities	

### Legal Status

GOV	Governmental	local, regional or national public or governmental organisations e. g. libraries, hospitals, schools
INO	International Organisation	an international organisation established by national governments
EUB	European Body	A European organisation
PUC	Public Commercial Organisation	commercial organisation established and owned by a public authority
PRC	Private Commercial Organisation including Consultant	any commercial organisations owned by individuals either directly or by shares
EEI	European Economic Interest Group	
PNP	Private Organisation, Non Profit	Any privately owned non profit organisation

collator	Per Originator	Country	Datasets	Activity Type	Legal Status
BSH-DOD	Alfred Wegener Institute for Polar and Marine Research (AWI), Geophysics Dep	Germany	3775	REC	GOV
BSH-DOD	Alfred-Wegener-Institute for Polar- and Marine Research	Germany	5271	REC	GOV
BSH-DOD	Baltic Sea Research Institute Warnemuende (IOW)	Germany	1316	REC	GOV
BSH-DOD	Elbe River Water Authority	Germany	715	REC	GOV
BSH-DOD	Federal Institute of Hydrology (BFG)	Germany	10	REC	GOV
BSH-DOD	Federal Maritime and Hydrographic Agency	Germany	3382	REC	GOV
BSH-DOD	Federal Research Centre for Fisheries (Cuxhaven)	Germany	57	REC	GOV
BSH-DOD	Federal Research Centre for Fisheries (Hamburg)	Germany	212	REC	GOV
BSH-DOD	German Hydrographic Institute	Germany	26	REC	GOV
BSH-DOD	GKSS Research Center	Germany	122	REC	GOV
BSH-DOD	Institute of Biochemistry and Food Chemistry, University Hamburg	Germany	27	EDU	GOV
BSH-DOD	Institute of Biogeochemistry and Marine Chemistry (IfBM), University of Hamburg	Germany	80	EDU	GOV
BSH-DOD	Lower Saxony Water Management, Coastal Defense and Nature Conservation A	Germany	341	PAU	GOV
BSH-DOD	Senckenberg by the Sea, Marine Science Department	Germany	157	PAU	GOV
BSH-DOD	State Agency for Environment, Nature and Geology, Mecklenburg-Vorpommern	Germany	1379	PAU	GOV
BSH-DOD	State Agency for Nature and Environment of Schleswig Holstein (LANU)	Germany	2528	PAU	GOV
BSH-DOD	State Office for Agriculture, Environment and Rural Areas of Schleswig Holstein	Germany	209	PAU	GOV
BSH-DOD	State Office for Water Economy and Shore, Schleswig-Holstein, Kiel	Germany	36	PAU	GOV
BSH-DOD	State Office of Ecology of Lower Saxony	Germany	473	PAU	GOV
BSH-DOD	Waterways and Shipping Authority Wilhelmshaven	Germany	26	PAU	GOV
BSH-DOD	Waterways and Shipping Office Cuxhaven	Germany	28	PAU	GOV
BSH-DOD	Weser River Management Bureau	Germany	8	PAU	GOV
FIMR	Finnish Institute of Marine Research (FIMR)	Finland	2104	REC	GOV
GAMMA	Scientific - Research Firm GAMMA	Georgia	308	REC	PUC
HCMR	Hellenic Centre for Marine Research, Institute of Oceanography (HCMR/IO)	Greece	19110	PAU	GOV
IEO	Baleares Islands University, Environmental Biology Department, UIB	Spain	223	EDU	GOV
IEO	Centre for Advanced Studies of Blanes (CEAB-CSIC)	Spain	256	REC	GOV
IEO	IEO/ Murcia Oceanographic Centre	Spain	1225	REC	GOV
IEO	IEO/ Balearic Islands Oceanographic Centre	Spain	670	REC	GOV
IEO	IEO/ La Coruna Oceanographic Centre	Spain	658	REC	GOV
IEO	IEO/ Malaga Oceanographic Centre	Spain	1129	REC	GOV
IEO	IEO/ Santander Oceanographic Centre	Spain	1746	REC	GOV
IEO	IEO/ Vigo Oceanographic Centre	Spain	1111	REC	GOV
IEO	Institute of Marine Sciences, Mediterranean Marine and Environmental Research	Spain	509	REC	GOV
IEO	Spanish Oceanographic Institute	Spain	2036	REC	GOV
IFERMER	CEA / INSTITUT DE RADIOPROTECTION ET DE SURETE NUCLEAIRE	France	221	REC	GOV
IFERMER	CEA / LABORATOIRE DES SCIENCES DU CLIMAT ET DE L'ENVIRONNEM	France	282	REC	GOV
IFERMER	CEREGE	France	15	REC	GOV
IFERMER	CNRS / Center of Oceanology of Marseille (COM) La-Seyne-Sur-Mer	France	92	REC	GOV
IFERMER	CNRS / COM - LAB. D' OCEANOGRAPHIE & DE BIOGEOCHIMIE - ENDOUME	France	507	REC	GOV
IFERMER	CNRS / COM - Lab. D'OCEANOGRAPHIE ET DE BIOGEOCHIMIE - TOULON	France	152	REC	GOV
IFERMER	CNRS / LABORATOIRE DE MICROBIOLOGIE MARINE	France	137	REC	GOV
IFERMER	CNRS / LEGOS	France	57	REC	GOV
IFERMER	CNRS / STATION BIOLOGIQUE DE ROSCOFF	France	3	REC	GOV
IFERMER	DEPARTEMENT DE GEOLOGIE ET OCEANOGRAPHIE (UNIV. BORDEAUX 1)	France	268	EDU	GOV
IFERMER	IFERMER	France	1040	REC	GOV
IFERMER	IFREMERE / BE-DPT CHEMICAL POLLUTANTS, BIOGEOCHEMISTRY & ECOT	France	72	REC	GOV
IFERMER	IFREMERE / CENTRE DE BREST	France	333	REC	GOV
IFERMER	IFREMERE / CENTRE MANCHE - MER DU NORD	France	81	REC	GOV
IFERMER	Ifremer / Crela	France	172	REC	GOV
IFERMER	IFREMERE / DYNECO-DPT DYNAMIQUES DE L'ENVIRONNEMENT COTIER	France	368	REC	GOV
IFERMER	IFREMERE / EEP/LEP-DEEP ENVIRONMENT LABORATORY	France	16	REC	GOV
IFERMER	IFREMERE / EMH-DEPARTEMENT ECOLOGIE ET MODELES POUR L'HALIEU	France	388	REC	GOV
IFERMER	IFREMERE / GM-MARINE GEOSCIENCES	France	5	REC	GOV
IFERMER	IFREMERE / STATION DE LA TREMBLADE	France	273	REC	GOV
IFERMER	IFREMERE / STATION DE LA TRINITE	France	26	REC	GOV
IFERMER	IFREMERE / STATION DE SETE	France	45	REC	GOV
IFERMER	IFREMERE / STH-DEPARTEMENT SCIENCES ET TECHNOLOGIES HALIEUTIQ	France	72	REC	GOV
IFERMER	Ifremer / Tahiti Centre COP	France	105	REC	GOV
IFERMER	IFREMERE/EEP/ DEEP SEA ENVIRONMENT DEPARTMENT	France	1	REC	GOV
IFERMER	INSTITUT DE PHYSIQUE DU GLOBE DE PARIS / OBSERVATOIRES - IPGP	France	131	REC	GOV
IFERMER	IRD / CENTRE DE CAYENNE- GUYANE	French Guiana	477	REC	GOV
IFERMER	IRD / CENTRE DE MONTELLIER	France	840	REC	GOV
IFERMER	IRD / CENTRE DE PAPEETE	France	863	REC	GOV
IFERMER	IRD / CENTRE OF ABIDJAN	Cote D'Ivoire	2958	REC	GOV
IFERMER	IRD / CENTRE OF POINTE NOIRE	Congo	725	REC	GOV
IFERMER	IRD / CENTRE TOGA LE HAVRE	France	48	REC	GOV
IFERMER	IRD /CENTRE DE BRETAGNE	France	1815	REC	GOV
IFERMER	IRD ANTENNE INSTITUT OCEANOGRAPHIQUE (IRD)	France	601	EDU	GOV
IFERMER	LABORATOIRE DE PHYSIQUE DES OCEANS/UBO (UNIVERSITE DE BRETA	France	1026	EDU	GOV
IFERMER	LABORATORY OF OCEANOGRAPHY and CLIMATE (LOCEAN)	France	3241	REC	GOV
IFERMER	LABORATORY OF OCEANOGRAPHY of VILLEFRANCHE (LOV)	France	1940	REC	GOV
IFERMER	LABORATORY of PHYSICAL OCEANOGRAPHY (LPO) UMR 6523 CNRS-IFRE	France	1864	EDU	GOV
IFERMER	METEO FRANCE / CENTRE METEOROLOGIQUE NEVERS	France	65	PAU	GOV
IFERMER	MUSEUM NATIONAL D'HISTOIRE NATURELLE / DEPARTEMENT MILIEUX PE	France	31	PAU	GOV
IFERMER	MUSEUM NATIONAL D'HISTOIRE NATURELLE / LABORATOIRE D'OCEANO	France	760	PAU	GOV
IFERMER	Observatoire Oceanologique De Banyuls (Université de Paris VI)	France	655	EDU	GOV
IFERMER	SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MAR	France	401	REC	GOV
IFERMER	Universite D'Angers / Laboratoire Des Bio-Indicateurs Actuels Et Fossiles (Biaf)	France	26	REC	GOV
IFERMER	UNIVERSITE DE BORDEAUX I / IGBA TALENCE	France	19	REC	GOV
IFERMER	UNIVERSITE DE BORDEAUX I / INSTITUT DE BIOLOGIE MARINE	France	27	REC	GOV
IFERMER	Universite de Bordeaux I / Laboratoire De Physico Et Toxico-Chimie Ism	France	19	REC	GOV
IFERMER	UNIVERSITE DE BRETAGNE OCCIDENTALE (UBO) / LAB. D'OCEANO. CHIM	France	150	EDU	GOV
IFERMER	UNIVERSITE DE LA MEDITERRANEE (U2) / CENTRE D'OCEANOLOGIE DE	France	100	EDU	GOV
IFERMER	UNIVERSITE DE LA MEDITERRANEE (U2) / COM - LAB. OCEANO. & BIO	France	1469	EDU	GOV

IFERMER	UNIVERSITE DE MONTPELLIER II / LABORATOIRE DYNAMIQUE DE LA LITH	France	73	EDU	GOV
IFERMER	UNIVERSITE DE PERPIGNAN / CEFREM	France	31	EDU	GOV
IFR	Institute of Fishery Resources (IFR)	Bulgaria	138	REC	GOV
IFREMER	IRD / CENTRE DE LA REUNION	Reunion	1549	REC	GOV
IFREMER	IRD / CENTRE OF HANN	Senegal	153	REC	GOV
IFREMER	IRD / CENTRE OF JAKARTA	Indonesia	81	REC	GOV
IFREMER	IRD / CENTRE OF MADAGASCAR	Madagascar	1	REC	GOV
IFREMER	IRD CENTRE DE NOUMEA	New Caledonia	4839	REC	GOV
IMS-METU	Institute of Marine Sciences, Middle East Technical University	Turkey	1507	EDU	GOV
Institute of Oceanography and Fisheries	Center for marine research - Rudjer Boskovic Institute	Croatia	578	REC	GOV
Institute of Oceanography and Fisheries	Institute of Oceanography and Fisheries	Croatia	899	REC	GOV
IO-BAS	Institute of Oceanology, Bulgarian Academy of Sciences (IO-BAS)	Bulgaria	40	REC	GOV
IOLR	Israel Oceanographic and Limnological Research (IOLR)	Israel	3119	REC	GOV
Latvian Institute of Aquatic Ecology	Latvian Institute of Aquatic Ecology	Latvia	134	PAU	GOV
MHI	Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	339	REC	GOV
MHI	Marine branch of Ukrainian Hydrometeorological Institute	Ukraine	98	REC	GOV
MHI	Marine Hydrophysical Institute	Ukraine	2050	REC	GOV
MHI	Scientific Research Institute of Ecological Problems (USRIP)	Ukraine	4	REC	GOV
MHI	Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	4691	REC	GOV
NERC-BODC	Agri-Food and Biosciences Institute (AFBI)	United Kingdom	477	PAU	GOV
NERC-BODC	British Antarctic Survey (BAS)	United Kingdom	27	PAU	GOV
NERC-BODC	Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laborato	United Kingdom	2215	PAU	GOV
NERC-BODC	Dunstaffnage Marine Laboratory (DML)	United Kingdom	640	PAU	GOV
NERC-BODC	Fisheries Research Services, Aberdeen Marine Laboratory	United Kingdom	196	PAU	GOV
NERC-BODC	Institute of Oceanographic Sciences Deacon Laboratory	United Kingdom	128	PAU	GOV
NERC-BODC	Institute of Oceanographic Sciences Wormley Laboratory	United Kingdom	303	PAU	GOV
NERC-BODC	Institute of Oceanographic Sciences, Bidston Laboratory	United Kingdom	277	PAU	GOV
NERC-BODC	Marine Institute	Ireland	4521	PAU	GOV
NERC-BODC	Marine Scotland Science	United Kingdom	3298	PAU	GOV
NERC-BODC	National Oceanography Centre (NOC), Southampton	United Kingdom	18	PAU	GOV
NERC-BODC	Newcastle University Department of Marine Science and Coastal Management	United Kingdom	1	EDU	GOV
NERC-BODC	Northern Ireland Environment Agency (NIEA), Water Management Unit	United Kingdom	709	PAU	GOV
NERC-BODC	Plymouth Marine Laboratory (PML)	United Kingdom	89	REC	GOV
NERC-BODC	Proudman Oceanographic Laboratory (POL)	United Kingdom	1	PAU	GOV
NERC-BODC	Proudman Oceanographic Laboratory (POL)	United Kingdom	719	PAU	GOV
NERC-BODC	Scottish Association for Marine Science (SAMS)	United Kingdom	110	REC	GOV
NERC-BODC	Scottish Environment Protection Agency (SEPA)	United Kingdom	2089	PAU	GOV
NERC-BODC	Scottish Office Agriculture and Fisheries Department (SOAFD) - Aberdeen Mari	United Kingdom	2302	PAU	GOV
NERC-BODC	Scottish Office Agriculture Environment and Fisheries Department (SOAEFD) -	United Kingdom	275	PAU	GOV
NERC-BODC	Southampton Oceanography Centre	United Kingdom	49	PAU	GOV
NERC-BODC	The Environment Agency (EA)	United Kingdom	3428	PAU	GOV
NERC-BODC	University of Cambridge Department of Earth Sciences	United Kingdom	16	EDU	GOV
NERC-BODC	University of Plymouth, Institute of Marine Studies	United Kingdom	3	EDU	GOV
NERC-BODC	University of Southampton Department of Oceanography	United Kingdom	2	EDU	GOV
NERC-BODC	University of Wales, School of Ocean Sciences	United Kingdom	222	EDU	GOV
NERI-MAR	National Environmental Research Institute, University of Aarhus, Department of	Denmark	116439	EDU	GOV
NIBM	National Institute of Biology - NIBM Marine Biology Station	Slovenia	3242	REC	GOV
NIMH-BAS	Laboratory of Marine Ecology-Central Laboratory of General Ecology	Bulgaria	101	REC	GOV
NIMRD	National Institute for Marine Research and Development Grigore Antipa	Romania	3374	REC	GOV
NODC	Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology (NIO	Netherlands	7987	REC	GOV
NODC	NIOZ Royal Netherlands Institute for Sea Research	Netherlands	4137	REC	GOV
NODC	Rijkswaterstaat Waterdienst	Netherlands	11132	PAU	GOV
OC-UCY	Cyprus Oceanographic Data Center, Oceanography Center	Cyprus	499	EDU	GOV
OGS	ARPA Emilia-Romagna - Struttoria Oceanografica Daphne	Italy	4512	PAU	GOV
OGS	ARPA Toscana, Area tutela ambiente marino	Italy	246	PAU	GOV
OGS	CNR, Istituto di Scienze Marine (Sezione di Ancona)	Italy	2277	REC	GOV
OGS	CNR, Istituto di Scienze Marine (Sezione di Bologna)	Italy	49	REC	GOV
OGS	CNR, Istituto di Scienze Marine (Sezione di La Spezia)	Italy	573	REC	GOV
OGS	CNR, Istituto di Scienze Marine (Sezione di Trieste)	Italy	1853	REC	GOV
OGS	CNR, Istituto di Scienze Marine (Sezione di Venezia - ex IBM)	Italy	3746	REC	GOV
OGS	CNR, Istituto per lo Studio della Dinamica delle Grandi Masse	Italy	900	REC	GOV
OGS	Commissione Permanente per lo Studio dell'Adriatico, Venezia	Italy	106	PAU	GOV
OGS	ICRAM, Chioggia	Italy	283	REC	GOV
OGS	ICRAM, Palermo	Italy	753	REC	GOV
OGS	Istituto Idrografico della Marina, Genova	Italy	599	REC	GOV
OGS	Marine Biology Laboratory of Trieste	Italy	643	REC	GOV
OGS	OGS, National Institute of Oceanography and Experimental Geophysics, Depart	Italy	21142	REC	GOV
OGS	Zoological Station 'A. Dohrn' - Laboratory of Biological Oceanography	Italy	844	REC	GOV
RBINS-MUMM	Management Unit of North Sea and Scheldt Estuary Mathematical Models, dat	Belgium	41	REC	GOV
RBINS-MUMM	Management Unit of the North Sea and Scheldt Estuary Mathematical Models	Belgium	2836	REC	GOV
RBINS-MUMM	Université Libre de Bruxelles, Ecology of Aquatic systems	Belgium	230	EDU	GOV
RBINS-MUMM	Vrije Universiteit Brussel, Laboratory of Ecology and Systematics	Belgium	39	REC	GOV
RIHMI-WDC	Atlantic Scientific Research Institute for Marine Fishery and Oceanography	Russian Federation	48	REC	GOV
RIHMI-WDC	Far Eastern Regional Hydrometeorological Research Institute	Russian Federation	49	REC	GOV
RIHMI-WDC	Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	37742	REC	GOV
RIHMI-WDC	Odessa National I.I. Mechnikov University	Ukraine	324	EDU	GOV
RIHMI-WDC	P.P. Shirshov Institute of Oceanology, RAS	Russian Federation	504	REC	GOV
SMHI	Geological Survey of Sweden, SGU	Sweden	3	PAU	GOV
SMHI	IVL Swedish Environmental Research Institute	Sweden	198	REC	GOV
SMHI	Stockholm Marine Research Centre, SMF	Sweden	821	REC	GOV
SMHI	Swedish Meteorological and Hydrological Institute, SMHI	Sweden	51108	PAU	GOV
SMHI	Umea Marine Sciences Centre, UMF	Sweden	1532	REC	GOV
SNU-FF	Sinop University, Fisheries Faculty	Turkey	183	EDU	GOV
TSU-DNA	Iv.Javakishvili Tbilisi State University, Centre of Relations with UNESCO Ocean	Georgia	43	EDU	GOV
University Of Malta	Malta Centre for Fisheries Sciences	Malta	128	REC	GOV
VLIZ	Flanders Marine Institute	Belgium	1382	REC	GOV
	UNKNOWN	Unknown	3359		

## **9. ANNEX III – OVERVIEW OF CDI RECORDS FOR THE 3 REGIONS**

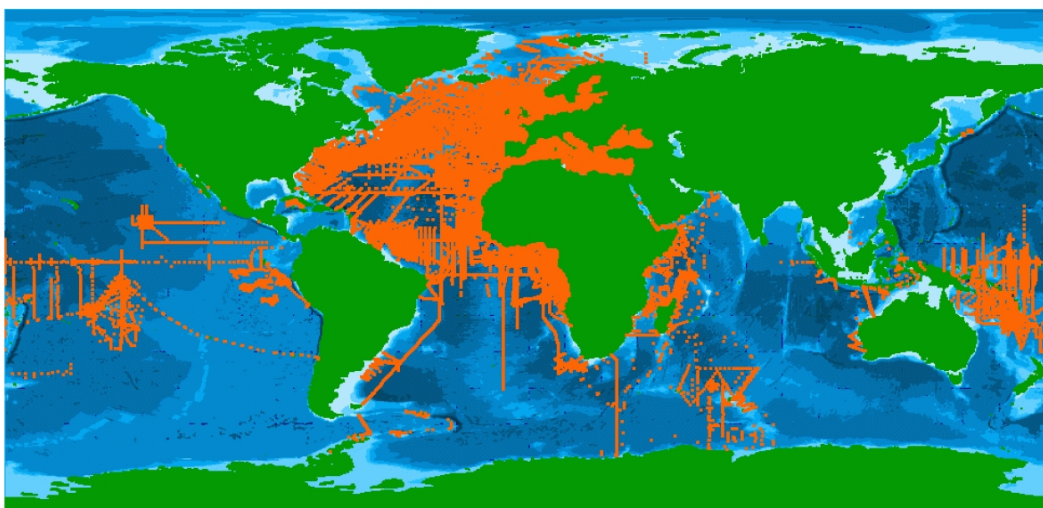
In this annex are available some overviews of the CDIs status for:

- General overview for All Seas
- North Sea Region
- Black sea Region
- Mediterranean Sea Region



## All Seas

QUERY RESULTS - Pilot portal for Chemistry Common Data Index (CDI) V2 - ALL SEAS - 14 February 2011.



PER DATA HOLDING CENTRE

Per Data Holding Centre	Country	All Datasets	North Sea	Mediterranean	Black Sea	Other seas	
National Environmental Research Institute, University of Aarhus, Department of Marine Ecology	Denmark	116439	114293			2146	
Swedish Meteorological and Hydrological Institute, SMHI	Sweden	53662	27985			25677	
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	38757	134	89	1304	2500	
OGS, National Institute of Oceanography and Experimental Geophysics, Department of Oceanography	Italy	38526			38526	0	
IFREMER / IDW/SISMER	France	35068	314	220	4415	107	
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece	19110			635	18475	
British Oceanographic Data Centre (BODC)	United Kingdom	17594	8842	15			
German Oceanographic Datacentre (NODC)	Germany	16423	15958			465	
Rijkswaterstaat Waterdienst	Netherlands	11132	11132			0	
Spanish Oceanographic Institute	Spain	9601		2836	2238	4527	
Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology (NICO-CEME)	Netherlands	7987	7987			0	
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	4587				4587	
Marine Institute	Ireland	4521	21			4500	
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	4137	1201		269	2667	
National Institute for Marine Research and Development Grigore Antipa	Romania	3374				3374	
National Institute of Biology - NIBMarine Biology Station	Slovenia	3242			3242	0	
Management Unit of the North Sea and Scheldt estuary Mathematical Models, Belgian Marine Data Centre (MUMM-BMDC)	Belgium	3146	3048			98	
Israel Oceanographic and Limnological Research (IOLR)	Israel	3119			29	3090	
Institute of Marine Sciences, Middle East Technical University	Turkey	3090				3080	
Finnish Meteorological Institute (FMI)	Finland	2084	34			2050	
Marine Hydrophysical Institute	Ukraine	2050				2050	
Institute of Oceanography and Fisheries	Croatia	1477			1477	0	
Flanders Marine Institute	Belgium	1382	1382			0	
Cyprus Oceanographic Data Center, Oceanography Center	Cyprus	499				499	
Odessa National I.I.Mechnikov University	Ukraine	324				324	
Scientific - Research Firm GAMMA	Georgia	308				308	
Sinop University, Fisheries Faculty	Turkey	183				183	
Institute of Fishery Resources (IFR)	Bulgaria	138				138	
Latvian Institute of Aquatic Ecology	Latvia	134				134	
International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	Malta	128			128	0	
P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	122				122	
National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences	Bulgaria	50				50	
Iv.Javakishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO)	Georgia	43				43	
Bulgarian National Oceanographic Data Centre(BGODC), Institute of Oceanology	Bulgaria	40				40	
Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	5				5	
Scientific Research Institute of Ecological Problems (USRIEP)	Ukraine	4				4	
		402476	192331	3160	52263	24671	18200
							111851

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PER ORIGINATOR  
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Per Originator	Country	All Datasets
National Environmental Research Institute, University of Aarhus, Department of Marine Ecology	Denmark	116439
Swedish Meteorological and Hydrological Institute, SMHI	Sweden	51108
Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	37742
OGS, National Institute of Oceanography and Experimental Geophysics, Department of Oceanography	Italy	21142
Hellenic Centre for Marine Research, Institute of Oceanography (HCMR/IO)	Greece	19110
Rijkswaterstaat Waterdienst	Netherlands	11132
Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology (NIOO-CEME)	Netherlands	7987
Alfred-Wegener-Institute for Polar- and Marine Research	Germany	5271
IRD CENTRE DE NOUMEA	New Caledonia	4839
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	4691
Marine Institute	Ireland	4521
ARPA Emilia-Romagna - Struttura Oceanografica Daphne	Italy	4512
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	4137
Alfred Wegener Institute for Polar and Marine Research (AWI), Geophysics Department	Germany	3775
CNR, Istituto di Scienze Marine (Sezione di Venezia - ex IBM)	Italy	3746
The Environment Agency (EA)	United Kingdom	3428
Federal Maritime and Hydrographic Agency	Germany	3382
National Institute for Marine Research and Development Grigore Antipa	Romania	3374
UNKNOWN	Unknown	3359
Marine Scotland Science	United Kingdom	3298
National Institute of Biology - NIBMarine Biology Station	Slovenia	3242
LABORATORY of OCEANOGRAPHY and CLIMATE (LOCEAN)	France	3241
Israel Oceanographic and Limnological Research (IOLR)	Israel	3119
Institute of Marine Sciences, Middle East Technical University	Turkey	3080
IRD / CENTRE OF ABIDJAN	Cote D'Ivoire	2958
Management Unit of the North Sea and Scheldt Estuary Mathematical Models	Belgium	2836
State Agency for Nature and Environment of Schleswig Holstein (LANU)	Germany	2528
Scottish Office Agriculture and Fisheries Department (SOAFD) - Aberdeen Marine Laboratory	United Kingdom	2302
CNR, Istituto di Scienze Marine (Sezione di Ancona)	Italy	2277
Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory	United Kingdom	2215
Finnish Institute of Marine Research (FIMR)	Finland	2104
Scottish Environment Protection Agency (SEPA)	United Kingdom	2089
Spanish Oceanographic Institute	Spain	2074
Marine Hydrophysical Institute	Ukraine	2050
LABORATORY OF OCEANOGRAPHY of VILLEFRANCHE (LOV)	France	1940
LABORATORY of PHYSICAL OCEANOGRAPHY (LPO) UMR 6523 CNRS-IFREMER-IRD-UBO	France	1864
CNR, Istituto di Scienze Marine (Sezione di Trieste)	Italy	1853
IRD /CENTRE DE BRETAGNE	France	1815
IEO/ Santander Oceanographic Centre	Spain	1746
IRD / CENTRE DE LA REUNION	Reunion	1549
Umea Marine Sciences Centre, UMF	Sweden	1532
UNIVERSITE DE LA MEDITERRANNEE (U2) / COM - LAB. OCEANOG. & BIOGEOCHIMIE - LUMINY	France	1469
Flanders Marine Institute	Belgium	1382
State Agency for Environment, Nature and Geology, Mecklenburg-Vorpommern	Germany	1379
Baltic Sea Research Institute Warnemuende (IOW)	Germany	1316
IEO/ Murcia Oceanographic Centre	Spain	1225
IEO/ Malaga Oceanographic Centre	Spain	1129
IEO/ Vigo Oceanographic Centre	Spain	1111
IFREMER	France	1040
LABORATOIRE DE PHYSIQUE DES OCEANS/UBO (UNIVERSITE DE BRETAGNE OCCIDENTALE (UBO))	France	1026
CNR, Istituto per lo Studio della Dinamica delle Grandi Masse	Italy	900
Institute of Oceanography and Fisheries	Croatia	899
IRD / CENTRE DE PAPEETE	France	863
Zoological Station 'A. Dohrn' - Laboratory of Biological Oceanography	Italy	844
IRD / CENTRE DE MONTPELLIER	France	840
Stockholm Marine Research Centre, SMF	Sweden	821
MUSEUM NATIONAL D'HISTOIRE NATURELLE / LABORATOIRE D'OCEANOGRAPHIE PHYSIQUE	France	760
ICRAM, Palermo	Italy	753
IRD / CENTRE OF POINTE NOIRE	Congo	725
Proudman Oceanographic Laboratory (POL)	United Kingdom	719
Elbe River Water Authority	Germany	715
Northern Ireland Environment Agency (NIEA), Water Management Unit	United Kingdom	709
IEO/ Balearic Islands Oceanographic Centre	Spain	670
IEO/ La Coruna Oceanographic Centre	Spain	658
Observatoire Oceanologique De Banyuls (Université de Paris VI)	France	655
Marine Biology Laboratory of Trieste	Italy	643
Dunstaffnage Marine Laboratory (DML)	United Kingdom	640
IRD ANTENNE INSTITUT OCEANOGRAPHIQUE (IRD)	France	601
Istituto Idrografico della Marina, Genova	Italy	599
Center for marine research - Rudjer Boskovic Institute	Croatia	578
CNR, Istituto di Scienze Marine (Sezione di La Spezia)	Italy	573
Institute of Marine Sciences, Mediterranean Marine and Environmental Research Centre (CMIMA-ICM-CSIC)	Spain	509
CNRS / COM - LAB. D' OCEANOGRAPHIE & DE BIOGEOCHIMIE -ENDOUME	France	507
P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	504
Cyprus Oceanographic Data Center, Oceanography Center	Cyprus	499
IRD / CENTRE DE CAYENNE- GUYANE	French Guiana	477
Agri-Food and Biosciences Institute (AFBI)	United Kingdom	477
State Office of Ecology of Lower Saxony	Germany	473
SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE)	France	401
IFREMER / EMH-DEPARTEMENT ECOLOGIE ET MODELES POUR L'HALIEUTIQUE	France	388
IFREMER / DYNECO-DPT DYNAMIQUES DE L'ENVIRONNEMENT COTIER	France	368
Lower Saxony Water Management, Coastal Defense and Nature Conservation Agency	Germany	341

Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	339
IFREMER / CENTRE DE BREST	France	333
Odessa National I.I.Mechnikov University	Ukraine	324
Scientific - Research Firm GAMMA	Georgia	308
Institute of Oceanographic Sciences Wormley Laboratory	United Kingdom	303
ICRAM, Chioggia	Italy	283
CEA / LABORATOIRE DES SCIENCES DU CLIMAT ET DE L' ENVIRONNEMENT	France	282
Institute of Oceanographic Sciences, Bidston Laboratory	United Kingdom	277
Scottish Office Agriculture Environment and Fisheries Department (SOAEFD) - Aberdeen Marine Laboratory	United Kingdom	275
IFREMER / STATION DE LA TREMBLADE	France	273
DEPARTEMENT DE GEOLOGIE ET OCEANOGRAPHIE (UNIV. BORDEAUX 1) (UNIVERSITE DE BORDEAUX I)	France	268
Centre for Advanced Studies of Blanes (CEAB-CSIC)	Spain	256
ARPA Toscana, Area tutela ambiente marino	Italy	246
Université Libre de Bruxelles, Ecology of Aquatic systems	Belgium	230
Baleares Islands University. Environmental Biology Department. UIB	Spain	223
University of Wales, School of Ocean Sciences	United Kingdom	222
CEA / INSTITUT DE RADIOPROTECTION ET DE SURETE NUCLEAIRE	France	221
Federal Research Centre for Fisheries (Hemburg)	Germany	212
State Office for Agriculture, Environment and Rural Areas of Schleswig Holstein (LLUR)	Germany	209
IVL Swedish Environmental Research Institute	Sweden	198
Fisheries Research Services, Aberdeen Marine Laboratory	United Kingdom	196
Sinop University, Fisheries Faculty	Turkey	183
Ifremer / Crela	France	172
Senckenberg by the Sea, Marine Science Department	Germany	157
IRD / CENTRE OF HANN	Senegal	153
CNRS / COM - Lab. D'OCEANOGRAPHIE ET DE BIOGEOCHIMIE - TOULON	France	152
UNIVERSITE DE BRETAGNE OCCIDENTALE (UBO) / LAB. D'OCEANO. CHIMIQUE LOC - IUEM	France	150
Institute of Fishery Resources (IFR)	Bulgaria	138
CNRS / LABORATOIRE DE MICROBIOLOGIE MARINE	France	137
Latvian Institute of Aquatic Ecology	Latvia	134
INSTITUT DE PHYSIQUE DU GLOBE DE PARIS / OBSERVATOIRES - IPEG	France	131
Malta Centre for Fisheries Sciences	Malta	128
Institute of Oceanographic Sciences Deacon Laboratory	United Kingdom	128
GKSS Research Center	Germany	122
Scottish Association for Marine Science (SAMS)	United Kingdom	110
Commissione Permanente per lo Studio dell'Adriatico, Venezia	Italy	106
Ifremer / Tahiti Centre COP	France	105
UNIVERSITE DE LA MEDITERRANEE (U2) / CENTRE D'OCEANOLOGIE DE MARSEILLE	France	100
Marine branch of Ukrainian Hydrometeorological Institute	Ukraine	98
CNRS / Center of Oceanology of Marseille (COM) La-Seyne-Sur-Mer	France	92
Plymouth Marine Laboratory (PML)	United Kingdom	89
IFREMER / CENTRE MANCHE - MER DU NORD	France	81
IRD / CFNTRF OF JAKARTA	Indonesia	81
Institute of Biogeochemistry and Marine Chemistry (IFBM), University of Hamburg	Germany	80
UNIVERSITE DE MONTPELLIER II / LABORATOIRE DYNAMIQUE DE LA LITHOSPHERE	France	73
IFREMER / BE-DPT CHEMICAL POLLUTENTS, BIOGEOCHEMISTRY & ECOTOXICOLOGY	France	72
IFREMER / STH-DEPARTEMENT SCIENCES ET TECHNOLOGIES HALIEUTIQUES	France	72
METEO FRANCE / CENTRE METEOROLOGIQUE NEVERS	France	65
CNRS / LEGOS	France	57
Federal Research Centre for Fisheries (Cuxhaven)	Germany	57
Laboratory of Marine Ecology-Central Laboratory of General Ecology	Bulgaria	50
CNR, Istituto di Scienze Marine (Sezione di Bologna)	Italy	49
Far Eastern Regional Hydrometeorological Research Institute	Russian Federation	49
Southampton Oceanography Centre	United Kingdom	49
IRD / CENTRE TOGA LE HAVRE	France	48
Atlantic Scientific Research Institute for Marine Fishery and Oceanography	Russian Federation	48
IFREMER / STATION DE SETE	France	45
Iv.Javakishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO)	Georgia	43
Management Unit of North Sea and Scheldt Estuary Mathematical Models, data acquisition centre	Belgium	41
Institute of Oceanology, Bulgarian Academy of Sciences (IO-BAS)	Bulgaria	40
Vrije Universiteit Brussel, Laboratory of Ecology and Systematics	Belgium	39
State Office for Water Economy and Shore, Schleswig-Holstein, Kiel	Germany	36
MUSEUM NATIONAL D'HISTOIRE NATURELLE / DEPARTEMENT MILIEUX PEUPLEMENTS AQUATIQUES	France	31
UNIVERSITE DE PERPIGNAN / CEFREM	France	31
Waterways and Shipping Office Cuxhaven	Germany	28
UNIVERSITE DE BORDEAUX I / INSTITUT DE BIOLOGIE MARINE	France	27
Institute of Biochemistry and Food Chemistry, University Hamburg	Germany	27
British Antarctic Survey (BAS)	United Kingdom	27
IFREMER / STATION DE LA TRINITE	France	26
Universite D'Angers / Laboratoire Des Bio-Indicateurs Actuels Et Fossiles (Biaf)	France	26
Waterways and Shipping Authority Wilhelmshaven	Germany	26
German Hydrographic Institute	Germany	26
Universite de Bordeaux I / Laboratoire De Physico Et Toxico-Chimie Ism	France	19
UNIVERSITE DE BORDEAUX I / IGBA TALENCE	France	19
National Oceanography Centre (NOC), Southampton	United Kingdom	18
IFREMER / EEP/LEP-DEEP ENVIRONMENT LABORATORY	France	16
University of Cambridge Department of Earth Sciences	United Kingdom	16
CEREGE	France	15
Federal Institute of Hydrology (BFG)	Germany	10
Weser River Management Bureau	Germany	8
IFREMER / GM-MARINE GEOSCIENCES	France	5
Scientific Research Institute of Ecological Problems (USRIP)	Ukraine	4
CNRS / STATION BIOLOGIQUE DE ROSCOFF	France	3
Geological Survey of Sweden, SGU	Sweden	3
University of Plymouth, Institute of Marine Studies	United Kingdom	3

University of Southampton Department of Oceanography	United Kingdom	2
IFREMER/EEP/ DEEP SEA ENVIRONMENT DEPARTMENT	France	1
IRD / CENTRE OF MADAGASCAR	Madagascar	1
Proudman Oceanographic Laboratory (POL)	United Kingdom	1
Newcastle University Department of Marine Science and Coastal Management	United Kingdom	1

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**PER CATEGORY**  
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Per Category	All Datasets
Dissolved gases	313482
Water column temperature and salinity	292973
Carbon, nitrogen and phosphorus	199867
Nutrients	188280
Administration and dimensions	151086
Pigments	116037
Carbonate system	71408
Other physical oceanographic measurements	28011
Suspended particulate material	24278
Optical properties	19606
Other inorganic chemical measurements	16691
Rock and sediment chemistry	16364
Anthropogenic contamination	13565
PCBs and organic micropollutants	9246
Currents	6947
Metal and metalloid concentrations	6320
Hydrocarbons	5848
Biota composition	4157
Sea level	3911
Acoustics	2582
Halocarbons (including freons)	2479
Other organic chemical measurements	2136
Rock and sediment physical properties	2123
Phytoplankton	1792
Biota abundance and biomass	1331
Isotopes	978
Rate measurements (including production, excretion and grazing)	914
Bacteria and viruses	323
Zooplankton	193
Other biological measurements	146
Fish	101
Fisheries	97
Rock and sediment biota	97
Fatty acids	33
Sediment pore water chemistry	8



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**PER VARIABLE**  
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Per Variable	All Datasets
Dissolved oxygen parameters in the water column	310437
Salinity of the water column	283111
Temperature of the water column	280376
Phosphate concentration parameters in the water column	181317
Nitrate concentration parameters in the water column	151256
Silicate concentration parameters in the water column	122645
Ammonium concentration parameters in the water column	112897
Chlorophyll pigment concentrations in the water column	102328
Vertical spatial coordinates	97233
Nitrite concentration parameters in the water column	91473
Alkalinity, acidity and pH of the water column	71112
Particulate total and organic nitrogen concentrations in the water column	67341
Particulate total and organic phosphorus concentrations in the water column	58776
Dissolved total or organic phosphorus concentration in the water column	52146
Moored instrument depth	38757
Dissolved total and organic nitrogen concentrations in the water column	36391
Density of the water column	28011
Particulate total and organic carbon concentrations in the water column	18130
Concentration of suspended particulate material in the water column	18026
Date and time	18013
Electrical conductivity of the water column	16423
Raw fluorometer output	14933
Phaeopigment concentrations in the water column	12664
Transmittance and attenuation of the water column	10541
Redox potential in sediment	10092
Dissolved organic carbon concentration in the water column	9627
Temperature variation in the water column	8068
Carbon concentrations in suspended particulate material	8047
Horizontal velocity of the water column (currents)	6947
Concentration of inorganic sulphur species in the water column	6445
Secchi disk depth	6202
Raw temperature and/or salinity instrument output	5261

Raw oxygen sensor output	5151
Concentration of polycyclic aromatic hydrocarbons (PAHs) in sediment samples	4378
Dissolved inorganic nitrogen concentration in the water column	4296
Carbon concentrations in sediment	4034
Unspecified	3792
Metal concentrations in biota	3775
Optical backscatter	3731
Visible waveband radiance and irradiance measurements in the water column	3492
Sea level	3285
Raw light meter output	3259
Nitrogen concentrations in suspended particulate material	3056
Sound velocity and travel time in the water column	2580
Concentration of other organic contaminants in sediment samples	2168
Dissolved metal concentrations in the water column	2050
Sediment grain size parameters	1789
Reference numbers	1676
Concentration of other organic contaminants in the water column	1596
Chlorofluorocarbon concentrations in the water column	1477
Concentration of carbohydrates in the water column	1283
Total dissolved inorganic carbon (TCO <sub>2</sub> ) concentration in the water column	1240
Phytoplankton taxonomic abundance in water bodies	1063
Dissolved concentration parameters for other gases in the water column	999
Concentration of polycyclic aromatic hydrocarbons (PAHs) in biota	988
Concentration of polychlorobiphenyls (PCBs) in sediment samples	928
Other physical and chemical properties of suspended particulate material	915
Raw suspended particulate material optical sensor output	910
Pesticide concentrations in biota	877
Urea concentration parameters in the water column	762
Primary production in the water column	734
Sediment water content, porosity and surface area	660
Sea level expressed as pressure	626
Radioactivity in the water column	495
Total metal concentrations in water bodies	493
Concentration of proteins in the water column	455
Phytoplankton generic abundance in water bodies	398
Geological sample radioactivity	397
Concentration of alkanols (alcohols), phenols and ethers in sediment	353
Concentration of polychlorobiphenyls (PCBs) in the water column	327
Terrestrial detritus in the water column suspended particulate material	322
Bacteria generic abundance in water bodies	321
Nitrogen concentrations in sediment	319
Carotenoid pigment concentrations in the water column	297
Unclassified pigment concentrations in the water column	297
Concentration of polycyclic aromatic hydrocarbons (PAHs) in the water column	246
Concentration of other hydrocarbons in the water column	209
Partial pressure (pCO <sub>2</sub> ) and fugacity (fCO <sub>2</sub> ) of carbon dioxide in the water column	201
Concentration of adenylates in the water column	143
Particulate metal concentrations in the water column	141
Oxygen production and respiration in the water column	136
Concentration of alkanes in the water column	122
Pesticide concentrations in water bodies	122
Regenerated production in water bodies	115
Concentration of other organic contaminants in suspended particulate material	114
Concentration of polychlorobiphenyls (PCBs) in suspended particulate material	114
Concentration of polycyclic aromatic hydrocarbons (PAHs) in suspended particulate material	114
New production in water bodies	112
Fish morphology, age and physiology	101
Metadata parameters	97
Organometallic species concentration parameters in biota	97
Shellfish morphology, age and physiology	97
Zooplankton and zoobenthos morphological parameters	97
Zooplankton non taxonomy-related abundance per unit volume of the water column	96
Stable isotope enrichment in the water column	86
Concentration of inorganic sulphur species in sediment	66
Suspended particulate material grain size parameters	66
Concentration of other organic contaminants in biota	61
Excretion rate parameters in the water column	49
Concentration of inorganic halogens in water bodies	47
Nitrification rate in the water column	47
Concentration of silicon species in the water column	41
Bacterial production in the water column	40
Lipid (fatty acids, sterols or isoprenoid compounds) concentrations in the water column	32
Dissolved noble gas concentration parameters in the water column	30
Metal concentrations in sediment pore waters	5
Dissolved trace metalloid concentrations in the water column	4
Organometallic species concentration parameters in sediments	3
Pesticide concentrations in sediment	3
Acoustic backscatter in the water column	2
Platform or instrument orientation	2
Horizontal spatial co-ordinates	1
Lipid (fatty acids, sterols or isoprenoid compounds) concentrations in sediment	1



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**PER YEAR**  
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Per Year	Datasets
2010	772
2009	10307
2008	17368
2007	14210
2006	18736
2005	17597
2004	20121
2003	17798
2002	16016
2001	16649
2000	16856
1999	15976
1998	13320
1997	13098
1996	12038
1995	13246
1994	10998
1993	11123
1992	12324
1991	10193
1990	9654
1989	10561
1988	9119
1987	8251
1986	6215

Per Year	Datasets
1985	5405
1984	6519
1983	7037
1982	5595
1981	4114
1980	3062
1979	4320
1978	4317
1977	4192
1976	3891
1975	4694
1974	3478
1973	3865
1972	3407
1971	2939
1970	2050
1969	2711
1968	2164
1967	1290
1966	1224
1965	1033
1964	1264
1963	1013
1962	506
1961	416

Per Year	Datasets
1960	473
1959	290
1958	324
1957	182
1956	437
1955	203
1954	56
1953	122
1952	39
1951	85
1950	120
1949	249
1948	87
1947	14
1946	10
1935	1
1930	1
1929	1
1923	55
1922	58
1921	32
1915	5
1914	106
1913	106
1912	106

Per Year	Datasets
1911	106
1907	1
1906	17
1905	18
1904	13
1903	18
1902	31
1899	2
1882	5

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**per data access restriction**  
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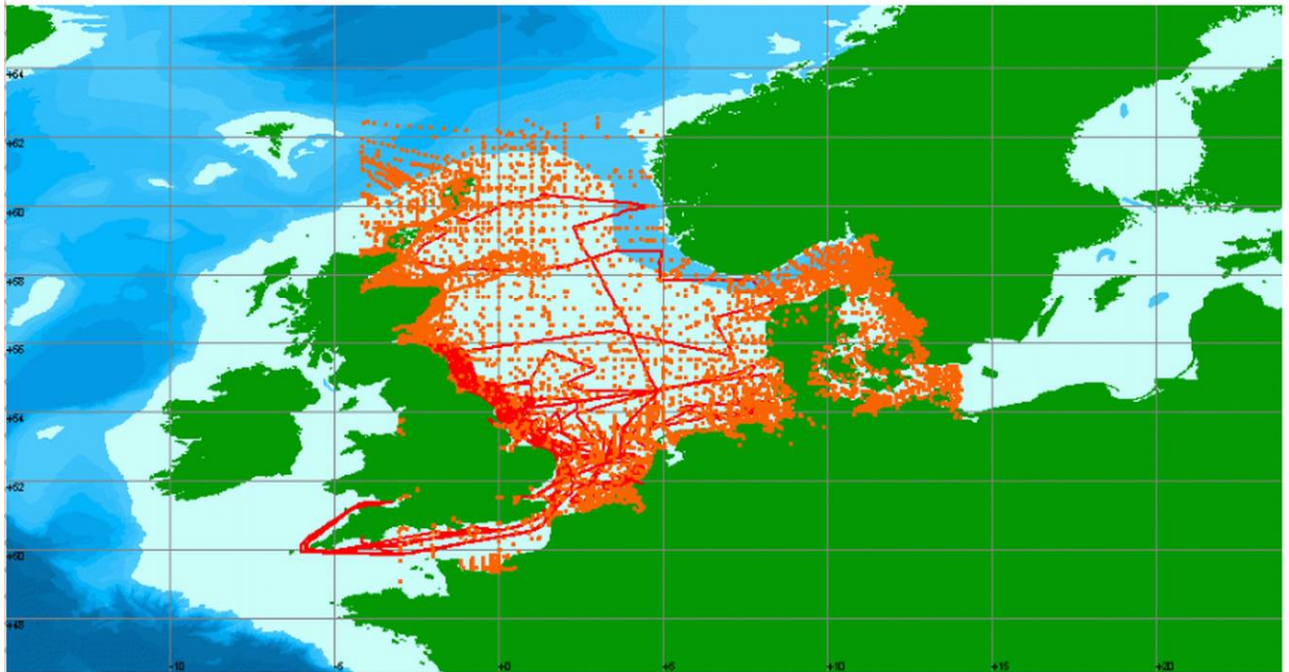
Per Data Access Restriction	Datasets
SeaDataNet licence	181901
unrestricted	159475
restricted	54077
no access	5980
licence	555
academic	474
moratorium	14

**NOTES**

- 1) data sets can have multiple originators
- 2) data sets might concern multiple categories and mostly concern multiple variables
- 3) data sets might have multiple data access restrictions

North Sea

QUERY RESULTS - pilot portal for Chemistry Common Data Index (CDI) V2 - Greater North Sea 14 Feb 2011



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**PER DATA HOLDING CENTRE**  
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Per Data Holding Centre	Country	Datasets
National Environmental Research Institute, University of Aarhus, Department of Marine Ecology	Denmark	114293
Swedish Meteorological and Hydrological Institute, SMHI	Sweden	27985
German Oceanographic Datacentre (NODC)	Germany	15958
Rijkswaterstaat Waterdienst	Netherlands	11132
British Oceanographic Data Centre (BODC)	United Kingdom	8842
Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology (NIOO-CEME)	Netherlands	7987
Management Unit of the North Sea and Scheldt estuary Mathematical Models, Belgian Marine Data Centre (MUMM-BMDC)	Belgium	3048
Flanders Marine Institute	Belgium	1382
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	1201
IFREMER / IDM/SISMER	France	314
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	134
Finnish Meteorological Institute (FMI)	Finland	34
Marine Institute	Ireland	21

192331

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**PER ORIGINATOR**  
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Per Originator	Country	Datasets
National Environmental Research Institute, University of Aarhus, Department of Marine Ecology	Denmark	114293
Swedish Meteorological and Hydrological Institute, SMHI	Sweden	27784
Rijkswaterstaat Waterdienst	Netherlands	11132
Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology (NIOO-CEME)	Netherlands	7987
Alfred-Wegener-Institute for Polar- and Marine Research	Germany	5265
Alfred Wegener Institute for Polar and Marine Research (AWI), Geophysics Department	Germany	3769
Federal Maritime and Hydrographic Agency	Germany	3334
Management Unit of the North Sea and Scheldt Estuary Mathematical Models	Belgium	2779
The Environment Agency (EA)	United Kingdom	2592
State Agency for Nature and Environment of Schleswig Holstein (LANU)	Germany	2528
Scottish Office Agriculture and Fisheries Department (SOAFD) - Aberdeen Marine Laboratory	United Kingdom	1957
Marine Scotland Science	United Kingdom	1781
Flanders Marine Institute	Belgium	1382
Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory	United Kingdom	1369
State Agency for Environment, Nature and Geology, Mecklenburg-Vorpommern	Germany	1279
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	1201
Baltic Sea Research Institute Warnemuende (IOW)	Germany	1030
Elbe River Water Authority	Germany	715
Scottish Environment Protection Agency (SEPA)	United Kingdom	496
State Office of Ecology of Lower Saxony	Germany	473
Lower Saxony Water Management, Coastal Defense and Nature Conservation Agency	Germany	341
Institute of Oceanographic Sciences, Bidston Laboratory	United Kingdom	277
Université Libre de Bruxelles, Ecology of Aquatic systems	Belgium	230
IFREMER / DYNECO-DPT DYNAMIQUES DE L'ENVIRONNEMENT COTIER	France	224
State Office for Agriculture, Environment and Rural Areas of Schleswig Holstein (LLUR)	Germany	209
IVL Swedish Environmental Research Institute	Sweden	198
Federal Research Centre for Fisheries (Hemburg)	Germany	195
Scottish Office Agriculture Environment and Fisheries Department (SOAEFD) - Aberdeen Marine Laboratory	United Kingdom	164
Senckenberg by the Sea, Marine Science Department	Germany	157
Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	124
GKSS Research Center	Germany	122
Fisheries Research Services, Aberdeen Marine Laboratory	United Kingdom	104
Plymouth Marine Laboratory (PML)	United Kingdom	89
IFREMER / CENTRE MANCHE - MER DU NORD	France	81
Institute of Biogeochemistry and Marine Chemistry (IFBM), University of Hamburg	Germany	80
Federal Research Centre for Fisheries (Cuxhaven)	Germany	57
Finnish Institute of Marine Research (FIMR)	Finland	46
Vrije Universiteit Brussel, Laboratory of Ecology and Systematics	Belgium	39
State Office for Water Economy and Shore, Schleswig-Holstein, Kiel	Germany	36
Waterways and Shipping Office Cuxhaven	Germany	28
Institute of Biochemistry and Food Chemistry, University Hamburg	Germany	27
German Hydrographic Institute	Germany	26
Waterways and Shipping Authority Wilhelmshaven	Germany	26
Marine Institute	Ireland	21
Federal Institute of Hydrology (BFG)	Germany	10
Atlantic Scientific Research Institute for Marine Fishery and Oceanography	Russian Federal	10
Weser River Management Bureau	Germany	8
IFREMER / BE-DPT CHEMICAL POLLUTENTS, BIOGEOCHEMISTRY & ECOTOXICOLOGY	France	3
CNRS / STATION BIOLOGIQUE DE ROSCOFF	France	3
Geological Survey of Sweden, SGU	Sweden	3
University of Plymouth, Institute of Marine Studies	United Kingdom	3
University of Wales, School of Ocean Sciences	United Kingdom	3
SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE)	France	2
Scottish Association for Marine Science (SAMS)	United Kingdom	2
University of Southampton Department of Oceanography	United Kingdom	2
LABORATORY of OCEANOGRAPHY and CLIMATE (LOCEAN)	France	1
Proudman Oceanographic Laboratory (POL)	United Kingdom	1
Dunstaffnage Marine Laboratory (DML)	United Kingdom	1
Newcastle University Department of Marine Science and Coastal Management	United Kingdom	1



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**PER CATEGORY**  
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<b>Per Category</b>	<b>Datasets</b>
Dissolved gases	138808
Carbon, nitrogen and phosphorus	109432
Water column temperature and salinity	104759
Nutrients	102967
Pigments	75493
Suspended particulate material	14575
Carbonate system	13568
Anthropogenic contamination	9104
Other physical oceanographic measurements	8572
Optical properties	7294
PCBs and organic micropollutants	6354
Other inorganic chemical measurements	4147
Metal and metalloid concentrations	4143
Rock and sediment chemistry	4066
Hydrocarbons	3557
Sea level	3285
Biota composition	2333
Administration and dimensions	2020
Rock and sediment physical properties	2006
Acoustics	1224
Isotopes	874
Halocarbons (including freons)	585
Other organic chemical measurements	453
Rate measurements (including production, excretion and grazing)	136
Fish	101
Fisheries	97
Other biological measurements	97
Rock and sediment biota	97
Zooplankton	97
Sediment pore water chemistry	3

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**PER VARIABLE**  
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Per Variable	Datasets
Dissolved oxygen parameters in the water column	135773
Phosphate concentration parameters in the water column	101688
Salinity of the water column	98538
Temperature of the water column	97231
Nitrate concentration parameters in the water column	93609
Ammonium concentration parameters in the water column	79417
Silicate concentration parameters in the water column	74760
Chlorophyll pigment concentrations in the water column	72071
Particulate total and organic nitrogen concentrations in the water column	58019
Particulate total and organic phosphorus concentrations in the water column	53804
Nitrite concentration parameters in the water column	43088
Dissolved total or organic phosphorus concentration in the water column	30498
Dissolved total and organic nitrogen concentrations in the water column	18955
Alkalinity, acidity and pH of the water column	13568
Concentration of suspended particulate material in the water column	9627
Particulate total and organic carbon concentrations in the water column	9308
Density of the water column	8572
Dissolved organic carbon concentration in the water column	8059
Carbon concentrations in suspended particulate material	7564
Phaeopigment concentrations in the water column	5503
Secchi disk depth	5490
Raw temperature and/or salinity instrument output	5261
Raw oxygen sensor output	5151
Raw fluorometer output	4390
Concentration of inorganic sulphur species in the water column	4147
Electrical conductivity of the water column	3308
Sea level	3285
Raw light meter output	3259
Optical backscatter	3208
Nitrogen concentrations in suspended particulate material	3056
Concentration of polycyclic aromatic hydrocarbons (PAHs) in sediment samples	2710
Carbon concentrations in sediment	2331
Metal concentrations in biota	2209
Dissolved metal concentrations in the water column	1929
Concentration of other organic contaminants in sediment samples	1835
Sediment grain size parameters	1705
Vertical spatial coordinates	1664
Dissolved inorganic nitrogen concentration in the water column	1602
Concentration of other organic contaminants in the water column	1440
Transmittance and attenuation of the water column	1283
Sound velocity and travel time in the water column	1224
Other physical and chemical properties of suspended particulate material	915
Concentration of polychlorobiphenyls (PCBs) in sediment samples	914
Temperature variation in the water column	828
Sediment water content, porosity and surface area	621
Concentration of polycyclic aromatic hydrocarbons (PAHs) in biota	524
Pesticide concentrations in biota	504
Radioactivity in the water column	488



Urea concentration parameters in the water column	418
Geological sample radioactivity	366
Concentration of alkanols (alcohols), phenols and ethers in sediment	353
Visible waveband radiance and irradiance measurements in the water column	344
Concentration of polychlorobiphenyls (PCBs) in the water column	326
Terrestrial detritus in the water column suspended particulate material	322
Carotenoid pigment concentrations in the water column	297
Unclassified pigment concentrations in the water column	297
Concentration of polycyclic aromatic hydrocarbons (PAHs) in the water column	209
Concentration of other hydrocarbons in the water column	208
Reference numbers	201
Nitrogen concentrations in sediment	190
Oxygen production and respiration in the water column	136
Moored instrument depth	134
Particulate metal concentrations in the water column	125
Concentration of other organic contaminants in suspended particulate material	114
Concentration of polychlorobiphenyls (PCBs) in suspended particulate material	114
Concentration of polycyclic aromatic hydrocarbons (PAHs) in suspended particulate material	114
Raw suspended particulate material optical sensor output	104
Fish morphology, age and physiology	101
Metadata parameters	97
Organometallic species concentration parameters in biota	97
Shellfish morphology, age and physiology	97
Zooplankton and zoobenthos morphological parameters	97
Pesticide concentrations in water bodies	78
Concentration of other organic contaminants in biota	27
Date and time	21
Stable isotope enrichment in the water column	20
Total metal concentrations in water bodies	12
Organometallic species concentration parameters in sediments	3
Pesticide concentrations in sediment	3

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**PER YEAR**

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Per Year	Datasets	Per Year	Datasets	Per Year	Datasets
2010	519	1985	1770	1960	129
2009	5897	1984	1683	1959	83
2008	6388	1983	1760	1958	95
2007	7719	1982	1349	1957	3
2006	10588	1981	1231	1956	4
2005	11020	1980	1053	1955	14
2004	9507	1979	1018	1954	1
2003	9754	1978	1220	1953	27
2002	9911	1977	1447	1952	7
2001	9712	1976	1504	1951	16
2000	9282	1975	1449	1950	20
1999	9070	1974	871	1949	54
1998	7488	1973	805	1947	1
1997	7005	1972	699	1946	3
1996	6704	1971	521	1935	1
1995	7306	1970	341	1929	1
1994	6584	1969	300	1922	17
1993	6573	1968	298	1921	27
1992	6528	1967	248	1907	1
1991	5306	1966	306	1906	14
1990	5331	1965	191	1905	14
1989	4899	1964	144	1904	12
1988	3588	1963	63	1903	16
1987	2596	1962	64	1902	24
1986	2071	1961	66	1899	2

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**Per data access restriction**

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<b>Per Data Access Restriction</b>	<b>Datasets</b>
SeaDataNet licence	122112
unrestricted	52823
restricted	10508
no access	5980
licence	518
academic	376
moratorium	14

**NOTES**

- 1) data sets can have multiple originators
- 2) data sets might concern multiple categories and mostly concern multiple variables
- 3) data sets might have multiple data access restrictions

## SUMMARY OF QUERY RESULTS FROM Pilot portal for Chemistry Common Data Index (CDI) V2. - Greater North Sea Region - 14 February 2011

Per Data Holding Centre	Country	Datasets	Originators	Country	Datasets	Per Category	Datasets	Per Year	Datasets
British Oceanographic Data Centre (BODC)	United Kingdom	8842	The Environment Agency (EA)	United Kingdom	2592	Water column temperature and salinity	4426	2010	66
			Scottish Office Agriculture and Fisheries Department (SOAFD) - Aberdeen Marine Laboratory	United Kingdom	1957	Anthropogenic contamination	4321	2009	1077
			Marine Scotland Science	United Kingdom	1781	Carbon, nitrogen and phosphorus	3308	2008	1223
			Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory	United Kingdom	1369	PCBs and organic micropollutants	2853	2007	559
			Scottish Environment Protection Agency (SEPA)	United Kingdom	496	Hydrocarbons	2486	2006	612
			Institute of Oceanographic Sciences, Bidston Laboratory	United Kingdom	277	Other physical oceanographic measurements	2474	2005	596
			Scottish Office Agriculture Environment and Fisheries Department (SOAEFD) - Aberdeen Marine Laboratory	United Kingdom	164	Metal and metalloid concentrations	2136	2004	407
			Fisheries Research Services, Aberdeen Marine Laboratory	United Kingdom	104	Biota composition	2135	2003	355
			Plymouth Marine Laboratory (PML)	United Kingdom	89	Biota composition	2135	2002	385
			University of Plymouth, Institute of Marine Studies	United Kingdom	3	Rock and sediment chemistry	2125	2001	467
			University of Wales, School of Ocean Sciences	United Kingdom	3	Rock and sediment chemistry	2125	2000	301
			University of Southampton Department of Oceanography	United Kingdom	2	Nutrients	1669	1999	296
			Scottish Association for Marine Science (SAMS)	United Kingdom	2	Dissolved gases	711	1998	1
			Proudman Oceanographic Laboratory (POL)	United Kingdom	1	Optical properties	546	1995	9
			Dunstaffnage Marine Laboratory (DML)	United Kingdom	1	Suspended particulate material	445	1994	233
			Newcastle University Department of Marine Science and Coastal Management	United Kingdom	1	Halocarbons (including freons)	384	1993	563
						Pigments	384	1992	659
						Other inorganic chemical measurements	1	1991	149
								1990	195
								1989	335
					1988	354			
German Oceanographic Datacentre (NODC)	Germany	15958	Alfred-Wegener-Institute for Polar- and Marine Research	Germany	5265	Carbon, nitrogen and phosphorus	14518	2010	47
			Alfred Wegener Institute for Polar and Marine Research (AWI), Geophysics Department	Germany	3769	Nutrients	12892	2009	573
			Federal Maritime and Hydrographic Agency	Germany	3334	Water column temperature and salinity	4771	2008	1780
			State Agency for Nature and Environment of Schleswig Holstein (LANU)	Germany	2528	Dissolved gases	3028	2007	1521
			State Agency for Environment, Nature and Geology, Mecklenburg-Vorpommern	Germany	1279	Anthropogenic contamination	2827	2006	2316
			Baltic Sea Research Institute Warnemuende (IOW)	Germany	1030	PCBs and organic micropollutants	2251	2005	2143
			Elbe River Water Authority	Germany	715	Carbonate system	2232	2004	1122
			State Office of Ecology of Lower Saxony	Germany	473	Rock and sediment physical properties	2006	2003	1086
			Lower Saxony Water Management, Coastal Defense and Nature Conservation Agency	Germany	341	Rock and sediment physical properties	2006	2002	1325
			State Office for Agriculture, Environment and Rural Areas of Schleswig Holstein (LLUR)	Germany	209	Rock and sediment chemistry	1938	2001	1170
			Federal Research Centre for Fisheries (Hamburg)	Germany	195	Rock and sediment chemistry	1938	2000	1017
			Senckenberg by the Sea, Marine Science Department	Germany	157	Pigments	1686	1999	677
			GKSS Research Center	Germany	122	Administration and dimensions	1350	1998	151
			Institute of Biogeochemistry and Marine Chemistry (IFBM), University of Hamburg	Germany	80	Metal and metalloid concentrations	878	1997	216
			Federal Research Centre for Fisheries (Cuxhaven)	Germany	57	Hydrocarbons	857	1996	216
			State Office for Water Economy and Shore, Schleswig-Holstein, Kiel	Germany	36	Isotopes	500	1995	212
			Waterways and Shipping Office Cuxhaven	Germany	28	Other organic chemical measurements	353	1994	71
			Institute of Biochemistry and Food Chemistry, University Hamburg	Germany	27	Suspended particulate material	339	1993	12
			German Hydrographic Institute	Germany	26	Rate measurements (including production, excretion and grazing)	136	1991	22
			Waterways and Shipping Authority Wilhelmshaven	Germany	26			1990	17
			Finnish Institute of Marine Research (FIMR)	Finland	12			1989	36
			Federal Institute of Hydrology (BFG)	Germany	10			1988	19
			Weser River Management Bureau	Germany	8			1987	33
								1986	160
								1985	15
					1984	3			
Finnish Meteorological Institute (FMI)	Finland	34	Finnish Institute of Marine Research (FIMR)	Finland	34	Dissolved gases	33	2008	2
								2006	1
								2005	1
								2004	1
								2002	2
								1995	1
								1988	1
								1987	1
								1986	1
								1985	1
					1984	2			
					1982	1			

								1981	1
								1980	2
								1974	1
								1972	2
								1971	3
								1970	3
								1969	2
								1968	1
								1967	1
								1966	2
								1965	1
IFREMER / IDM/SISMER	France	314	IFREMER / DYNECO-DPT DYNAMIQUES DE L'ENVIRONNEMENT COTIER	France	224	Administration and dimensions	314	2004	81
			IFREMER / CENTRE MANCHE - MER DU NORD	France	81	Carbon, nitrogen and phosphorus	313	1999	4
			IFREMER / BE-DPT CHEMICAL POLLUTENTS, BIOGEOCHEMISTRY & ECOTOXICOLOGY	France	3	Nutrients	312	1998	26
			CNRS / STATION BIOLOGIQUE DE ROSCOFF	France	3	Pigments	299	1997	40
			SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE)	France	2	Suspended particulate material	289	1994	32
			LABORATORY of OCEANOGRAPHY and CLIMATE (LOCEAN)	France	1	Water column temperature and salinity	233	1992	129
						Isotopes	20	1970	2
						Dissolved gases	1		
						Optical properties	1		
Marine Institute	Ireland	21	Marine Institute	Ireland	21	Administration and dimensions	21	2009	21
						Other physical oceanographic measurements	21		
						Water column temperature and salinity	21		
Management Unit of the North Sea and Scheldt estuary Mathematical Models, Belgian Marine Data Centre (MUMM-BMDC)	Belgium	3048	Management Unit of the North Sea and Scheldt Estuary Mathematical Models	Belgium	2779	Water column temperature and salinity	2868	2008	42
			Université Libre de Bruxelles, Ecology of Aquatic systems	Belgium	230	Suspended particulate material	2737	2007	38
			Vrije Universiteit Brussel, Laboratory of Ecology and Systematics	Belgium	39	Dissolved gases	2614	2006	83
						Carbon, nitrogen and phosphorus	2521	2005	85
						Nutrients	2485	2004	160
						Carbonate system	2405	2003	134
						Pigments	1998	2002	79
						Optical properties	374	2001	78
								2000	149
								1999	160
								1998	139
								1997	216
								1996	90
								1995	159
								1994	89
								1993	121
								1992	153
								1991	169
								1990	155
								1989	323
								1988	243
								1987	183
Flanders Marine Institute	Belgium	1382	Flanders Marine Institute	Belgium	1382	Other physical oceanographic measurements	904	2009	207
						Water column temperature and salinity	904	2008	143
						Carbon, nitrogen and phosphorus	478	2007	47
						Nutrients	478	2006	216
								2005	189
								2004	121
								2003	212
								2002	229
								2001	18
National Environmental Research Institute, University of Aarhus, Department of Marine Ecology	Denmark	114293	National Environmental Research Institute, University of Aarhus, Department of Marine Ecology	Denmark	114293	Dissolved gases	96108	2009	3271
						Water column temperature and salinity	57009	2008	1447
						Carbon, nitrogen and phosphorus	53747	2007	3866
						Nutrients	53675	2006	5620
						Pigments	51739	2005	6255
								2004	5850
								2003	6290
								2002	6273
								2001	6383
								2000	6387
								1999	6448
								1998	5596
								1997	5184
								1996	4792
								1995	5225
								1994	5031
								1993	4886
								1992	4562
								1991	3950
								1990	3578



								1989	2997
								1988	1791
								1987	1405
								1986	1107
								1985	1090
								1984	988
								1983	1006
								1982	689
								1981	429
								1980	282
								1979	195
								1978	282
								1977	384
								1976	234
								1975	180
								1974	97
								1973	43
								1972	73
								1971	36
								1970	4
								1969	33
								1968	26
								1967	13
								1966	2
								1963	1
								1961	1
								1956	1
								1955	1
								1954	1
								1935	1
								1907	1
								1906	3
								1905	2
								1899	1
Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology (NIOO-CEME)	Netherlands	7987	Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology (NIOO-CEME)	Netherlands	7987	Dissolved gases	7134	2010	406
						Carbon, nitrogen and phosphorus	5583	2009	748
						Water column temperature and salinity	5583	2008	724
						Nutrients	5575	2007	643
						Optical properties	5506	2006	706
						Pigments	5483	2005	750
						Carbonate system	5346	2004	690
						Other inorganic chemical measurements	3481	2003	509
						Sea level	3285	2002	350
						Suspended particulate material	3056	2001	350
								2000	392
								1999	298
								1998	352
								1997	257
								1996	475
								1995	337
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	1201	NIOZ Royal Netherlands Institute for Sea Research	Netherlands	1201	Other physical oceanographic measurements	1201	2004	17
						Water column temperature and salinity	1201	2003	52
						Pigments	1035	2002	296
						Optical properties	867	2001	212
								2000	54
								1999	198
								1998	227
								1997	87
								1994	1
								1993	1
								1983	56
Rijkswaterstaat Waterdienst	Netherlands	11132	Rijkswaterstaat Waterdienst	Netherlands	11132	Carbon, nitrogen and phosphorus	6630	2008	120
						Dissolved gases	6212	2007	148
						Nutrients	3874	2006	129
						Suspended particulate material	3250	2005	150
						Pigments	2455	2004	177
						Anthropogenic contamination	1755	2003	130
						PCBs and organic micropollutants	1049	2002	128
						Metal and metalloid concentrations	928	2001	121
						Isotopes	354	2000	143
						Water column temperature and salinity	169	1999	139
						Hydrocarbons	114	1998	141
								1997	136
								1996	138
								1995	259
								1994	258
								1993	257
								1992	266
								1991	271
								1990	261
								1989	254
								1988	298
								1987	282
								1986	284

								1985	297
								1984	281
								1983	434
								1982	428
								1981	527
								1980	527
								1979	528
								1978	539
								1977	539
								1976	530
								1975	647
								1974	412
								1973	407
								1972	224
								1971	138
								1970	42
								1969	24
								1968	24
								1967	32
								1966	16
								1965	16
								1964	16
								1963	4
								1962	4
								1961	3
								1960	1
								1929	1
								1899	1
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	134	Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	124	Administration and dimensions	134	1990	2
			Atlantic Scientific Research Institute for Marine Fishery and Oceanography	Russian Federation	10	Water column temperature and salinity	134	1988	7
						Dissolved gases	130	1977	20
						Carbon, nitrogen and phosphorus	121	1976	16
						Nutrients	121	1975	28
						Carbonate system	106	1972	28
								1971	20
								1968	3
								1963	10
Swedish Meteorological and Hydrological Institute, SMHI	Sweden	27985	Swedish Meteorological and Hydrological Institute, SMHI	Sweden	27784	Water column temperature and salinity	27413	2008	907
			IVL Swedish Environmental Research Institute	Sweden	198	Dissolved gases	22837	2007	897
			Geological Survey of Sweden, SGU	Sweden	3	Carbon, nitrogen and phosphorus	22187	2006	905
						Nutrients	21861	2005	851
						Pigments	10414	2004	881
						Suspended particulate material	4459	2003	986
						Other physical oceanographic measurements	3972	2002	844
						Carbonate system	3475	2001	913
						Acoustics	1224	2000	839
						Other inorganic chemical measurements	665	1999	850
						Administration and dimensions	201	1998	855
						Anthropogenic contamination	201	1997	869
						Halocarbons (including freons)	201	1996	993
						Metal and metalloid concentrations	201	1995	1104
						PCBs and organic micropollutants	201	1994	869
						Biota composition	198	1993	733
						Fish	101	1992	759
						Hydrocarbons	100	1991	745
						Other organic chemical measurements	100	1990	1123
						Fisheries	97	1989	954
						Other biological measurements	97	1988	875
						Rock and sediment biota	97	1987	692
						Zooplankton	97	1986	519
						Rock and sediment chemistry	3	1985	367
						Sediment pore water chemistry	3	1984	409
								1983	264
								1982	231
								1981	274
								1980	242
								1979	295
								1978	399
								1977	504
								1976	724
								1975	594
								1974	361
								1973	355
								1972	372
								1971	324
								1970	290
								1969	241
								1968	244
								1967	202
								1966	286
								1965	174
								1964	128
								1963	48
								1962	60

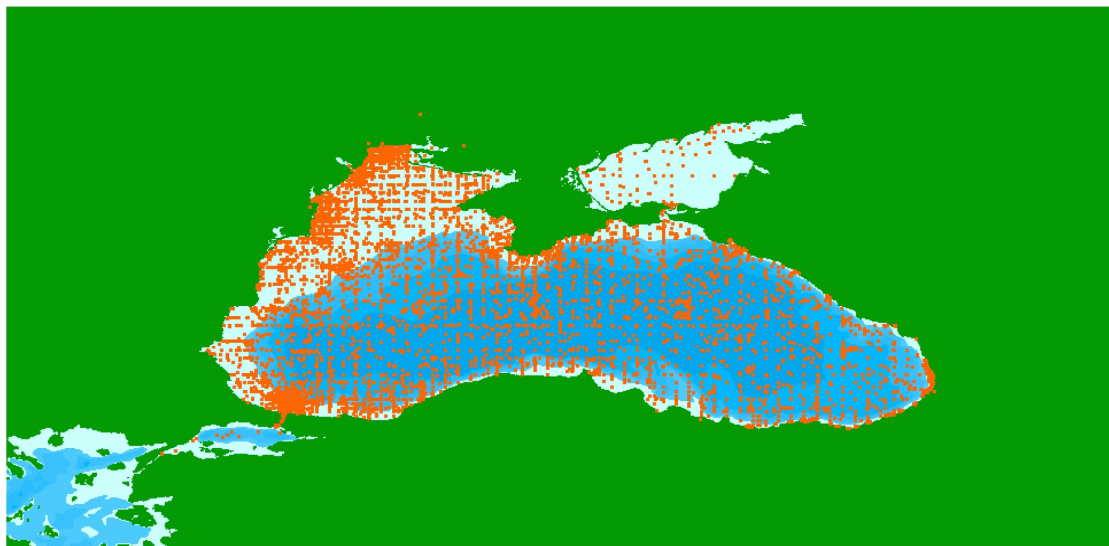
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								1961	62
								1960	128
								1959	83
								1958	95
								1957	3
								1956	3
								1955	13
								1953	27
								1952	7
								1951	16
								1950	20
								1949	54
								1947	1
								1946	3
								1922	17
								1921	27
								1906	11
								1905	12
								1904	12
								1903	16
								1902	24



**Black Sea**

**QUERY RESULTS - Pilot portal for Chemistry Common Data Index (CDI) V2 - Black Sea Region - 14 February 2011**



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**PER DATA HOLDING CENTRE**

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Per Data Holding Centre	Country	Datasets
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	4587
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC)	Russian Federation	3887
National Oceanographic Data Centre (NODC)	Romania	3374
National Institute for Marine Research and Development Grigore Antipa	Turkey	3080
Institute of Marine Sciences, Middle East Technical University	Ukraine	2050
Marine Hydrophysical Institute	Ukraine	324
Odessa National I.I.Mechnikov University	Georgia	308
Scientific - Research Firm GAMMA	Turkey	183
Sinop University, Fisheries Faculty	Bulgaria	138
Institute of Fishery Resources (IFR)	Russian Federation	122
P.P.Shirshov Institute of Oceanology, RAS	Bulgaria	50
National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences	Georgia	43
Iv.Javakhishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO)	Bulgaria	40
Bulgarian National Oceanographic Data Centre(BGODC), Institute of Oceanology	France	5
IFREMER / IDM/SISMER	Ukraine	5
Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	4
Scientific Research Institute of Ecological Problems (USRIEP)		

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**PER ORIGINATOR**  
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Per Originator	Country	Datasets
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	4593
Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	3556
National Institute for Marine Research and Development Grigore Antipa	Romania	3374
Institute of Marine Sciences, Middle East Technical University	Turkey	3080
Marine Hydrophysical Institute	Ukraine	2050
Odessa National I.I.Mechnikov University	Ukraine	324
Scientific - Research Firm GAMMA	Georgia	308
P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	306
Sinop University, Fisheries Faculty	Turkey	183
Institute of Fishery Resources (IFR)	Bulgaria	138
Marine branch of Ukrainian Hydrometeorological Institute	Ukraine	98
Laboratory of Marine Ecology-Central Laboratory of General Ecology	Bulgaria	50
Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	48
Iv.Javakhishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO)	Georgia	43
Institute of Oceanology, Bulgarian Academy of Sciences (IO-BAS)	Bulgaria	40
IFREMER / GM-MARINE GEOSCIENCES	France	5
Scientific Research Institute of Ecological Problems (USRIEP)	Ukraine	4

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**PER CATEGORY**  
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Per Category	Datasets
Dissolved gases	13699
Water column temperature and salinity	11685
Carbon, nitrogen and phosphorus	8692
Nutrients	8656
Other physical oceanographic measurements	4430
Administration and dimensions	3892
Carbonate system	2293
Optical properties	969
Anthropogenic contamination	625
Metal and metalloid concentrations	474
Pigments	404
Suspended particulate material	197
PCBs and organic micropollutants	154
Hydrocarbons	122
Sea level	122
Rock and sediment chemistry	104
Biota abundance and biomass	14
Phytoplankton	14
Fatty acids	1
Isotopes	1

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**PER VARIABLE**  
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Per Variable	Datasets
Dissolved oxygen parameters in the water column	13694
Temperature of the water column	11665
Salinity of the water column	11572
Phosphate concentration parameters in the water column	7903
Nitrate concentration parameters in the water column	6340
Nitrite concentration parameters in the water column	5635
Silicate concentration parameters in the water column	5086
Density of the water column	4430
Moored instrument depth	3887
Ammonium concentration parameters in the water column	2386
Alkalinity, acidity and pH of the water column	2266
Dissolved total and organic nitrogen concentrations in the water column	909
Dissolved total or organic phosphorus concentration in the water column	874
Dissolved concentration parameters for other gases in the water column	714
Secchi disk depth	712
Total metal concentrations in water bodies	456
Raw fluorometer output	251
Transmittance and attenuation of the water column	251
Dissolved organic carbon concentration in the water column	236
Concentration of suspended particulate material in the water column	197
Chlorophyll pigment concentrations in the water column	153
Concentration of alkanes in the water column	122
Sea level expressed as pressure	122
Concentration of other organic contaminants in sediment samples	103
Dissolved inorganic nitrogen concentration in the water column	65
Electrical conductivity of the water column	64
Concentration of other organic contaminants in the water column	51
Particulate total and organic phosphorus concentrations in the water column	40
Total dissolved inorganic carbon (TCO <sub>2</sub> ) concentration in the water column	27
Particulate total and organic carbon concentrations in the water column	20
Particulate total and organic nitrogen concentrations in the water column	20
Dissolved metal concentrations in the water column	15
Phytoplankton taxonomic abundance in water bodies	14
Visible waveband radiance and irradiance measurements in the water column	14
Vertical spatial coordinates	5
Dissolved trace metalloid concentrations in the water column	3
Temperature variation in the water column	2
Lipid (fatty acids, sterols or isoprenoid compounds) concentrations in sediment	1
Radioactivity in the water column	1

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**PER YEAR**

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Per Year	Datasets
2010	15
2009	123
2008	191
2007	154
2006	167
2005	86
2004	428
2003	147
2002	171
2001	272
2000	320
1999	655
1998	248
1997	140
1996	965
1995	1005
1994	768
1993	1452
1992	1884
1991	556
1990	641
1989	895
1988	702
1987	445
1986	620

Per Year	Datasets
1985	509
1984	276
1983	372
1982	655
1981	488
1980	296
1979	423
1978	414
1977	193
1976	269
1975	117
1974	228
1973	183
1972	138
1971	69
1970	67
1969	34
1968	41
1967	129
1966	37
1965	43
1964	68
1963	55
1960	98
1882	5

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**Per Data Access Restriction**

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Per Data Access Restriction	Datasets
SeaDataNet licence	12821
unrestricted	4073
restricted	1305

**NOTES**

- 1) data sets can have multiple originators
- 2) data sets might concern multiple categories and mostly concern multiple variables
- 3) data sets might have multiple data access restrictions

## SUMMARY OF QUERY RESULTS FROM Pilot portal for Chemistry Common Data Index (CDI) V2. - Black Sea Region - 14 February 2011

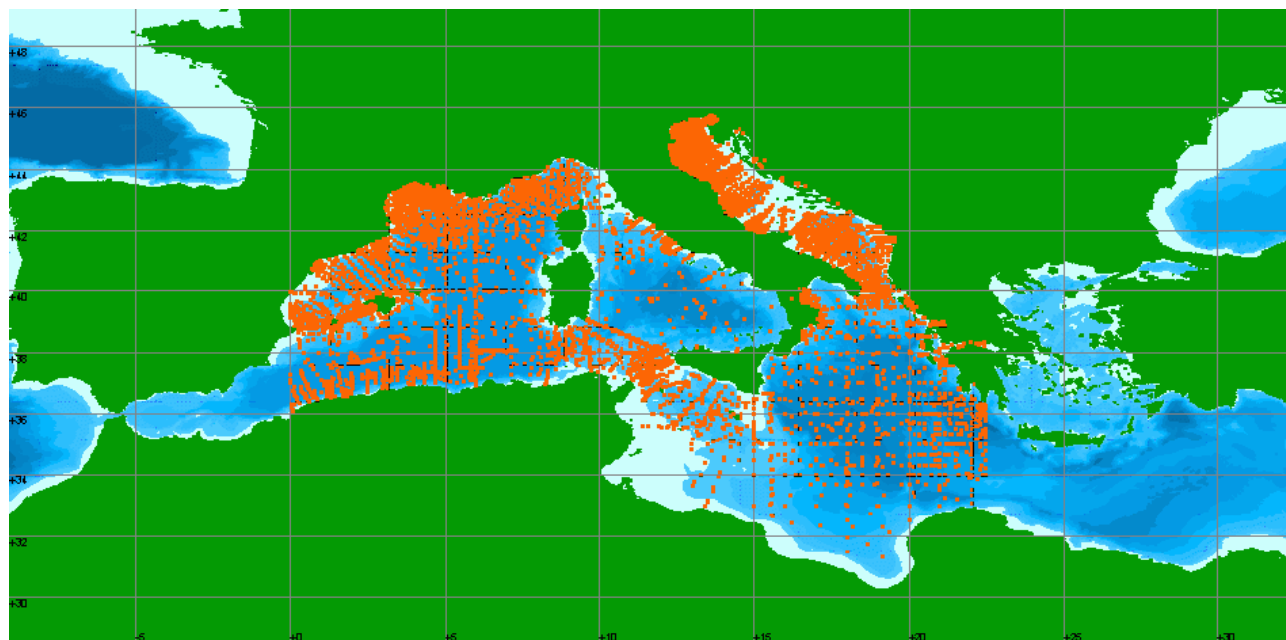
Per Data Holding Centre	Country	Datasets	Originators	Country	Datasets	Per Category	Datasets	Per Year	Datasets
Institute of Fishery Resources (IFR)	Bulgaria	138	Institute of Fishery Resources (IFR)	Bulgaria	138	Dissolved gases	138	2003	19
						Water column temperature and salinity	138	2002	31
						Pigments	88	2000	88
						Carbon, nitrogen and phosphorus	50		
						Nutrients	50		
Bulgarian National Oceanographic Data Centre (BGODC), Institute of Oceanology	Bulgaria	40	Institute of Oceanology, Bulgarian Academy of Sciences (IO-BAS)	Bulgaria	40	Carbon, nitrogen and phosphorus	40	1986	26
						Dissolved gases	40	1985	14
National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences	Bulgaria	50	Laboratory of Marine Ecology-Central Laboratory of General Ecology	Bulgaria	50	Carbon, nitrogen and phosphorus	50	2001	50
						Nutrients	50	2000	50
						Optical properties	50		
						Pigments	50		
						Suspended particulate material	50		
Water column temperature and salinity	50								
IFREMER / IDM/SISMER	France	5	IFREMER / GM-MARINE GEOSCIENCES	France	5	Administration and dimensions	5	2004	5
						Dissolved gases	5		
						Water column temperature and salinity	5		
Scientific - Research Firm GAMMA	Georgia	308	Scientific - Research Firm GAMMA	Georgia	308	Anthropogenic contamination	145	2010	15
						PCBs and organic micropollutants	133	2009	123
						Rock and sediment chemistry	104	2008	117
						Rock and sediment chemistry	104	2006	35
						Dissolved gases	68	2001	18
						Carbonate system	64		
						Water column temperature and salinity	64		
						Metal and metalloid concentrations	12		
						Fatty acids	1		
						Iv.Javakishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO)	Georgia	43	Iv.Javakishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO)
PCBs and organic micropollutants	21	2004	11						
Carbon, nitrogen and phosphorus	13	2003	11						
Nutrients	13	2002	6						
Dissolved gases	5								
Metal and metalloid concentrations	3								
Isotopes						1			
National Institute for Marine Research and Development Grigore Antipa	Romania	3374	National Institute for Marine Research and Development Grigore Antipa	Romania	3374	Carbon, nitrogen and phosphorus	2918	2008	71
						Dissolved gases	2918	2007	141
						Nutrients	2918	2006	99
						Other physical oceanographic measurements	2918	2005	66
						Water column temperature and salinity	2918	2004	87
						Optical properties	662	2003	98
						Anthropogenic contamination	456	2002	122
						Metal and metalloid concentrations	456	2001	97
								2000	82
								1999	69
								1998	74
								1997	53
								1996	75
								1995	91
								1994	115
								1993	89
								1992	84
								1991	87
								1990	13
								1989	44
								1988	87
								1987	94
								1986	83
								1985	92
								1984	91
								1983	45
								1982	51
		1981	52						
		1980	110						
		1979	111						
		1978	109						

								1977	107
								1976	50
								1975	54
								1974	60
								1973	55
								1972	57
								1971	54
								1970	43
								1969	26
								1968	40
								1967	47
								1966	37
								1965	43
								1964	46
								1963	40
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	3887	Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	3556	Administration and dimensions	3887	1992	14
			P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	184	Water column temperature and salinity	3886	1991	13
			Marine branch of Ukrainian Hydrometeorological Institute	Ukraine	98	Dissolved gases	3836	1990	83
			Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	43	Carbonate system	1820	1989	338
			Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	6	Nutrients	1225	1988	80
						Carbon, nitrogen and phosphorus	1218	1987	136
								1986	132
								1985	316
								1984	101
								1983	264
								1982	604
								1981	436
								1980	125
								1979	312
								1978	236
								1977	60
								1976	188
								1975	63
								1974	166
								1973	71
								1972	19
								1971	15
								1970	24
								1969	8
								1968	1
								1967	82
P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	122	P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	122	Carbon, nitrogen and phosphorus	122	2007	10
						Dissolved gases	122	2006	15
						Hydrocarbons	122	2005	6
						Nutrients	122	2004	13
						Sea level	122	2002	8
						Water column temperature and salinity	122	2001	31
								2000	3
								1999	20
								1998	4
								1997	8
								1994	4
Sinop University, Fisheries Faculty	Turkey	183	Sinop University, Fisheries Faculty	Turkey	183	Carbonate system	168	2005	11
						Dissolved gases	168	2004	12
						Water column temperature and salinity	168	2003	16
						Carbon, nitrogen and phosphorus	15	2002	1
						Nutrients	15	1999	143
						Pigments	15		
						Biota abundance and biomass	14		
						Phytoplankton	14		
Institute of Marine Sciences, Middle East Technical University	Turkey	3080	Institute of Marine Sciences, Middle East Technical University	Turkey	3080	Carbon, nitrogen and phosphorus	1517	2001	73
						Nutrients	1516	2000	95
						Other physical oceanographic measurements	1507	1999	39
						Water column temperature and salinity	1507	1998	17
						Dissolved gases	1269	1997	77
						Optical properties	257	1996	216
						Pigments	251	1995	169
						Carbonate system	211	1994	205
						Suspended particulate material	144	1993	470
								1992	232
								1991	276
								1990	368
								1989	268
								1988	142

							1987	180
							1986	253
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	4587	Dissolved gases	2793	1999	382
					Water column temperature and salinity	2792	1998	124
					Carbon, nitrogen and phosphorus	1794	1996	672
					Nutrients	1792	1995	673
							1994	372
							1993	667
							1992	1402
							1991	9
							1990	29
							1989	37
							1988	103
							1987	35
							1986	24
							1984	28
							1983	30
Scientific Research Institute of Ecological Problems (USRIEP)	Ukraine	Scientific Research Institute of Ecological Problems (USRIEP)	Ukraine	3	Carbon, nitrogen and phosphorus	3	2008	3
					Carbonate system	3	2007	3
					Dissolved gases	3	2006	3
					Metal and metalloid concentrations	3	2005	3
					Nutrients	3	2004	3
					Suspended particulate material	3	2003	3
					Water column temperature and salinity	3	2002	3
							2001	3
							2000	2
							1999	2
							1998	2
							1997	2
							1996	2
Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	5	Other physical oceanographic measurements	5	1882	5
					Water column temperature and salinity	5		
Marine Hydrophysical Institute	Ukraine	2050 Marine Hydrophysical Institute	Ukraine	2050	Dissolved gases	2010	1995	72
					Carbon, nitrogen and phosphorus	628	1994	72
					Nutrients	628	1993	226
							1992	152
							1991	171
							1990	148
							1989	208
							1988	290
							1986	92
							1985	87
							1984	56
							1983	33
							1980	61
							1978	69
							1977	26
							1976	31
							1974	2
							1973	57
							1972	62
							1964	22
							1963	15
							1960	98
Odessa National I.I.Mechnikov University	Ukraine	Odessa National I.I.Mechnikov University	Ukraine	324	Carbon, nitrogen and phosphorus	324	2004	207
					Dissolved gases	324	1998	27
					Nutrients	324		
					Carbonate system	27		
					Water column temperature and salinity	27		

**Mediterranean Sea**

## Central Mediterranean Sea



PER DATA HOLDING CENTRE

Per Data Holding Centre	Country	Datasets
OGS, National Institute of Oceanography and Experimental Geophysics, Department of Oceanography	Italy	38526
IFREMER / IDM/SISMER	France	4415
National Institute of Biology - NIBMarine Biology Station	Slovenia	3242
Spanish Oceanographic Institute	Spain	2238
Institute of Oceanography and Fisheries	Croatia	1477
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	1304
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece	635
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	269
International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	Malta	128
Israel Oceanographic and Limnological Research (IOLR)	Israel	29

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 PER ORIGINATOR  
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Per Originator	Country	Datasets
OGS, National Institute of Oceanography and Experimental Geophysics, Department of Oceanography	Italy	21142
ARPA Emilia-Romagna - Struttura Oceanografica Daphne	Italy	4512
CNR, Istituto di Scienze Marine (Sezione di Venezia - ex IBM)	Italy	3746
National Institute of Biology - NIBMarine Biology Station	Slovenia	3242
CNR, Istituto di Scienze Marine (Sezione di Ancona)	Italy	2277
CNR, Istituto di Scienze Marine (Sezione di Trieste)	Italy	1853
UNKNOWN	Unknown	1235
CNR, Istituto per lo Studio della Dinamica delle Grandi Masse	Italy	900
Institute of Oceanography and Fisheries	Croatia	899
Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	855
Zoological Station 'A. Dohrn' - Laboratory of Biological Oceanography	Italy	844
ICRAM, Palermo	Italy	753
LABORATORY OF OCEANOGRAPHY of VILLEFRANCHE (LOV)	France	744
Marine Biology Laboratory of Trieste	Italy	643
Hellenic Centre for Marine Research, Institute of Oceanography (HCMR/IO)	Greece	635
Istituto Idrografico della Marina, Genova	Italy	599
IEO/ Balearic Islands Oceanographic Centre	Spain	579
Center for marine research - Rudjer Boskovic Institute	Croatia	578
CNR, Istituto di Scienze Marine (Sezione di La Spezia)	Italy	573
Spanish Oceanographic Institute	Spain	547
UNIVERSITE DE LA MEDITERRANEE (U2) / COM - LAB. OCEANOLOG. & BIOGEOCHIMIE - LUMINY	France	484
Institute of Marine Sciences. Mediterranean Marine and Environmental Research Centre (CMIMA-ICM-CSIC)	Spain	442
CNRS / COM - LAB. D' OCEANOGRAPHIE & DE BIOGEOCHIMIE -ENDOUME	France	390
Observatoire Oceanologique De Banyuls (Université de Paris VI)	France	385

MUSEUM NATIONAL D'HISTOIRE NATURELLE / LABORATOIRE D'OCEANOGRAPHIE PHYSIQUE	France	298
ICRAM, Chioggia	Italy	283
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	269
Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	258
Centre for Advanced Studies of Blanes (CEAB-CSIC)	Spain	256
ARPA Toscana, Area tutela ambiente marino	Italy	246
Baleares Islands University. Environmental Biology Department. UIB	Spain	223
IEO/ Malaga Oceanographic Centre	Spain	173
SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE)	France	153
CNRS / OOM - Lab. D'OCEANOGRAPHIE ET DE BIOGEOCHIMIE - TOULON	France	152
CNRS / LABORATOIRE DE MICROBIOLOGIE MARINE	France	137
P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	134
Malta Centre for Fisheries Sciences	Malta	128
Commissione Permanente per lo Studio dell'Adriatico, Venezia	Italy	106
UNIVERSITE DE LA MEDITERRANEE (U2) / CENTRE D'OCEANOLOGIE DE MARSEILLE	France	100
CNRS / Center of Oceanology of Marseille (OOM) La-Seyne-Sur-Mer	France	92
UNIVERSITE DE MONTPELLIER II / LABORATOIRE DYNAMIQUE DE LA LITHOSPHERE	France	73
CEA / LABORATOIRE DES SCIENCES DU CLIMAT ET DE L' ENVIRONNEMENT	France	58
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	57
CNR, Istituto di Scienze Marine (Sezione di Bologna)	Italy	49
CNRS / LEGOS	France	44
UNIVERSITE DE PERPIGNAN / CEFREM	France	31
Israel Oceanographic and Limnological Research (IOLR)	Israel	29
Universite D'Angers / Laboratoire Des Bio-Indicateurs Actuels Et Fossiles (Biaf)	France	26
IEO/ Murcia Oceanographic Centre	Spain	18
IFREMER / BE-DPT CHEMICAL POLLUTENTS, BIOGEOCHEMISTRY & ECOTOXICOLOGY	France	7
IRD / CENTRE OF ABIDJAN	Cote D'Ivoire	4
IFREMER / EEP/LEP-DEEP ENVIRONMENT LABORATORY	France	2

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**PER CATEGORY**  
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Per Category	Datasets
Administration and dimensions	52068
Water column temperature and salinity	51643
Dissolved gases	51462
Carbonate system	25482
Carbon, nitrogen and phosphorus	15680
Pigments	15100
Nutrients	13793
Other inorganic chemical measurements	10139
Rock and sediment chemistry	10092
Optical properties	4816
Suspended particulate material	4401
Other physical oceanographic measurements	2528
Currents	1787
Other organic chemical measurements	1381
Phytoplankton	512
Biota abundance and biomass	379
Rate measurements (including production, excretion and grazing)	142
Other biological measurements	49
Acoustics	2

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**PER VARIABLE**  
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<b>Per Variable</b>	<b>Datasets</b>
Dissolved oxygen parameters in the water column	51462
Salinity of the water column	51173
Temperature of the water column	49456
Vertical spatial coordinates	47762
Alkalinity, acidity and pH of the water column	25482
Phosphate concentration parameters in the water column	12948
Nitrate concentration parameters in the water column	12476
Nitrite concentration parameters in the water column	11067
Silicate concentration parameters in the water column	11012
Pedox potential in sediment	10092
Chlorophyll pigment concentrations in the water column	9553
Ammonium concentration parameters in the water column	8785
Raw fluorometer output	5813
Transmittance and attenuation of the water column	4467
Concentration of suspended particulate material in the water column	4401
Particulate total and organic nitrogen concentrations in the water column	4064
Date and time	3463
Phaeopigment concentrations in the water column	3150
Dissolved total or organic phosphorus concentration in the water column	2827
Density of the water column	2528
Unspecified	2146
Horizontal velocity of the water column (currents)	1787
Electrical conductivity of the water column	1612
Particulate total and organic carbon concentrations in the water column	1570
Reference numbers	1475

Particulate total and organic phosphorus concentrations in the water column	1452
Dissolved inorganic nitrogen concentration in the water column	1415
Moored instrument depth	1304
Concentration of carbohydrates in the water column	1113
Dissolved total and organic nitrogen concentrations in the water column	1048
Dissolved organic carbon concentration in the water column	745
Optical backscatter	523
Visible waveband radiance and irradiance measurements in the water column	432
Phytoplankton taxonomic abundance in water bodies	379
Concentration of proteins in the water column	285
Temperature variation in the water column	269
Primary production in the water column	138
Regenerated production in water bodies	115
New production in water bodies	112
Urea concentration parameters in the water column	70
Suspended particulate material grain size parameters	66
Excretion rate parameters in the water column	49
Concentration of inorganic halogens in water bodies	47
Nitrification rate in the water column	47
Total dissolved inorganic carbon (TCO <sub>2</sub> ) concentration in the water column	19
Acoustic backscatter in the water column	2
Platform or instrument orientation	2

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**PER YEAR**  
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Per Year	Datasets
2009	413
2008	2723
2007	1198
2006	3874
2005	2037
2004	6304
2003	5252
2002	3389
2001	3727
2000	4194
1999	3347
1998	2299
1997	2263
1996	1553
1995	2020
1994	857
1993	470
1992	659
1991	856
1990	897
1989	456
1988	365
1987	1304
1986	812
1985	172

Per Year	Datasets
1984	99
1983	294
1982	214
1981	431
1980	368
1979	630
1978	446
1977	410
1976	511
1975	385
1974	23
1973	521
1972	778
1971	685
1970	255
1969	362
1968	117
1967	28
1966	185
1965	242
1964	121
1963	294
1962	133
1961	79
1960	27

Per Year	Datasets
1959	15
1958	11
1957	9
1954	3
1951	5
1930	1
1915	2
1914	106
1913	106
1912	106
1911	106

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**per data access restriction**  
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Per Data Access Restriction	Datasets
restricted	29506
unrestricted	19641
SeaDataNet licence	6588

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## SUMMARY OF QUERY RESULTS FROM Pilot portal for Chemistry Common Data Index (CDI) V2. - Central Mediterranean Sea - 14 February 2011

Per Data Holding Centre	Country	Datasets	Originators	Country	Datasets	Per Category	Datasets	Per Year	Datasets
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece	4089	Hellenic Centre for Marine Research, Institute of Oceanography (HCMR/IO)	Greece	4089	Administration and dimensions	4089	2009	413
						Dissolved gases	4089	2008	2224
						Water column temperature and salinity	3916	2007	824
						Suspended particulate material	2296	2001	35
						Currents	1785	2000	163
						Carbon, nitrogen and phosphorus	394	1999	25
						Nutrients	394	1998	11
						Optical properties	199	1995	48
						Carbonate system	96	1994	93
								1991	94
								1989	14
								1988	16
								1987	125
								1986	8

Spanish Oceanographic Institute	Spain	2238	IEO/ Balearic Islands Oceanographic Centre	Spain	579	Administration and dimensions	2238	2008	365
			Spanish Oceanographic Institute	Spain	547	Dissolved gases	1821	2007	65
			Institute of Marine Sciences, Mediterranean Marine and Environmental Research Centre (CMIMA-ICM-CSIC)	Spain	442	Nutrients	1700	2004	24
			Centre for Advanced Studies of Blanes (CEAB-CSIC)	Spain	256	Carbon, nitrogen and phosphorus	1696	2003	11
			Balearic Islands University, Environmental Biology Department, UIB	Spain	223	Water column temperature and salinity	1665	2002	27
			IEO/ Malaga Oceanographic Centre	Spain	173	Pigments	1620	2001	12

			IEO/ Murcia Oceanographic Centre	Spain	18	Suspended particulate material	243	2000	48
						Carbonate system	179	1999	205
						Optical properties	31	1998	48
								1997	113
								1996	203
								1995	217
								1994	31
								1993	2
								1992	7
								1991	55
								1990	111
								1989	30
								1988	82
								1987	90
								1986	39
								1985	28
								1984	26
								1983	13
								1982	5
								1981	65
								1980	49
								1979	20
								1978	12
								1976	134
								1975	77
								1974	6
								1971	1
								1970	9

								1969	3
								1954	3
								1915	2
IFREMER / IDM/SISMER	France	4415	UNKNOWN	Unknown	1235	Administration and dimensions	4415	2006	28
			LABORATORY OF OCEANOGRAPHY of VILLEFRANCHE (LOV)	France	744	Water column temperature and salinity	4297	2005	134
			UNIVERSITE DE LA MEDITERRANEE (U2) / COM - LAB. OCEANOLOG. & BIOGEOCHIMIE - LUMINY	France	484	Dissolved gases	3421	2004	63
			CNRS / COM - LAB. D' OCEANOGRAPHIE & DE BIOGEOCHIMIE - ENDOUME	France	390	Pigments	1975	2003	74
			Observatoire Oceanologique De Banyuls (Université de Paris VI)	France	385	Carbon, nitrogen and phosphorus	1812	2002	21.7



			MUSEUM NATIONAL D'HISTOIRE NATURELLE / LABORATOIRE D'OCEANOGRAPHIE PHYSIQUE	France	298	Nutrients	1733	2001	31
			SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE)	France	153	Optical properties	406	2000	105
			CNRS / COM-Lab. D'OCEANOGRAPHIE ET DE BIOGEOCHIMIE - TOULON	France	152	Suspended particulate material	252	1999	314
			CNRS / LABORATOIRE DE MICROBIOLOGIE MARINE	France	137	Rate measurements (including production, excretion and grazing)	129	1998	417

			UNIVERSITE DE LA MEDITERRANEE (U2) / CENTRE D'OCEANOLOGIE DE MARSEILLE	France	100	Phytoplankton	125	1997	309
			CNRS / Center of Oceanology of Marseille (COM) La-Seyne-Sur-Mer	France	92	Other biological measurements	49	1996	113
			UNIVERSITE DE MONTPELLIER II / LABORATOIRE DYNAMIQUE DE LA LITHOSPHERE	France	73	Other inorganic chemical measurements	47	1995	127
			CEA / LABORATOIRE DES SCIENCES DU CLIMAT ET DE L'ENVIRONNEMENT	France	58	Other organic chemical measurements	17	1994	22
			CNRS / LEGOS	France	44	Acoustics	2	1993	6

			UNIVERSITE DE PERPIGNAN / CEFREM	France	31	Currents	2	1992	6
			Universite D'Angers / Laboratoire Des Bio-Indicateurs Actuels Et Fossiles (Biaf)	France	26	Carbonate system	1	1991	10
			IFREMER / BE-DPT CHEMICAL POLLUTENTS , BIOGEOCHEMISTRY & ECOTOXICOLOGY	France	7			1990	283
			IRD / CENTRE OF ABIDJAN	Cote D'Ivoire	4			1988	39
			IFREMER / EEP/LEP-DEEP ENVIRONMENT LABORATORY	France	2			1986	157
								1981	52
								1973	48
								1972	98
								1971	176
								1970	135

								1969	358
								1968	104
								1967	28
								1966	137
								1965	182
								1964	121
								1963	294
								1962	133
								1961	79
								1957	9
								1951	5
								1930	1
Institute of Oceanography and Fisheries	Croatia	1477	Institute of Oceanography and Fisheries	Croatia	899	Dissolved gases	1468	2008	134
			Center for marine research - Rudjer Boskovic Institute	Croatia	578	Administration and dimensions	1449	2007	157
						Carbon, nitrogen and phosphorus	1446	2006	148
						Nutrients	1446	2005	174
						Water column temperature and salinity	1418	2004	161
						Pigments	1384	2003	141
								2002	136
								2001	121
								2000	77

								1999	109
								1998	119
Israel Oceanographic and Limnological Research (IOLR)	Israel	47	Israel Oceanographic and Limnological Research (IOLR)	Israel	47	Administration and dimensions	47	1973	7
						Carbonate system	47	1972	13
						Dissolved gases	47	1971	5
						Water column temperature and salinity	47	1970	15
						Carbon, nitrogen and phosphorus	41	1969	1
						Nutrients	41	1968	6
International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	Malta	128	Malta Centre for Fisheries Sciences	Malta	128	Carbon, nitrogen and phosphorus	128	1998	32
						Carbonate system	128	1997	33
						Dissolved gases	128	1996	63
						Nutrients	128		
						Pigments	128		
						Water column temperature and salinity	128		

National Institute of Biology - NIBMarine Biology Station	Slovenia	3242	National Institute of Biology - NIBMarine Biology Station	Slovenia	3242	Water column temperature and salinity	3195	2007	152
						Dissolved gases	2945	2006	210
						Other physical oceanographic measurements	2259	2005	210
						Carbon, nitrogen and phosphorus	2254	2004	197
						Nutrients	2228	2003	174
						Carbonate system	1940	2002	75
						Pigments	1269	2001	123
						Suspended particulate material	163	2000	194
								1999	86
								1998	120
								1997	70
								1996	56
								1995	58
								1994	48
								1993	57
								1992	51
								1991	48
								1990	46
								1989	41
								1988	34
								1987	489

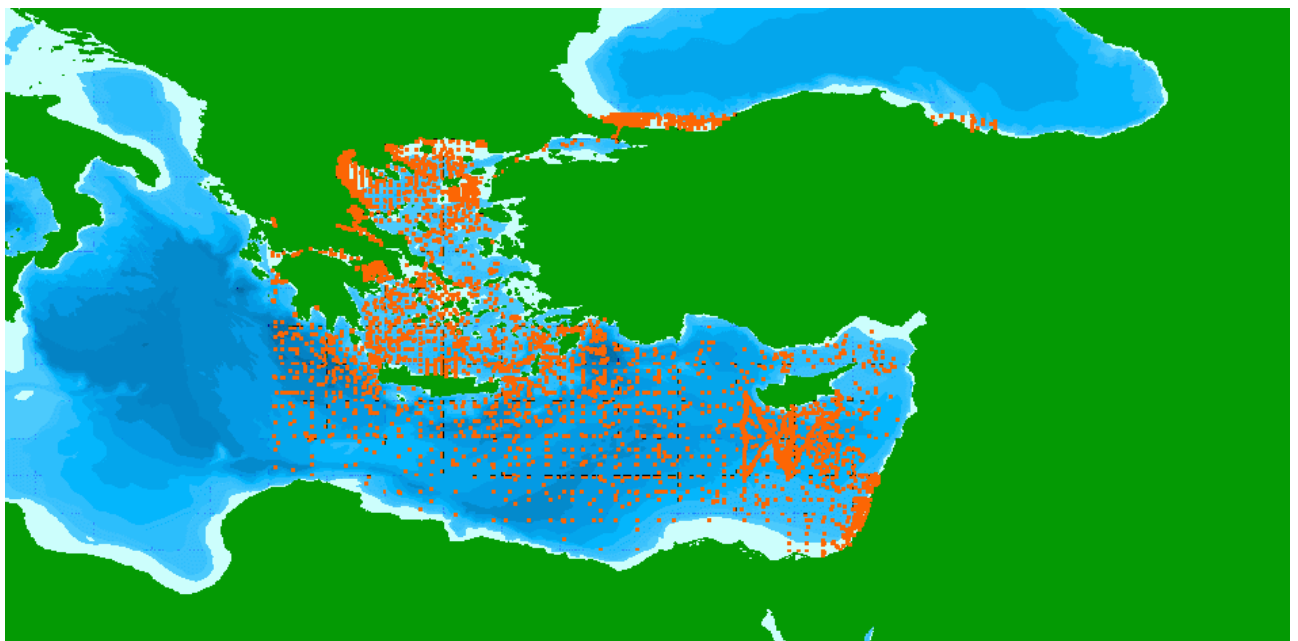
								1986	360
								1985	55
								1984	47
								1983	62
								1982	62
								1981	23
								1980	33
								1979	28
								1978	33
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	269	NIOZ Royal Netherlands Institute for Sea Research	Netherlands	269	Other physical oceanographic measurements	269	2004	19
						Water column temperature and salinity	269	2003	61
						Optical properties	189	1991	20
						Pigments	100	1987	169
OGS, National Institute of Oceanography and Experimental Geophysics, Department of Oceanography	Italy	38526	OGS, National Institute of Oceanography and Experimental Geophysics, Department of Oceanography	Italy	21142	Administration and dimensions	38526	2006	3488
			ARPA Emilia-Romagna - Struttura Oceanografica Daphne	Italy	4512	Dissolved gases	36271	2005	1519
			CNR, Istituto di Scienze Marine (Sezione di Venezia - ex IBM)	Italy	3746	Water column temperature and salinity	35404	2004	5840
			CNR, Istituto di Scienze Marine (Sezione di Ancona)	Italy	2277	Carbonate system	22427	2003	4791
			CNR, Istituto di Scienze Marine (Sezione di Trieste)	Italy	1853	Other inorganic chemical measurements	10092	2002	2934
			CNR, Istituto per lo Studio della Dinamica delle Grandi Masse	Italy	900	Rock and sediment chemistry	10092	2001	3405
			Zoological Station 'A. Dohrn' - Laboratory of Biological Oceanography	Italy	844	Rock and sediment chemistry	10092	2000	3607
			ICRAM, Palermo	Italy	753	Pigments	8624	1999	2608
			Marine Biology Laboratory of Trieste	Italy	643	Carbon, nitrogen and phosphorus	7285	1998	1552

			Istituto Idrografico della Marina, Genova	Italy	599	Nutrients	5487	1997	1738
			CNR, Istituto di Scienze Marine (Sezione di La Spezia)	Italy	573	Optical properties	3991	1996	1118
			ICRAM, Chioggia	Italy	283	Suspended particulate material	1447	1995	1570
			Toscana, Area tutela ambiente marino	Italy	246	Other organic chemical measurements	1364	1994	663
			Commissione Permanente per lo Studio dell'Adriatico, Venezia	Italy	106	Phytoplankton	387	1993	405
			CNR, Istituto di Scienze Marine (Sezione di Bologna)	Italy	49	Biota abundance and biomass	379	1992	595
						Rate measurements (including production, excretion and grazing)	13	1991	568
								1990	365
								1989	254

								1988	63
								1987	356
								1986	142
								1985	35
								1984	25
								1983	136
								1982	8
								1981	291
								1980	286
								1979	568
								1978	401
								1977	290
								1976	362
								1975	237
								1973	449
								1972	578
								1971	503
								1970	54
								1966	48
								1965	60
								1914	106
								1913	106
								1912	106
								1911	106
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RHHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	1304	Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	855	Administration and dimensions	1304	1991	61

			Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	258	Water column temperature and salinity	1304	1990	92
			P. P. Shirshov Institute of Oceanology, RAS	Russian Federation	134	Dissolved gases	1272	1989	117
			Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	57	Carbonate system	664	1988	131
						Nutrients	636	1987	75
						Carbon, nitrogen and phosphorus	624	1986	106
								1985	54
								1984	1
								1983	83
								1982	139
								1979	14
								1977	120
								1976	15
								1975	71
								1974	17
								1973	17
								1972	89
								1970	42
								1968	7
								1960	27
								1959	15
								1958	11

East Mediterranean Sea



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PER DATA HOLDING CENTRE  
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Per Data Holding Centre	Country	Datasets
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece	18475
Israel Oceanographic and Limnological Research (IOLR)	Israel	3090
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	2500
Cyprus Oceanographic Data Center, Oceanography Center	Cyprus	499
IFREMER / IDM/SISMER	France	107

24671

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PER ORIGINATOR  
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Per Originator	Country	Datasets
Hellenic Centre for Marine Research, Institute of Oceanography (HCMR/IO)	Greece	18475
Israel Oceanographic and Limnological Research (IOLR)	Israel	3090
Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	2405
Cyprus Oceanographic Data Center, Oceanography Center	Cyprus	499
LABORATORY OF OCEANOGRAPHY of VILLEFRANCHE (LOV)	France	70
Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	51
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	41
UNIVERSITE DE LA MEDITERRANEE (U2) / COM - LAB. OCEANOLOG. & BIOGEOCHIMIE - LUMINY	France	21
UNKNOWN	Unknown	15
P.P. Shirshov Institute of Oceanology, RAS	Russian Federation	3
IFREMER / GM-MARINE GEOSCIENCES	France	1

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PER CATEGORY  
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Per Category	Datasets
Administration and dimensions	24172
Dissolved gases	23706
Water column temperature and salinity	23400
Currents	6211
Nutrients	5936
Carbon, nitrogen and phosphorus	5876
Suspended particulate material	5448
Carbonate system	2683
Optical properties	1684
Sea level	499
Other physical oceanographic measurements	308
Pigments	152
Other inorganic chemical measurements	6



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## PER VARIABLE

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Per Variable	Datasets
Dissolved oxygen parameters in the water column	23706
Temperature of the water column	23400
Salinity of the water column	22710
Date and time	13385
Vertical spatial coordinates	12859
Electrical conductivity of the water column	6633
Horizontal velocity of the water column (currents)	6211
Phosphate concentration parameters in the water column	5818
Concentration of suspended particulate material in the water column	5448
Silicate concentration parameters in the water column	5061
Nitrate concentration parameters in the water column	4851
Nitrite concentration parameters in the water column	4493
Alkalinity, acidity and pH of the water column	2683
Moored instrument depth	2500
Ammonium concentration parameters in the water column	2328
Unspecified	1708
Transmittance and attenuation of the water column	1684
Particulate total and organic carbon concentrations in the water column	1068
Particulate total and organic nitrogen concentrations in the water column	510
Sea level expressed as pressure	499
Particulate total and organic phosphorus concentrations in the water column	478
Dissolved organic carbon concentration in the water column	440
Density of the water column	308
Raw fluorometer output	145
Dissolved concentration parameters for other gases in the water column	46
Dissolved total or organic phosphorus concentration in the water column	8
Chlorophyll pigment concentrations in the water column	7
Concentration of inorganic halogens in water bodies	6
Dissolved total and organic nitrogen concentrations in the water column	6
Visible waveband radiance and irradiance measurements in the water column	1

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## PER YEAR

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Per Year	Datasets
2009	1637
2008	6400
2007	2854
2006	1245
2005	1498
2004	566
2003	183
2002	178
2001	213
2000	441
1999	344
1998	989
1997	739
1996	171
1995	347
1994	126
1993	62
1992	39
1991	280
1990	337
1989	665
1988	511
1987	589
1986	197
1985	86
1984	17
1983	84
1982	218
1981	273

Per Year	Datasets
1980	133
1979	113
1978	135
1976	352
1975	278
1974	223
1973	307
1972	185
1971	171
1970	172
1969	251
1968	187
1967	161
1966	111
1965	49
1964	98
1963	70
1962	143
1961	133
1960	140
1959	80
1958	49
1957	7
1956	104
1955	95
1953	36
1952	16
1951	56
1950	71

Per Year	Datasets
1949	120
1948	31
1882	2

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 per data access restriction  
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Per Data Access Restriction	Datasets
unrestricted	19476
SeaDataNet licence	4282
restricted	1547

#### NOTES

- 1) data sets can have multiple originators
- 2) data sets might concern multiple categories and mostly concern multiple variables
- 3) data sets might have multiple data access restrictions

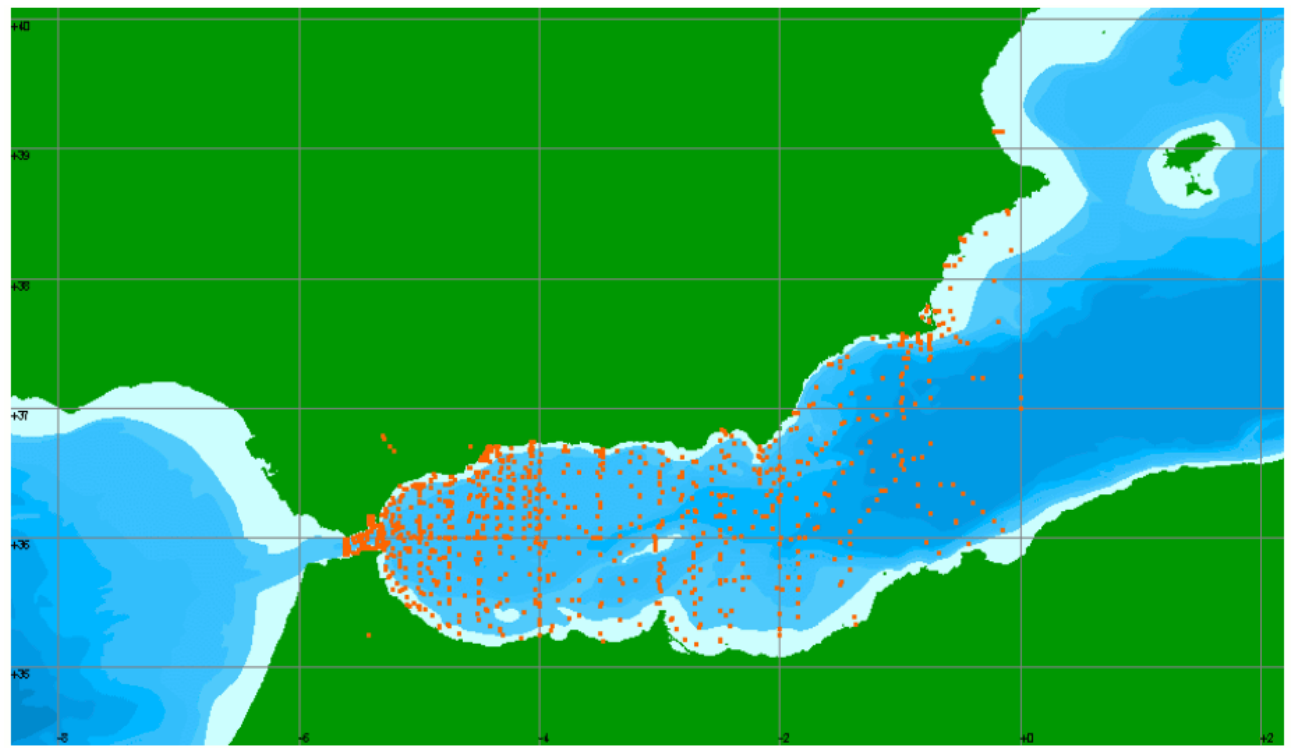
#### SUMMARY OF QUERY RESULTS FROM Pilot portal for Chemistry Common Data Index (CDI) V2. – Eastern Mediteranean Sea – 14 February 2011

Per Data Holding Centre	Country	Datasets	Originators	Country	Datasets	Per Category	Datasets	Per Year	Datasets
IFREMER /IDM/SISMER	France	107	LABORATORY OF OCEANOGRAPHY of VILLEFRANCHE (LOV)	France	70	Administration and dimensions	107	2004	1
			UNIVERSITE DE LA MEDITERRANEE (U2) / COM - LAB. OCEANOLOG. & BIOGEOCHIMIE - LUMINY	France	21	Water column temperature and salinity	107	1999	70
			UNKNOWN	Unknown	15	Dissolved gases	96	1996	21
			GEOSCIENCES	France	1	Pigments	77	1969	6
						Carbon, nitrogen and phosphorus	27	1966	9
						Nutrients	27		
						measurements	6		
Israel Oceanographic and Limnological Research (IOLR)	Israel	3090	Israel Oceanographic and Limnological Research (IOLR)	Israel	3090	Administration and dimensions	3090	2000	6
						salinity	3090	1998	60
						Carbon, nitrogen and phosphorus	2337	1997	87
						Nutrients	2337	1996	70
						Carbonate system	2081	1995	29
						Dissolved gases	1885	1992	10
						Pigments	68	1991	71
								1990	101
								1989	142
								1988	39
								1987	24
								1984	17
								1983	12
								1973	43
								1972	139
								1971	171
								1970	160
								1969	241

								1968	185
								1967	161
								1966	102
								1965	49
								1964	96
								1963	60
								1962	143
								1961	133
								1960	91
								1959	74
								1958	39
								1957	7
								1956	104
								1955	95
								1953	36
								1952	16
								1951	66
								1950	71
								1949	120
								1948	31
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMRHODC)									
	Greece	18475	Hellenic Centre for Marine Research, Institute of Oceanography (HCMR/IO)	Greece	18475	Administration and dimensions	18475	2009	1138
						Dissolved gases	18475	2008	6400
						salinity	16896	2007	2654
						Currents	6211	2006	1245
						Suspended particulate material	5405	2005	1498
						Carbon, nitrogen and phosphorus	2725	2004	665
						Nutrients	2725	2003	183
						Optical properties	1667	2002	178
						Carbonate system	16	2001	196
								2000	415
								1999	267
								1998	922
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)									
	Russian Federation	2500	Odessa Branch of S.O.I (State Oceanographic Institute)	Ukraine	2405	Administration and dimensions	2500	1991	98
			Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	51	Water column temperature and salinity	2500	1990	180
			Sea (UkrSCES)	Ukraine	41	Dissolved gases	2486	1989	328
			P.P. Shirshov Institute of Oceanology, RAS	Russian Federation	3	Nutrients	556	1988	313
						Carbonate system	528	1987	337
						Carbon, nitrogen and phosphorus	496	1986	31
								1985	86
								1983	72
								1982	218
								1981	273

								1980	133
								1979	113
								1978	133
								1976	27
								1975	34
								1974	40
								1973	11
								1972	22
								1970	12
								1969	4
								1968	2
								1960	17
								1959	6
								1958	10
Cyprus Oceanographic Data Center, Oceanography Center	Cyprus	499	Cyprus Oceanographic Data Center, Oceanography Center	Cyprus	499	Dissolved gases	499	2009	499
						Sea level	499		
						salinity	499		

West Mediterranean Sea



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**PER DATA HOLDING CENTRE**  
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Per Data Holding Centre	Country	Datasets
Spanish Oceanographic Institute	Spain	2836
IFREMER / IDM/SISMER	France	220
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	89
British Oceanographic Data Centre (BODC)	United Kingdom	15

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**3160**  
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**PER ORIGINATOR**  
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Per Originator	Country	Datasets
IEO/ Murcia Oceanographic Centre	Spain	1169
IEO/ Malaga Oceanographic Centre	Spain	824
Spanish Oceanographic Institute	Spain	686
IEO/ Balearic Islands Oceanographic Centre	Spain	90
LABORATORY OF OCEANOGRAPHY of VILLEFRANCHE (LOV)	France	88
UNKNOWN	Unknown	69
Institute of Marine Sciences. Mediterranean Marine and Environmental Research Centre (CMIMA-ICM-CSIC)	Spain	67
Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	61
UNIVERSITE DE LA MEDITERRANEE (U2) / COM - LAB. OCEANOLOG. & BIOGEOCHIMIE - LUMINY	France	36
P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	28
SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE)	France	26
Southampton Oceanography Centre	United Kingdom	15
MUSEUM NATIONAL D'HISTOIRE NATURELLE / LABORATOIRE D'OCEANOGRAPHIE PHYSIQUE	France	1

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**PER CATEGORY**  
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Per Category	Datasets
Administration and dimensions	3145
Dissolved gases	2718
Nutrients	2474
Carbon, nitrogen and phosphorus	2445
Water column temperature and salinity	2352
Pigments	2192
Carbonate system	760
Optical properties	154
Suspended particulate material	114

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**PER VARIABLE**  
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<b>Per Variable</b>	<b>Datasets</b>
Vertical spatial coordinates	3056
Dissolved oxygen parameters in the water column	2718
Temperature of the water column	2307
Nitrate concentration parameters in the water column	2194
Phosphate concentration parameters in the water column	2193
Silicate concentration parameters in the water column	2043
Nitrite concentration parameters in the water column	1989
Chlorophyll pigment concentrations in the water column	1871
Salinity of the water column	1856
Alkalinity, acidity and pH of the water column	760
Raw fluorometer output	321
Phaeopigment concentrations in the water column	254
Particulate total and organic phosphorus concentrations in the water column	122
Concentration of suspended particulate material in the water column	114
Moored instrument depth	89
Visible waveband radiance and irradiance measurements in the water column	87
Transmittance and attenuation of the water column	67
Dissolved organic carbon concentration in the water column	36



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**PER YEAR**  
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Per Year	Datasets
2008	188
2007	83
2006	60
2005	69
2004	80
2003	80
2002	72
2001	83
2000	75
1999	64
1998	145
1997	108
1996	85
1995	104
1994	79
1993	126
1992	276
1991	369
1990	108
1989	3
1988	7
1985	52
1984	53
1983	99
1982	23
1981	59
1980	58

Per Year	Datasets
1978	38
1977	28
1976	9
1975	18
1974	5
1973	2
1972	24
1968	1
1967	1
1965	6
1964	26
1963	7
1962	48
1961	33
1958	12
1957	34
1956	78
1955	76
1954	35
1953	20
1952	5
1951	8
1923	23
1922	13
1915	2

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**per data access restriction**  
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Per Data Access Restriction	Datasets
unrestricted	2042
restricted	883
SeaDataNet licence	220
academic	15

**NOTES**

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## SUMMARY OF QUERY RESULTS FROM Pilot portal for Chemistry Common Data Index (CDI) V2. - Western Mediteranean Sea - 14 February 2011

Per Data Holding Centre	Country	Datasets	Originators	Country	Datasets	Per Category	Datasets	Per Year	Datasets														
British Oceanographic Data Centre (BODC)	United Kingdom	15	Southampton Oceanography Centre	United Kingdom	15	Dissolved gases	15	1998	15														
						Water column temperature and salinity	15																
Spanish Oceanographic Institute	Spain	2836	IEO/ Murcia Oceanographic Centre	Spain	1169	Administration and dimensions	2836	2008	188														
						IEO/ Malaga Oceanographic Centre	Spain	824	Dissolved gases	2402	2007	83											
									Spanish Oceanographic Institute	Spain	686	Nutrients	2295	2006	60								
												IEO/ Balearic Islands Oceanographic Centre	Spain	90	Carbon, nitrogen and phosphorus	2267	2005	69					
															Institute of Marine Sciences. Mediterranean Marine and Environmental Research Centre (CMIMA-ICM-CSIC)	Spain	67	Pigments	2075	2004	80		
																		Water column temperature and salinity			2028	2003	80

						Optical properties	154	2001	83
						Suspended particulate material	114	2000	75
								1998	130
								1997	108
								1996	85
								1995	104
								1994	79
								1993	126
								1992	276
								1991	291
								1990	104
								1985	52
								1984	48
								1983	99
								1982	23
								1981	23
								1980	58
								1978	38
								1976	5
								1972	12
								1964	26
								1962	22
								1958	12
								1957	13
								1956	78
								1955	76
								1954	35
								1953	20

								1952	5
								1951	6
								1923	23
								1922	13
								1915	2
IFREMER / IDM/SISMER	France	220	LABORATORY OF OCEANOGRAPHY of VILLEFRANCHE (LOV)	France	88	Administration and dimensions	220	1999	10
			UNKNOWN	Unknown	69	Dissolved gases	220	1991	78
			UNIVERSITE DE LA MEDITERRANNEE (U2) / COM - LAB. OCEANOLOG. & BIOGEOCHIMIE - LUMINY	France	36	Water column temperature and salinity	220	1981	36
			SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE)	France	26	Carbon, nitrogen and phosphorus	133	1967	1
			MUSEUM NATIONAL D'HISTOIRE NATURELLE / LABORATOIRE D'OCEANOGRAPHIE PHYSIQUE	France	1	Nutrients	133	1965	6
						Pigments	117	1963	7
								1962	26
								1961	33
								1957	21
								1951	2

All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	89	Odessa Branch of SOI (State Oceanographic Institute)	Ukraine	61	Administration and dimensions	89	1990	4
			P.P. Shirshov Institute of Oceanology, RAS	Russian Federation	28	Water column temperature and salinity	89	1989	3
						Dissolved gases	81	1988	7
						Carbonate system	47	1984	5
						Nutrients	46	1977	28
						Carbon, nitrogen and phosphorus	45	1976	4
								1975	18
								1974	5
								1973	2
								1972	12
								1968	1