EMODnet Thematic Lot n° 06 – Physics

EMODnet Phase 2 – Annual (interim) report

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List of abbreviations and acronyms

AR - ARGO
ACRI-ST – France
AMGI – Andrija Mohorovičić Geophysical Institute, University of Zagreb - Croatia
AML - Aberdeen Marine Laboratory, Marine Scotland - UK
ARSO – Slovenian Environment Agency - Slovenia
ASLO - Association for the Sciences of Limnology and Oceanology
AUTH – Aristotle University of Thessaloniki - Greece
AWI - Alfred-Wegener-Institut für Polar- und Meeresforschung - germany
AZTI - AZTI Tecnalia - Spain
BODC - British Oceanographic Data Centre
BOOS - Baltic Operational Oceanographic System
BSH - Bundesamt für Seeschifffahrt und Hydrographie – Germany
CDI - Common Data Index
CEAB-CISC - Centre d'Estudis Avançats de Blanes, Consejo Superior de Investigaciones Cientificas - Spain
CEFAS - Centre for Environment, Fisheries & Aquaculture Science - UK
CETMEF - Centre d'Etudes Techniques Maritimes et Fluviales - France
CMCC – Centro Euro-Mediterraneo sui Cambiamenti Climatici - Italy
CMEMS - Copernicus Marine Environment Monitoring Service
CMR - CMRE - Centre for Maritime Research and Experimentation - Norway
CNR-IAMC – Instituto per l'Ambiente Marino Costiero - Italy
CNR-ISAC – Istituto di Scienze dell'Atmosfera e del Clima - Italy
CNR-ISMAR – Istituto di Scienze Marine - Italy
CNR-ISSIA – Instituto di Studi sui Sistemi Intelligenti per l'Automazione - Italy
CNRS - Centre national de la recherche scientifique - France
COSTADYN - Research Centre Dynamics of the Nearshore Zone - Russia Federation
CSIC – Consejo Superior de Investigaciones Cientificas - Spain
CTD - conductivity-temperature-depth
DAMSA - Danish Maritime Safety Administration - Denmark
DAMTP-CAM - University of Cambridge, Department of Applied Mathematics and Theoretical Physics - UK
DB - Drifting Buoy
DBCP - data buoy cooperation panel
Deltares - Deltares, National Institute for Coastal and Marine Management – Netherlands
DMI - Danmarks Meteorologiske Institut, Danish Meteorological Institute - Denmark
EGU - European Geosciences Union
EMSA - European Marine Safety Agency

ENEA – Italian National Agency for new Technologies, Energy and Sustainable Economic Development - Italy
ENSTA - École Nationale Supérieure de. Techniques Avancées - France
EPA - Environmental Protection Agency, Department of Marine Research - Lithuania
EPOC - Environnements et Paléoenvironnements Océaniques et Continentaux, Université de Bordeaux - France
ESEO – CISC – Departemento de Ocenorafia Fisica, Consejo Superior de Investigaciones Cientificas - Spain
EUSKALMET - Euskalmet- Basque Goverment - Spain
FB - Ferrybox
FCOO - Defense Centre for Operational Oceanography – Denmark
FMI - Finnish Meteorological Institute - Finland
GI-UIB - Geophysical Institute at University of Bergen - Norway
GL - glider
GLOSS - global sea level stations
GROOM - Gliders for Research, Ocean Observation and Management
HCMR – Hellenic Centre for Marine Research - Greece
HF - HF radar
HPA - Hamburg Port Authority - Germany
HRS - Hydraulics Research Limited, HR Wallingford - UK
HRW - HR Wallingford, UK
HZG - Helmholtz-Zentrum Geesthacht – Germany
ICES - International Council for the Exploration of the Sea - Denmark
IEO – Instituto Español de Oceanografía - Spain
IFM - Institute of Oceanography, University of Hamburg - Germany
IFREMER – Institut Français de Recherche pour l'Exploitation de la Mer - France
IH - Instituto Hidrografico - Portugal
IMB – Institute of Marine Biology, University of Montenegro - Montenegro
IMEDEA -Mediterranean Institute for Advanced Studies - Spain
IMR - Institute of Marine Research in Norway - Norway
IMS METU – Middle East Technical University Institute of Marine Sciences - Turkey
INGV – Istituto Nazionale di Geofisica e Vulcanologia - Italy
INRH – Institut National de Recherche Halieutique - Morocco
INSITU TAC - in situ temathic assembly centre
INSU - Institut National des Sciences de l'Univers - France
INTECMAR - Instituto de Tecnología y Ciencias Marinas - Spain
IOBAS - Institude of Oceanology - Bulgarian Academy of Science - Bulgaria
IODE - International Oceanographic Data and Information Exchange
IOLR – Israel Oceanographic and Limnological Research, National Institute of Oceanography - Israel
IOPAS - Institute of Oceanology, Polish Academy of Sciences - Poland
IPIMAR - Portuguese Institute of Sea and Fisheries - Portugal
IRCA - Icelandic Road and Coastal Administration - Iceland

IRD - L'Institut de recherche pour le développement - France
ISPRA - Istituto Superiore per la Protezione e la Ricerca Ambientale - Italy
IST - Instituto Superior Técnico - Portugal
IUP - University of Bremen, Institute of Environmental Physics - germany
IZOR – Institut za oceanografiju i ribarstvo (Institute of Oceanography and Fisheries) - Croatia
JCOMM - Joint Technical Commission for Oceanography and Marine Meteorology
JCOMMOPS - JCOMM in situ Observing Platform Support Centre
KIELMS - University of Kiel Institute for Marine - Germany
KNMI - Koninklijk Nederlands Meteorololologisch Instituut – Netherlands
LEGMA - Latvian Environment, Geology and Meteorology Agency - Latvia
LIM-UPC – Laboratorio de Ingeniería Marítima/Universidad Politécnica de Cataluña - Spain
LOCEAN - Laboratoire d'Oceanographie et du Climat - France
LOV - Laboratoire Oceanographique de Villefranche - France
LPO - Laboratoire de Physique des Oceans - France
MAGEST - MArel Gironde ESTuaire Consortium - France
MDK - Maritieme Dienstverlening en Kust, Agency for Maritime and Coastal Services, Coastal Division - Belgium
Mercator Ocean – Mercator Océan - France
MET - MET éireann - Irish Meterological Service - Ireland
MET NO - Norwegian Meteorological Institute - Norway
Météo France – Météo France - France
METEO GE - National Environmental Agency - Georgia
MeteoGalicia - MeteoGalicia - Spain
METNO - MetNo - Norwegian Meteorological Institute - Norway
METOFFICE - Met Office – UK
MI - Marine Institute - Ireland
MIO - Mediterranean Institute of Oceanography - France
MO - Mooring/ fixed Station
MONGOOS - Mediterranean Operational Network for the Global Ocean Observing System
MRI - Marine Research Institute - Iceland
MSI - Marine Systems Institute - Estonia
MUMM - Management Unit of the North Sea Mathematical Models - Belgium
MYO - My Ocean
NERC - Natural Environment Research Council - UK
NERSC - Nansen Environmental and Remote Sensing Center - Norway
NHS - Norwegian Hydrographic Service - Norway
NIB – National Institute of Biology Marine Biology Station - Slovenia
NIERSC - Nansen International Environmental and Remote Sensing Center - Norway
NIMRD - National Institute for Marine Research and Development - Romania
NIO - Northern Ireland Office - UK
NIVA - Norsk Institutt for Vannforskning, Norwegian Institute for Water Research - Norway

NMA - Norwegian Mapping Authority - Norway
NOC - National Oceanography Centre – UK
NOC/METOFFICE - National Oceanography Centre Southampton - UK
NODC – National Oceanographic Data Centre
NOOS - North West Shelf Operational Oceanographic System
NPI - Norwegian Polar Institute - Norway
NRT - Near Real Time
NWAHEM - North-West Regional Administration for Hydrometeorology and Environmental Monitoring - Russia
OC-UCY – Oceanography Cente University of Cyprus - Cyprus
OGS – Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - Italy
OILPLAT - Oil Platform - Private Industry
OSPAR - Convention for the Protection of the Marine Environment of the North-East Atlantic
PdE – Puertos del Estado - Spain
PF - Profiling buoy
PLOCAN - Plataforma Oceanica de Canarias - Spain
PSMSL - Permanent Service for Mean Sea Level
RBI – Rudjer Boskovic Institute - Croatia
RBINS - Royal Belgian Institute of Natural Sciences, Operational Directorate Natural Environment (previously known as MUMM) – Belgium
Rijkswaterstaat -Rijkswaterstaat -Netherlands
ROOS - regional Oceanographic Operational System
RSM - request Status manager
SAMS - Scottish Association for Marine Science
SBR - Station Biologique de Roscoff - France
SDN - SeaDataNet
SHOM - Service Hydrographique et Oceanographique de la Marine – France
SMHI - Swedish Meteorological and Hydrological Institute - Sweden
SOCIB – Balearic Islands Coastal Observing and Forecasting System - Spain
SYKE - Finnish Environment Institute - Finland
UAC - Universidade dos Açores - Portugal
UBO - Univerisite de Bordeaux - France
UHMI - Ukrainian Hydrometeorological Institute - Ukraine
UKHO - United Kingdom Hydrographic Office - UK
UKM - United Kingdom Recent Marine Data - UK
UKMO/MF - Met Office/Meteo France - UK/France
UM5A – University Mohamed V-Agdal - Morocco
UMA - APDII - Department of Applied Physics I, University of Malaga - Spain
UMT-IOI – University of Malta, International Ocean Institute - Malta
UNIBO – Alma Mater Studiorum Università di Bologna - Italy
UNI-Oldenburg - University of Oldenburg – Germany
UoA/IASA – University of Athens/ Institute of Accelerating Systems and Applications - Greece

UPC - Universidad Politécnica de Cataluña - Spain
UPT - Polytechnic University of Tirana - Albania
VMM - Flemish Environmental Agency - Belgium
WFS - Web feature Service
WMS - Web Map Service
WSAL - Waterways and Shipping Authority Lubeck - Germany
WSAW - Waterways and Shipping Authority Wilhelmshaven - Germany
WSOB - Waterways and Shipping Office Bremerhaven - Germany
WSOC - Waterways and Shipping Office Cuxhaven - Germany
WSOE - Waterways and Shipping Office Emden - Germany
WSOS - Waterways and Shipping Office Stralsund - Germany
WSOT - Waterways and Shipping Office Toenning - Germany
XBT - Expendable BathyThermograph
Xunta Galicia - Xunta Galicia - Spain

1. Introduction

Provide a short (max 2 pages) introduction to set the stage (start date, main goals, background, consortium, key components and characteristics of the lot)

The EMODnet Physics three-year contract formally started on 24th July 2013. The core consortium is ETT (Coordinator), MARIS, IFREMER, BODC and EuroGOOS (via SMHI).

The overall objective of the EMODnet Physics portal is to provide access to near real-time data and historical time series datasets on the physical conditions of European seas and oceans and to determine how well the data meets the needs of users from industry, public authorities and scientists.

EMODnet Physics builds on the EMODnet Physics portal developed under the ur-EMODnet preparatory actions (EMODnet Phase I from 2009-2013) and is based on the three established pillars in the European Oceanographic Community: (i) the EuroGOOS-ROOSs (Regional Operational Oceanographic Systems); the (ii) Copernicus Marine Environment Monitoring Service (CMEMS), and; (iii) SeaDataNet network of National Oceanographic Data Centres (NODCs).

The EMODnet Physics portal provides 24/7 coverage of a combined array of services and functions to users, for viewing and downloading data, meta-data and data products on the physical conditions of European sea basins and oceans through the collaborative efforts of EuroGOOS associates and its regional operational systems (ROOSs), and the CMEMS.INSTAC and SeaDataNet consortia. The EMODnet Physics portal is fully integrated with, and complementary to, the marine core services of Copernicus marine service.

In particular, access to the NRT data stream is supported by the EuroGOOS - ROOSs and the CMEMS *in-situ* TAC system, whilst metadata discovery to the archived data is organised through the SeaDataNet network and infrastructure. The Coriolis infrastructure of IFREMER also plays an important role for providing access to the supplementary data from Argo floats (EuroArgo).

The general goals in this phase are the strengthening of the existing structure and infrastructure and:

1. to provide better access to additional data not as yet in the current system;
2. to provide access to additional Ferrybox data;
3. better streamlining and an optimisation of data flow;
4. to fully exploit opportunities to obtain additional parameters from existing data sites;
5. filling in gaps in time-series;
6. assisting the work on the completeness of stations, leading to a list of uniform station names that reduces duplication between ROOSs;
7. better uptime of services and synchronization of data sources between ROOSs and data centres.

2. Highlights in this reporting period

Provide a summary of the key achievements and/or events of interest to a wider audience within this reporting period you wish to highlight – this can be based on the indicators or any other of the reporting sections.
[Provide a bullet list]

- *Release of services to access to ARGO, drifting buoys, profiling buoys and HF radar (about 5500 platforms are now available)*
- *Release of the updated WMS and WFS services (OCG compliant and to match EMSA needs better)*
- *Full integration with historical validated data – CDIs discovery and SeaDataNet Request Manager System*
- *Release of new services and products (dashboard, HFR THREDDS catalogue, Wind Products)*
- *Set up of a joint EMODnet Physics, EuroGOOS, CMEMS, and SeaDataNet team to deal with single sign on/open ID*
- *A series of meetings with JCOMMOPS for completing missing metadata were planned to complete EMODnet Physics platforms metadata and identify and connect missing platforms[1] - first meeting planned 26-27 November 2015*
- *Active dissemination actions*

[1] JCOMMOPS is the JCOMM In situ Operational Platform Support Centre and hosts a repository of the ocean observation programmes (nationally implemented but internationally coordinated and cooperated). In particular JCOMMPS manages the metadata for ARGO, Data Buoy Cooperation Panel, Ship Observation (VOS and SOOP) and OcenaSITES as well as data sharing and guides users to data centers

3. Summary of the work done

Provide a summary of the work done and an overview of the main tasks which remain to be done.

During the reporting period the EMODnet Physics portal was further updated and renovated. Currently, the portal provides users with following key services and functions:

1. **Landing page**, www.emodnet-physics.eu/portal, which presents the European Marine Observation and Data network background and introduces the EMODnet Physics scope and goals. The landing page also provides community news and meetings reports, as well as direct links to EMODnet Physics operational services and to other EMODnet lot portals.
2. **Dynamic map facility for viewing and downloading,** www.emodnet-physics.eu/map, which is the central tool for users to search, visualize and download data, metadata and products. For near real time (NRT) data, the map allows viewing/retrieving, within a specified time (e.g. a 60 day sliding window) measurement points, values of data and quality of data. The geographical area (space window) defines the area of interest within which the measurement points, values of data and quality of data are presented. For the previous 60 days, a graph is provided with data availability within the timeframe. Information about the data originator, curator etc. is also provided. The tool also serves to visualize and retrieve data products such as time plots for specific parameters (e.g. monthly averaged temperature for data acquired during the specified time window).
3. **Dashboard**, www.emodnet-physics.eu/map/dashboard, which is a reporting service where users can view and export various statistics about the data portal content and usage. The EMODnet Physics dashboard represents a valuable tool to discover data availability and monitor performance of the infrastructure behind the portal. The tool also provides KPIs (key performance indicators) presenting how much data and how many platforms are made available on a daily base, and extracts statistics on page access and data downloads etc.
4. **Interoperability services,** the EMODnet Physics is developing interoperability services to facilitate machine to machine interaction and to provide further systems and services with European seas and ocean physical data and metadata. In particular, EMODnet Physics is providing OCG compliant WMS and WFS layers offering information about which parameters are available (where and who is the data originator, etc.). EMODnet Physics is providing SOAP - web services which allow linkage to external services with near real time data stream and facilitate a machine-to-machine data fetching and assimilation.

In parallel, the consortium has continued to work on:

- engaging data originators and Regional assembly centres
- improving and empowering data flow infrastructure
- supporting data originators with metadata description and harmonization
- updating existing data and metadata products, and access to the data, metadata and data products already offered on the portal
- adding new fixed stations to the portal
- improving accessing, discovering, plotting and downloading features of the portal
- developing new interoperability features

- developing basic monthly products and making them accessible via both the portal and interoperability services
- inclusion of Argo, gliders, drifters
- collaborating with IODE/ODP to enable data provided from EMODnet Physics to the ODP to be made available to the WMO Information System (WIS)
- improving and optimising back-office infrastructure and services to keep the portal operational 24/7
- setting up a HF radar coordination group and making some HFR data accessible.
- working on Single-Sign On/Open-ID credentials management for data access

Results in numbers:
EMODnet Physics provides access to more than 5,500 platforms[2] giving more than 10,700 time series[3] as follows:

Table 1 - avaialble platforms

	drifting buoys (DB)	ferrybox (FB)	gliders (GL)	fixed buoys or mooring time series (MO)	profiling floats vertical profiles (PF)	Argo Floats (AR)	Radar (HR)	Total
	2575	22	17	1672	184	1080	6	5556

Each platform can provide one or more parameters. Operational platforms provide data time series as soon as data is ready – e.g. a fixed platform delivers data daily, an ARGO float delivers almost weekly – the following table shows the operational platforms that provided at least one dataset for the past 60 days (for further details see Annex 1).

Table 2 – avaialble platforms (complete metadata)

	drifting buoys (DB)	ferrybox (FB)	gliders (GL)	fixed buoys or mooring time series (MO)	profiling floats vertical profiles (PF)	Argo Floats (AR)	Radar (HR)	Total
Jul Aug 2014	54	8	10	670	28	651		1421
Sep Oct 2014	60	10	12	723	35	651		1491
Nov Dec 2014	35	6	1	666	26	490		1220
Jan Feb 2015	68	16	13	725	57	679		1628
Mar Apr 2015	36	13	0	671	77	414	7 (*)	1218
May Jun 2015	46(**)	21	2	656	172	414(**)	7	1318
Jul Aug 2015	48	13	1	670	101	412	6 (**)	1251

(*) covering 3 macro-areas
(**) the May-Jun bimonthly report was showing the total available DB, including the once with incomplete metadata
(***) the Italian site is temporarily not transmitting data

[2] http://www.emodnet-physics.eu/Map/dashboard/Section3.aspx
[3] http://www.emodnet-physics.eu/Map/dashboard/Section2.aspx, http://www.emodnet-physics.eu/Map/dashboard/Section2SeaRegion.aspx

The available parameters time series are:

Table 3 – available timeseries (30/10/2015)

parameter group	Waves and winds	Water Temperature	Water Salinity/ Conductivity/ Density	Currents	Light Attenuation/ Absorption/ Fluorescence/ Back Scattering	Sea Level	Atmospheric Parameters	Other Parameters	Chemical Parameters
Number of platforms providing operational data for latest 60days	276	2455	940	62	20	435	1079	973	296
Number of platforms providing operational data	328	3838	1234	75	28	529	1680	1384	405
Number of platforms providing historical datasets	227	3382	904	67	24	308	1591	1034	322
Number of platforms providing historical validated data (CDIs)	172	439	132	365	35	397	40	206	17

The following table[4] reports the available platforms per Sea Region:

Table 4 – available parameters - platforms (30/10/2015)

	Wave & Winds	**Temp.**	**Salinity**	**Currents**	**Light Attenuation**	**Sea Level**	**Atmospheric**	**Others**	**Chemical**	Total
Arctic, Barents, Greenland, Norwegian Sea	9	311	48	5	3	129	281	77	106	**969**
Atlantic, Bay of Biscay, Celtic Sea	119	1489	568	148	17	424	557	605	117	**4044**
Baltic Sea	29	78	32	21	6	189	17	24	18	**414**
Black Sea	4	31	24	3	0	22	8	27	8	**127**
Global Ocean	54	1860	473	11	0	641	750	567	77	**4433**
Mediterranean Sea	128	394	179	202	29	301	77	257	82	**1649**
North Sea	169	102	45	58	7	347	42	46	23	**839**

[4] http://www.emodnet-physics.eu/map/dashboard/Section2SeaRegion.aspx (report WP2.3)

Other (e.g. Land platforms)	0	8	2	1	0	100	4	23	2	**140**
TOTAL	**512**	**4273**	**1371**	**449**	**62**	**2153**	**1736**	**1626**	**433**	**12615**

Every month, the latest 30 days data is packed into the so-called "monthly" file and is made available for further purposes (e.g. validation). The figure indicates how many monthly files are available for each type of platform (since January 2013)[5].

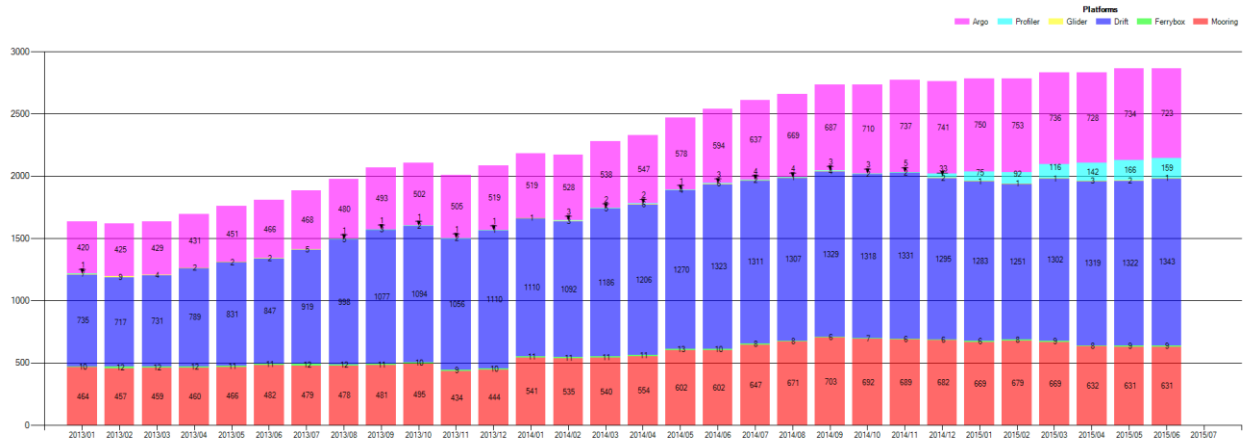


Figure 1. Available platforms since Jan 2013

During last year, 1,742 platforms (and 7 HF Radars) were connected and made available and accessible via the EMODnet Physics portal:

Table 5 – connected platforms

AREA	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	TOT
Artic										4	9				**13**
Baltic Sea	1				7	12	27	1		9	1				**58**
Black Sea										2		4	1		**7**
IBI				4			42			2					**48**
North Sea	9	47	29	16	27	13	16	15	1	4	1	5	41	2	**226**
Med	5		1	1	1		2								**10**
Global TAC - Coriolis[6]	97	242	102	107	143	92	77	106	49	80	78	66	91	50	**1380**
TOTAL	**112**	**289**	**132**	**128**	**178**	**117**	**164**	**122**	**50**	**101**	**89**	**75**	**133**	**52**	**1742**

[5] http://www.emodnet-physics.eu/map/dashboard/Section19.aspx
[6] Coriolis and Global TAC are providing EMODnet Physics with the ARGO and Drifting Buoys datasets.

Remaining tasks and planned activities include:

- continuing to engage data originators via EMODnet Physics workshops/days in UK (preliminary meeting for organizing the event in December), Germany (planned for end February – early march 2016), Turkey, Morocco
- updating existing data and metadata for some already connected platforms (table 6 – 1st row)
- connecting new identified platforms (Table 6 – 2nd row)
- improving accessing, discovering, plotting and downloading features of the portal
- developing further products (e.g. annual/periodic average) and making them accessible via both the portal and interoperability services (e.g. explore/exploit more THREDDS)
- updating the portal with ice data
- updating the portal with sea level trend
- working on Single Sign On/Open-ID in collaboration with Mercator on behalf of CMEMS and IFREMER on behalf of SeaDataNet

Table 6 - platforms

	drifting buoys (DB)	ferrybox (FB)	gliders (GL)	fixed buoys or mooring time series (MO)	profiling floats vertical profiles (PF)	Argo Floats (AR)	Radar (HR)	Total
Available platforms without complete information and metadata	2482			62	76	377		2997
Identified platforms to connect to the portal	1	7			20	151	4	176

4. Challenges encountered during the reporting period

Provide an overview (preferably in table format) listing and short explanation of the main challenges encountered during the reporting period and the measures taken to address them.

1. Access to validated historical datasets

The access to validated archived data sets is arranged by means of the SeaDataNet CDI Data Access and Discovery service. Progress has been made by SeaDataNet data centres with gathering and validating data sets for long term stewardship and access for an additional number of monitoring stations. SeaDataNet metadata are now accessible and discoverable for 879 fixed platforms with 11757 Common Data Index (CDI) files) via the EMODnet Physics portal, while associated data can be retrieved via the SeaDataNet – Request Status Manager (RSM) system. However there are still many monitoring stations in the EMODnet Physics portal, operated by EuroGOOS members, for which no data sets have been incorporated in the data centres of SeaDataNet. This is depending on the fact whether operators of monitoring stations have arrangements in place with SeaDataNet data centres for validating and archiving their monitoring data sets. In several European countries, both the operator and the data centre are members of the same institute, but it also happens often that these entities belong to different institutes which can provide a threshold. Operators of monitoring stations are being encouraged by EuroGOOS and CMEMS.INSTAC to work together and to forward their monitoring data sets to data centres, and the same is happening in SeaDataNet where the coordinating team is encouraging data centres to establish archiving arrangements with operators in their countries. Progress is made but it is hampered by the fact that SeaDataNet data centres are undertaking this activity on a voluntary basis. A more structural arrangement is needed in the next phase of EMODnet Physics.

Another remaining challenge is linking the historical datasets of fixed platforms (as organised and validated under the SeaDataNet - NODCs network) to the NRT data sets of operational platforms (as organised under the EuroGOOS – ROOSs and CMEMS.INSTAC). This is hampered by the fact that the station (platforms ID) are not harmonised (or sometimes not even provided); the process is not straightforward. Since last year, the EMODnet Physics partners are working and pushing for:

1. recommendation for and development of a unique PLATFORM ID in collaboration with the DATAMEQ[7] (if the platform WMO code is available that is the unique ID, otherwise it is the ROOS code)

[7] http://www.eurogoos.org/content/documents.asp?menu=0050000_000015_000000

2. identification of historical validated datasets under the SeaDataNet network of NODCs valuable for EMODnet Physics, regardless of whether the data is coming from an operational platform or a platform that is no longer operational.

Another issue is the performance of the present SeaDataNet CDI Data Discovery and Access service as one of the pillars under the EMODnet Physics portal. At present there are many clicks needed if a user wants access to multiple data sets from multiple providers.
This is illustrated in Annex 3.
Solving this requires a structural upgrading of the SeaDataNet service, which at present connects more than 100 data centres from 34 countries. Although the SeaDataNet 2 project has officially ended end September 2015, the SeaDataNet partners have agreed to maintain and operate all services in the coming 3 years, while exploring further opportunities[8].

The SeaDataNet team has recently undertaken a brainstorming about possible innovations to include in the proposal. A major element will be including dynamically replicating local SeaDataNet data collections from data centres to a common 'distributed cloud' environment as part of the SeaDataNet architecture. This solution is still quite complex but promises many benefits: i) it will provide higher speed and overall improved reliability of access, whereby users can download one integrated data package; ii) it will facilitate improved quality ensurance by horizontal quality scans and considering both metadata and data level (with feedback loops); iii) it will make it easier to introduce versioning and provenance with frozen copies of older versions of data sets, related to DOIs and to MSFD products. These ideas will be worked out into a SeaDataNet follow up proposal in the coming months.

The CMEMS INSTAC is building historical products at Global and regional scale by combining four main sources of observations:

- Historical data from JCOMM global networks,
- SeaDataNet historical aggregated products from NODCs. At the moment it is done for Temperature & Salinity periodic synchronisation with US-NODC
- direct update from EuroGOOS ROOS data providers, especially monitoring agencies that are not connected to the SeaDataNet network of NODCs

The duplicate between the different data sources are processed at INSTAC level, and integration of data gathered directly from originator or NODC is privileged except when data are distributed

[8] Many SeaDataNet partners are engaged in EMODnet lots where the SeaDataNet infrastructure is used, which gives an extra basis for the further operation. A good opportunity for structural upgrading of the SeaDataNet discovery and access mechanism is provided by a new Call of EU DG Research and Innovation 'INFRAIA-01-2016/2017: Integrating Activities for Advanced Communities' which has recently been published with a deadline end March 2016.

through Global Data Repositories such as ARGO, OceanSites or GOSUD as the Network data system has been organized to provide the best version of the observation through these portals.

Following the recent DATAMEQ meeting, some actions are planned:

1. Further focus on closing links between ROOSs and NODCs and in particular a matrix will be prepared of operators of monitoring platforms and their preferred long term archiving data centre in their country (December 2015)
2. Analysis of an improved dataflow method to facilitate NODCs to harvest data from the operational flow, validate, create CDI and make validated dataset available in the system (March 2016)
3. Identification of a couple of candidates for proofing the concept (June 2016)
4. Implementation (next phase EMODnet Physics)

2. Single Sign On/open-ID

On 1st May 2015 the Copernicus Marine Environment Monitoring Service (CMEMS) officially started and also includes the Copernicus Marine Core Service, which took over the legacy of the MyOcean and MyOcean2 projects and results, turning it into an operational service.

MyOcean was the implementation project of the GMES Marine Core Service, deploying the first concerted and integrated pan-European capacity for Ocean Monitoring and Forecasting. The MyOcean 2 project enhanced and strengthened the services developed in MyOcean, both for forecasting and re-analysis activities. Within these projects, the in-situ TAC was first designed to fulfil the needs of the GMES Marine Core Service and, later, the Copernicus Marine Service, as well as to empower the EuroGOOS regional systems (ROOS). The MyOcean in-situ TAC developed the operational tools to gather and carry out quality control in a homogeneous manner on oceanographic operational data.

Nowadays the in-situ TAC comprises a global in-situ centre and six regional in-situ centres. The focus of the in-situ TAC is on parameters that are presently necessary for GMES Monitoring and Forecasting Centres namely temperature, salinity, sea level, currents, chlorophyll / fluorescence, oxygen and nutrients. Additional parameters such as wind and waves are added by some ROOSes to these regional in-situ portals to fulfil additional downstream applications needs.

The advent of the Copernicus Marine that turned the MyOcean activities from a project perspective to a sustained service represents an important achievement, guaranteeing regional data assembly and harmonization.

EMODnet Physics and Copernicus Marine always worked together to avoid duplication and empower the infrastructure, and while Copernicus Marine is supporting the activity of gathering and carrying out quality control in a homogeneous manner on data to support the Copernicus programme needs, EMODnet Physics – in collaboration with EuroGOOS – is attracting and unlocking new and better data and new data originators. The EMODnet Physics is also focused in making these data discoverable, accessible and downloadable, and usable by new and more users and stakeholders.

The advent of the CMEMS also requested a new approach to the Single Sign On/unified log for access to both near real-time data and historical validated datasets, hosted at the National Oceanographic Data Centres – SeaDataNet network level.

On the 20th July 2015, Thomas Loubrieu (IFREMER) on behalf of IFREMER, SeaDataNet and EMODnet Physics, contacted Michele FABARDINES and Dominique OBATON (MERCATOR)

to have a meeting and discuss both licensing and technical topics[9]. The meeting is planned on 25th November.

[9] See Annex

5. Allocation of project resources

Please provide information about the effort (percentage of project resources) spent during the reporting period on the main objectives such as preparing and providing access to data within a country; access data from international sources; providing the data infrastructure to access and make data available across countries; develop standards (INSPIRE, EMODnet, MSFD).

Details about the effort spent during the reporting period are not available, as they were not always specifically tracked. In general, 70% of the budget was allocated to the improvement of data infrastructure in order to connect, access and make data (and products) available across countries (including dissemination - coordination actions in those areas). A further 15% was specifically allocated for web portal development (landing page, map page and interoperability services and products). The rest was allocated to project management and coordination.

categories	planned resources (percentage of total)	Used resources (percentage of total)
Making data and metadata interoperable and available	67%	23%
Preparing data products	6%	3%
Preparing web-pages, viewing or search facilities	13%	13%
Project management	11%	11%
Interaction with users	4%	4%
Other	0%	1%
total	100%	55%

With the second year activities, the specifically allocated budget for the web portal development and updates was spent.

To note that although the consortium used about 55% of available resources, it does not mean that there are free resources. Resources are already assigned to cover planned activities and contracts (i.e. the ROOSs activities).

6. Meetings held since last report

List here the meetings held since the last report, if relevant add short description

Table 7 – Meetings

Meetings		
When	What/Where	note
8-9 September 2014	Annual Ferrybox Meeting, Tallin, Estonia	
9-10 December 2014	Steering Committee, Brussels, Belgium	
14 January 2015	Meeting @ Copernicus Office, Brussels, Belgium	
9-12 June 2015	AtlantOS kick off meeting, Brussels, Belgium	
23 June 2015	Commission OpenData portal, Brussels, Belgium	

Table 8 – Technical meetings

Technical Meetings		
When	What/Where	note
1 July 2015	Technical meeting with EMODnet Chemistry - interoperability and data/services sharing (call conf.)	
31 July – 1 August 2014	Technical meeting about HF Radar @ ATZI, S. Sebastian, Spain	
24-25 September 2014	Progress technical meeting with ODP people, Brussels, Belgium	Defined the bidirectional interoperability interfaces
31 July – 1 Ago 2014	Technical meeting about HF Radar @ ATZI, S. Sebastian, Spain	
24-25 September 2014	Progress technical meeting with ODP people, Brussel, Belgium	Defined the bidirectional interoperability interfaces
23-24 September 2014	Progress technical meeting with BOOS and MONGOOS	
27 October 2014	Progress technical meeting with EuroGOOS - EMODnet HFR group	
10-11 November 2014	EMODnet Physics technical meeting, Milan, Italy	
28 November 2014	Progress technical meeting with MONGOOS, Lecce, Italy	
6 February 2015	EMODnet – EuroGOOS HF Radar Task Team (Webex)	
13 February 2015	EuroGOOS Ferrybox Task Team, Brussels, Belgium	
4 March 2015	EuroGOOS ROOS WorkGroups and Task Team, Brussels, Belgium	
15-16 April 2015	Core consortium technical meeting, Vienna, Austria	EuroGOOS, ETT, MARIS
5 May 2015	Core consortium technical meeting (webex)	EuroGOOS, ETT, IFREMER
20 May 2015	Core consortium technical meeting, Brussel, Belgium	EuroGOOS, ETT, IFREMER

Table 9 – Meetings with ROOSs

Meetings with ROOSs		
When	What/Where	note
28 August 2014	EuroGOOS Board Meeting, Brussels, Belgium	Missing info in report 6
15– 7 September 2014	Meeting with NOOS, Delft, Netherlands	
17-18 December 2014	Meeting with ARTIC ROOS, Oslo, Norway	
12-13 April 2015	Meeting with IBI ROOS, Galway, Ireland	
5-7 May 2015	Meeting with BOOS, Norrkoping, Sweden	
20-22 May 2015	EuroGOOS Annual, Brussels, Belgium	

Table 10 – Dissemination events

Dissemination		
When	What/Where	note
16–18 June 2014	JERICO Summer School, Delft, Netherlands	Oral presentation - Missing info in report 5
12 September 2014	EMODnet presentation @SMHI, Sweden	Oral presentation
24 September 2014	SeaDataNet Annual Meeting, Split, Croatia	Oral presentation
6 October 2014	EMODnet pre-event EUROCEAN, Rome, Italy	Oral presentation
27 October 2014	EuroGOOS - EMODnet HFR side event @ EuroGOOS conference	Organizer - Oral presentation
29 October 2014	EMODnet Physics @ EuroGOOS conference	Oral presentation
5-7 November 2014	EMODnet Physics presentation @ EMODnet MED CheckPoint annual meeting, Bologna, Italy	Oral presentation
16-18 November 2014	2nd International Ocean Research Conference (IORC) "One planet, one ocean", Barcelona, Spain[10]	Oral Presentation
22 November 2014	EMODnet session @ PLOCAN Glider School, Las Palmas, Spain[11]	Oral presentation
26-27 November 2014	EMODnet Physics presentation @ MonGOOS annual meeting, Lecce, Italy	Oral presentation
27 January 2015	EMODnet Day @ IFREMER, Brest, France	
3 – 4 February 2015	ICES – OSPAR Workshop, Copenhagen, Denmark	
26 – 27 February 2015	ASLO - Aquatic Sciences Meeting, Granada, Spain	Oral presentation
16-20 March 2015	IODE-XXII, Bruges, Belgium	
12-13April 2015	EGU, Vienna, Austria	Session O2.4
16 April 2015	EGU, Vienna, Austria	Oral presentation
16 April 2015	FixO3 Workshop "an introduction and practical use of European marine data infrastructures"	Oral presentation
18-20 May 2015	Ocean 2015, Genoa, Italy	Oral presentation
28-29 May 2015	European Marine Days, Athens, Greece	
10-12 June 2015	Sea Level Workshop, Mallorca, Spain	Oral presentation
15-16 June 2015	9th GEO European Projects WS, Copenhagen, Denmark	Oral presentation

[10] www.iocunesco-oneplanetoneocean.fnob.org.
[11] http://acamimusan.es/gliderschool/

7. Work package updates

WP1 – Project Management

Objective:

- *to manage and to coordinate all project activities, ensuring timely delivery and high quality of results and products.*

Besides general management of the EMODnet Physics project and the fulfilment of all reporting commitments, one specific action in the WP1 is the engagement and management of ROOSs activities in order to push developments at the in situ TAC data assembly centres that have effects on the EMODnet Physics goals. For each ROOS area, one or more organisations are responsible for the activities:

Table 11 – ROOSs activities

Area	Organization	Task	Achieved results
Arctic Sea	Institute of Marine Research (IMR), Norway	Develop the infrastructure compatible with EMODnet Physics and connect new originators in the Arctic area	11 Icelandic fixed platforms (from Icelandic Road and Coastal Administration) plus 2 from the Marine Research Institute[12]
Baltic Sea	Swedish Marine and Hydrographic Institute (SMHI), Sweden	Work on the infrastructure and connect new originators in the Baltic Sea area	Identified: 120 (in both Baltic sea and North Sea areas) Connected more than 100 SHMI supported BSH to make available 24 Norwegian stations and 15 Danish stations (from KDI via DMI) As well as made available data and information from5 icebreakers
Baltic Sea	Polish Academy of Sciences (IOPAN), Poland	Make the Sopot platform data accessible via the EMODnet Physics data flow infrastructure	Sopot platform connected[13]
Baltic Sea	Suomen ymparistokeskus (SYKE), Finland	Improve quality and availability of Finnish FB data	Progress on: Finnmaid Finnsea Transpaper

[12] http://www.emodnet-physics.eu/map/DefaultMap.aspx?sessionid=635742124765690833
[13] http://www.emodnet-physics.eu/map/DefaultMap.aspx?sessionid=635742129182053435

Baltic Sea	Marine Systems Institute (MSI), Estonia	Integrate profilers, moorings and tide gauges from Estonia	Identified:40 Connected to EMODnet Physics[14]: 14 MO, 3 FB
North Sea	Deltares (Netherlands)	Work on new originators in the Baltic Sea area	Deltares focused on making available more wave data from 21 platforms Achieved: 13
North Sea	Bundesamt für Seeschifffahrt und Hydrographie (BSH), Germany	Work on the infrastructure and connect new originators in the North Sea area (particular focus on cleaning duplicates)	See table 5
North Sea	Helmholtz-Zentrum Geesthacht (HZG), Germany	Integrate the HZG - ferrybox data repository[15] into the EMODnet Physics infrastructure.	Identified: 7 Progresses on: TorDania, LysBris, FunnyGirl,
Mediterranean Sea	Hellenic Centre for Marine Research (HCMR), Greece	Develop the infrastructure and connect new originators in the Mediterranean Sea	7 Italian platforms (5 in the Regione Liguria, 2 in the Adriatic Sea) and 1 Spanish platform and 1 Cypriote station
Ireland-Biscay-Iberia	4GOTAS&INTECMAR, Spain	testing new means for HFR data management and visualization	Development of the HFR THREDDS server for EMODnet Physics, and proof of concept with 3 HFR areas[16]:

Progress is also indicated in Table 5.

For the coming year the consortium and partners will keep working on described activities; some further dissemination and engagement actions are already planned in Italy, United Kingdom, Germany, Morocco, and Turkey.

[14] **http://www.emodnet-physics.eu/map/DefaultMap.aspx?sessionid=635742122912144817**
[15] http://ferrydata.hzg.de/index.cgi?seite=start;cookie=1
[16] see section 3 and 4 for more details

WP2 – Data Collection, Metadata Compilation and QA/QC

Objectives:

- *To implement access to data and metadata from the data sources identified in EMODnet Physics*
- *To identify specific additional data sources that contribute to the EMODnet physical parameters portfolio (Argo profiling floats (Euro-Argo), gliders, radar, etc.)*
- *To arrange that identified data sources become available via the underlying EuroGOOS ROOSes, MyOcean, and SeaDataNet infrastructures with common metadata and data formats. Arrange the data availability from other international programmes (Euro-Argo) through MyOcean in situ global component*
- *To validate the coverage and to complete the EDIOS metadata directory and standardised station index*
- *To establish and give guidance on common data and metadata models for complimentary data suppliers*

Table 2 to Table 6 provide a summary of the achieved results. Table 12 gives more details on data originators:

Table 12 – data originators

Country	drifting buoys	ferrybox ship	gliders	mooring time series	profiling floats	Argo Floats	**Total**
Albania				1			**1**
Belgium				14			**14**
Bulgaria				11		5	**16**
Cyprus			2	1			**3**
Denmark				71			**71**
Estonia		3		14			**17**
Finland		2		6	2	9	**19**
France	72	2	5	201	71	252	**603**
Georgia				2			**2**
Germany		2	6	123	22	154	**307**
Greece				15		1	**16**
Iceland				13			**13**
Ireland				45			**45**
Italy				167	9	37	**213**
Latvia				2			**2**
Lithuania							**0**
Malta				1			**1**
Netherlands		3		197	4	36	**240**
Norway	1	2		56		3	**62**
Other/Oil Platforms				23			**23**
Poland				1			**1**
Portugal				13			**13**
Romania				2		1	**3**
Russian Federation				3			**3**
Slovenia				1			**1**
Spain			3	61		28	**92**
Sweden		6		73			**79**
Turkey						6	**6**
Ukraine				5			**5**
UK	20			280		171	**471**

Total	**93**	**20**	**16**	**1402**	**108**	**703**	**2342**

Summing-up data from Table 12 and Table 6 (first row), about 5,000 platforms are discoverable and accessible from EMODnet Physics.

WP3 – Metadata aggregation, Data access and Data products

Objectives:

- *To compile aggregated metadata with common format and quality for the EMODnet Physics portal*
- *To implement/create access to data sets and to compile aggregated data sets with common format and quality for the EMODnet Physics data products*
- *To generate products from the metadata and aggregated data sets*

- **metadata and common format**

The activity of integrating datasets with incomplete metadata (table 3) is continuing in collaboration with JCOMMOPS (JCOMM in situ Observing Platform Support Centre).

JCOMMOPS maintains information on relevant data requirements for observations in support of GOOS, GCOS and the World Weather Watch of WMO as defined by the appropriate international scientific panels, and JCOMM Expert Teams and Groups, and routinely provides information on the functional status of the observing system. It also encourages platform operators to share data and distribute it in real-time and gives technical assistance with satellite data acquisition, automatic data processing and Global Telecommunication System (GTS) distribution of the data.

JCOMMPS is the focal point keeping track of the open ocean platforms, and so it hosts and manages the international registry for ARGOs, gliders, research ships, DBCP (data buoy cooperation panel), GLOSS (global sea level stations) etc.

A specific action to include more glider data also began. At the moment only a very small amount of glider data information is available and accessible because the community (well represented by the finished GROOM project) has a problem with data formatting and manpower; they defined the new EGOnc format (i.e netcdf file for European Gliders), but they don't have software tools to produce it from manufacturer files. On top of this, they are still working on reliable QC algorithms.

- **products**

Wind Data Product. Each platform that is measuring wind data is now providing a specific section to plot and extract wind data (see WP4 for feature description). New plots are under developments and are going to be released as soon as they are ready (e.g. the wind-rose plot is planned by end 2015).

HF Radar products. For selected HF Radars, a dynamic map showing sea surface current speed and direction based on the aggregation of last five days is available (see WP4 for feature description). HFR data are also available via a THREDDS catalogue[17]

[17] http://hfr-thredds.emodnet-physics.eu/thredds/catalog.html

Sea Level trends (PSMLS[18]) and Ice data are being incorporated.

The Permanent Service on Mean Sea Level (http://www.psmsl.org/products/trends/)[19] produces an interactive map of Relative Sea Level Trends compared to revised local references (i.e. to a local benchmark), allowing investigation of global mean sea level trends since 1900.

In particular, the mean sea level (MSL) trends measured by tide gauges are local relative MSL trends as opposed to the global sea level trend. These trends are not corrected for land movement. Tide gauge stations measure Local Sea Level, which refers to the height of the water as measured along the coast relative to a specific point on land.

Water level measurements at tide stations are referenced to stable vertical points (or benchmarks) on the land and a known relationship is established. However, the measurements at any given tide station include both global sea level rise and vertical land motion, such as subsidence, glacial rebound, or large-scale tectonic motion. Because the heights of both the land and the water are changing, the land-water interface can vary spatially and temporally and must be defined over time. Depending on the rates of vertical land motion relative to changes in sea level, observed local sea level trends may differ greatly from the average rate of global sea level rise, and vary widely from one location to the next.

For instance, in some parts of the world significant subsidence is occurring, for example, the northern Gulf of Mexico relative sea level trends show an increase of greater than 10 mm/year. In contrast, most of the Swedish and Finnish coasts of the Baltic Sea reflect a decrease in relative sea level because the region is dominated by isostatic rebound, or regional uplift of the land caused by the retreat of the glaciers.

Relative Sea Level Trends (RSLT) reflect changes in local sea level over time and are typically the most critical sea level trend for many coastal applications, including coastal mapping, marine boundary delineation, coastal zone management, coastal engineering, sustainable habitat restoration design, and the general public enjoying their favourite beach.

These relative sea level trends have been calculated to illustrate global and regional trends, and no attempt has been made to assess the appropriateness of the linear regression model for any given fit. Therefore, individual values should not be treated as a research quality product suitable for publication, or for use in planning or policy making. PSMSL results should not be considered as suitable for publication or planners, is that a more rigorous approach would be required, each site would be looked at in more detail.

[18] http://www.psmsl.org/

[19] A similar service is also provided by NOAA (http://tidesandcurrents.noaa.gov/sltrends/sltrends.html)

In order to present the RSLT, the service requires selecting a period of at least thirty years. Then, the map displays the annual sea level trend at each station that has suitable data available over the selected period.

It can be seen from the Figure 2a below that there are only a small number of tide gauge sites that have been in operation for long enough to provide a trend over a 100 year time period. Others have been in operation more recently and can provide trends in relative sea level over the last 30 years (Figure 2b).

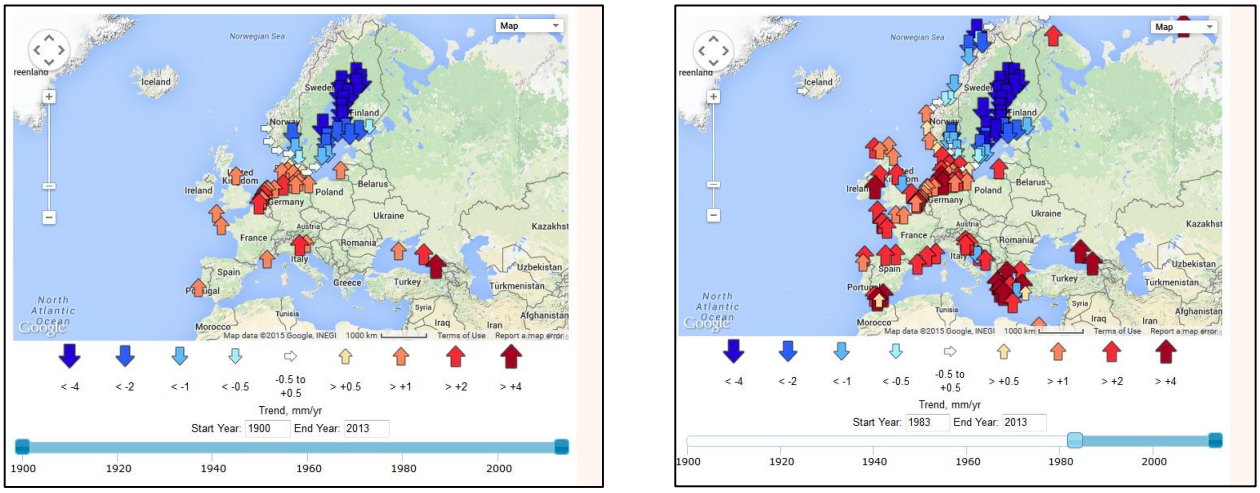


Figure 2. A. Relative Mean Sea Level Trends (1900-2013); B. Relative Mean Sea Level Trends (1983-2013)

This product was upgraded during 2015 and now uses a slightly different method of calculating the Relative Sea Level Trends. Primarily, this was done to allow the calculation of realistic uncertainties, but also uses mean monthly values, rather than the annual averages used in the earlier version. The new methodology now in use is described on the PSMSL web-site (http://www.psmsl.org/products/trends/methods.php).

As already anticipated, the PSMSL is not taking into account of the land movement. On a global basis, models of glacial isostatic adjustment (GIA) can be used[20]

An alternative approach was developed at SONEL (www.sonel.org). It generates absolute sea level trends at some tide gauge sites where there are co-located GPS measurements. SONEL is using the PSMSL relative sea level trends and it is correcting them for land movement measured by the GPS to get absolute trends (see: http://www.sonel.org/-Sea-level-trends-.html?lang=en)

Discussions are under way to ascertain the most suitable mechanism for sharing and displaying these trends in the EMODnet Physics portal and to provide appropriate linkage with those tide gauge sites, delivering near real-time observations and historical time series.

[20] http://www.psmsl.org/train_and_info/geo_signals/gia/ for more details

WP4 – Portal technical development and operation

Objectives:

- *To implement the existing EMODnet Physics website with new services*
- *To keep the website and portal services operational, including monitoring*

The EMODnet Physics portal is constantly being updated and is providing:

- ***Landing Page*** – with background information about the activities, links to EMODnet Central and the other lots, links to EMODnet Physics services, documents and manuals, contributors, etc.

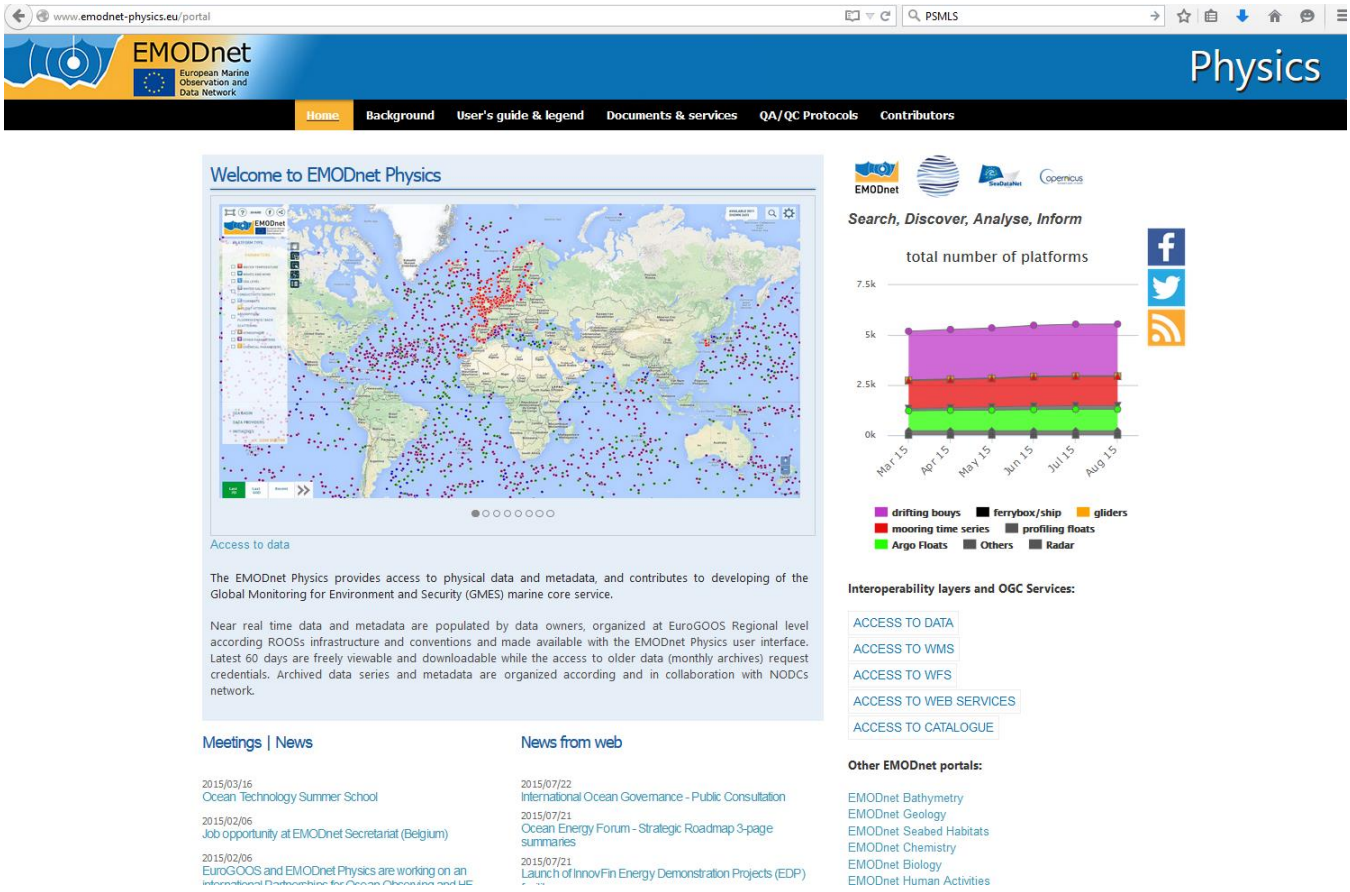


Figure 3. EMODnet Physics landing page

- ***Dynamic Map*** – the operational core tool for users to search, visualise and download data, metadata and products. For the near real-time (NRT) data, the map facility allows viewing/retrieving within a specified time (e.g. 60 days sliding window), measurement points, values of data and quality of data. The geographical area (space window) will define the area of interest within which the measurement points, values of data and quality of data are presented. For the previous 60 days, a graph is provided with data availability during that

time. Information about the data originator, curator etc. is also provided. The tool is also used to visualize and retrieve data products such as time plots for specific parameters (e.g. monthly average temperature for data acquired during the specified time window)

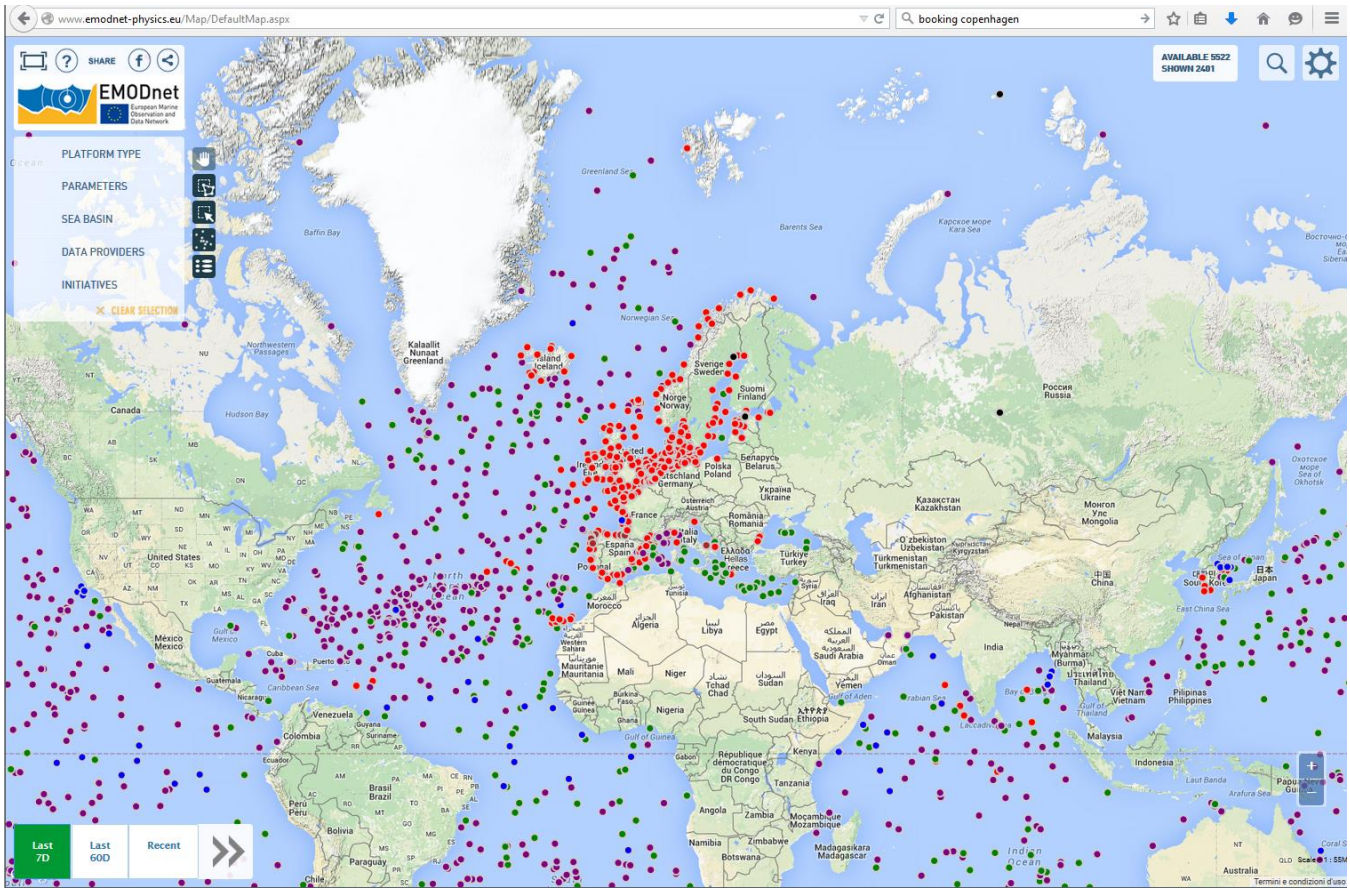


Figure 4. EMODnet Physics Map Page

To increase end user usability and match feedback from the survey, the Map page was partially redesigned.

Top left – Logo and share features

	1. Full Screen 2. Help 3. Share Selection 4. link to EMODnet Physics landing page

The “Share” feature is designed to let users share a selection; the portal creates a unique URL that can be copied and pasted and shared via emails/social networks etc.

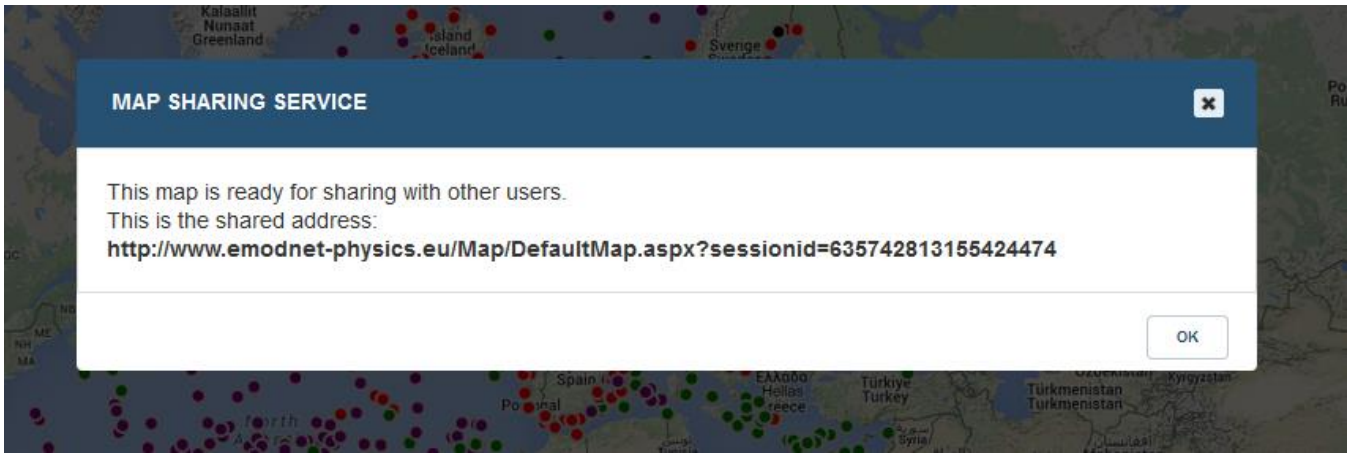


Figure 5. Example of the sharing feature link

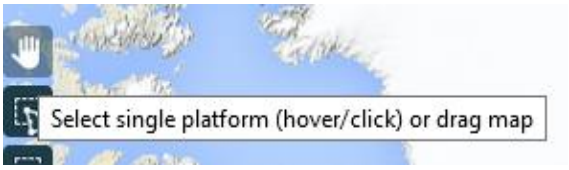
Top left – parameters and geographical filters

1 to 5 are filters and 6 removes the applied filters

7 to 11 are control buttons to select and access a single platform or a group of platforms.

7. normal interaction
8. free boxing to select platforms
9. rectangular boxing to select platforms
10. create a list/select all the platforms with the applied filters
11. go to the selected platforms list

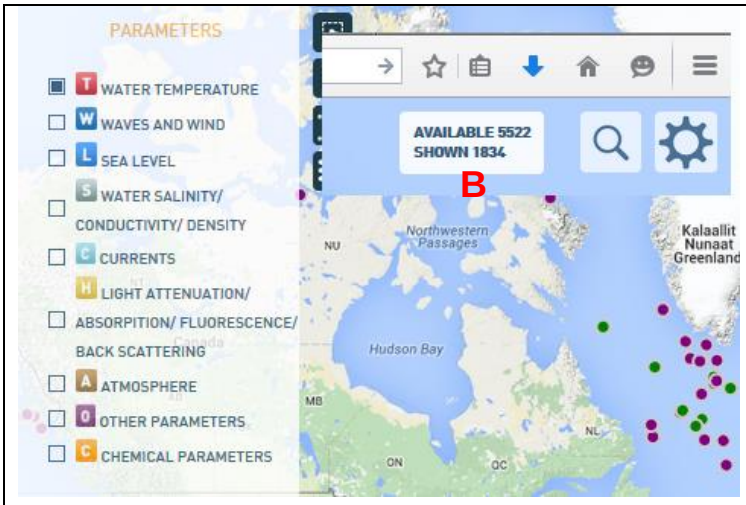
When pointing a dialog describes the feature



Platform type are:

- ARGO
- Drifter
- Ferrybox (and Ship)
- Mooring and fixed stations
- Profiling buoys
- Radars
- (Others)

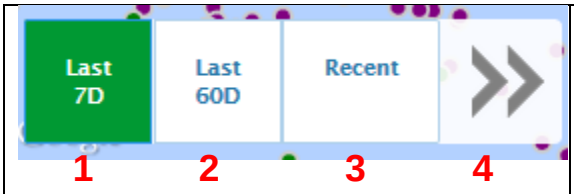
When a filter is applied a label appears (A) on the map



Parameters are:
- Sea water temperature
- Waves and winds
- Sea level
- Sea water salinity
- Currents
- Light attenuation
- Atmospheric parameters
- Chemical parameters
- Other (e.g. biological param.)

When a filter is applied the map also shows the number of platforms matching the applied filters (shown) vs. the total available platforms (B)

Bottom left – time filters



Playing with “time filters” the user can select platforms that are providing data for

1. (default setting) last 7 days
2. Last 60 days
3. Recent (last 20 years)
4. More

Applying filters 1 and 2, the map shows platforms and data that are freely accessible and downloadable, without credentials, by all users.

Filter 3 shows platforms with data older than 60 days. These platforms are connected via the INSITU TAC of EuroGOOS ROOSs and CMEMS. As soon as the user logs in (CMEMS credentials), he can download all data.

Filter 4 opens a slider to select a time range. Most of the historical data are provided by the SeaDataNet networks of NODCs and to download these data the user is redirected to the SDN Request Status Manager.

Filters are grouped according to some classes, namely Platform Type, Parameters, etc. The logic of the filters is AND between classes and OR within a class. Figure 10 shows the following selection:

(Ferrybox OR Mooring) AND (Water temperature OR Sea Level) AND (SMHI) AND (last 7 Days)

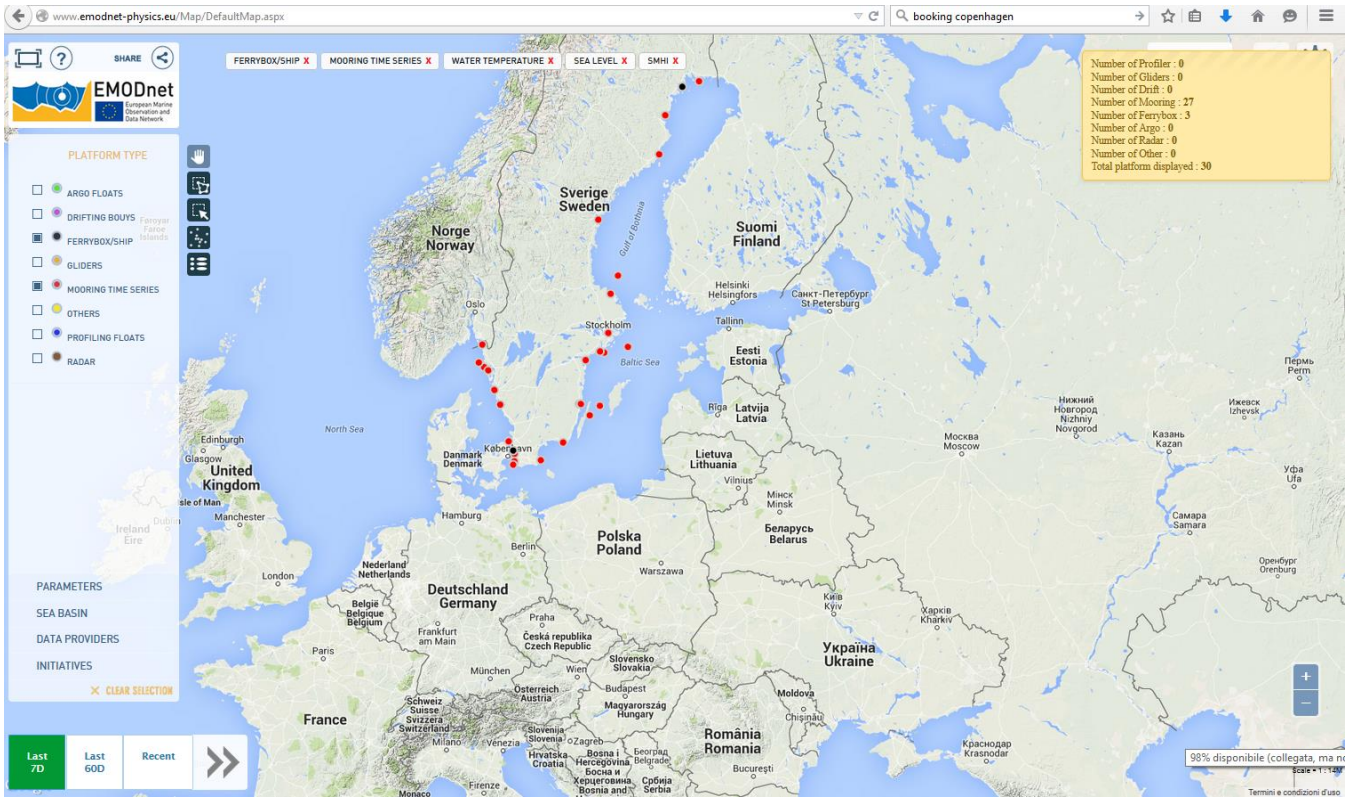
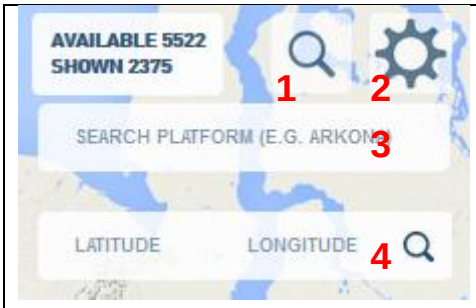
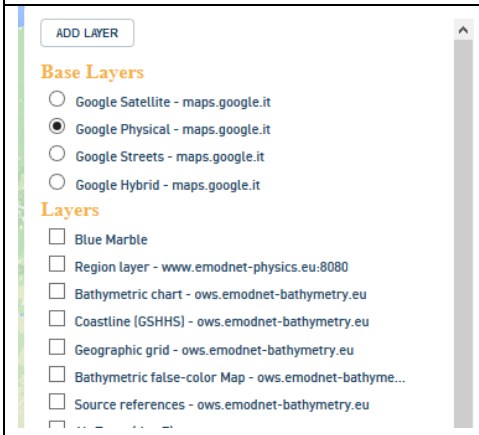


Figure 6. Example for the filters: Ferrybox + Mooring; Water temperature + sea level; SMHI; latest 7days.

Top right – search and options

	1. search 2. options If the user clicks on 1, the options 3 and 4 appear: 3. search by platform name 4. search by latitude and longitude
	If the user clicks the “option” he can play with the background map and add layers.

If the user clicks on a specific platform, he accesses the platform page:

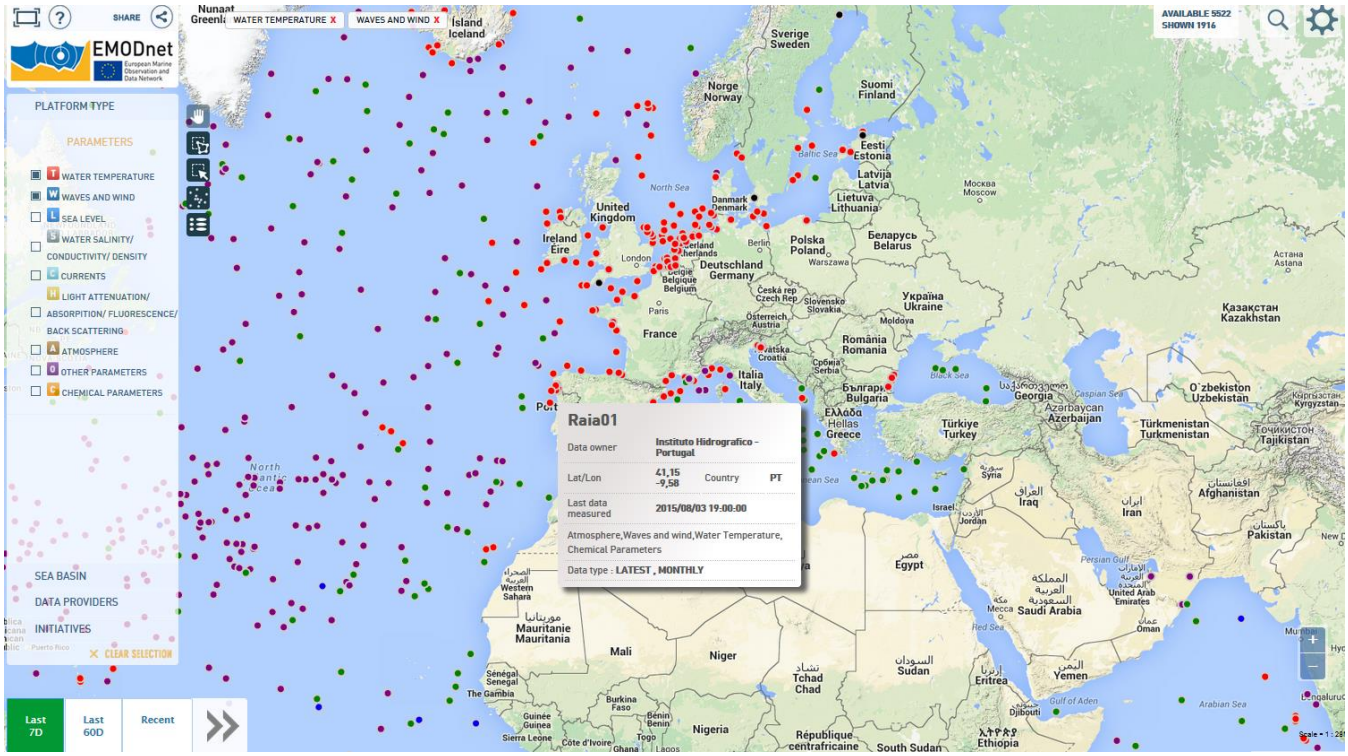


Figure 7. Example of the operational map page with some filters applied.

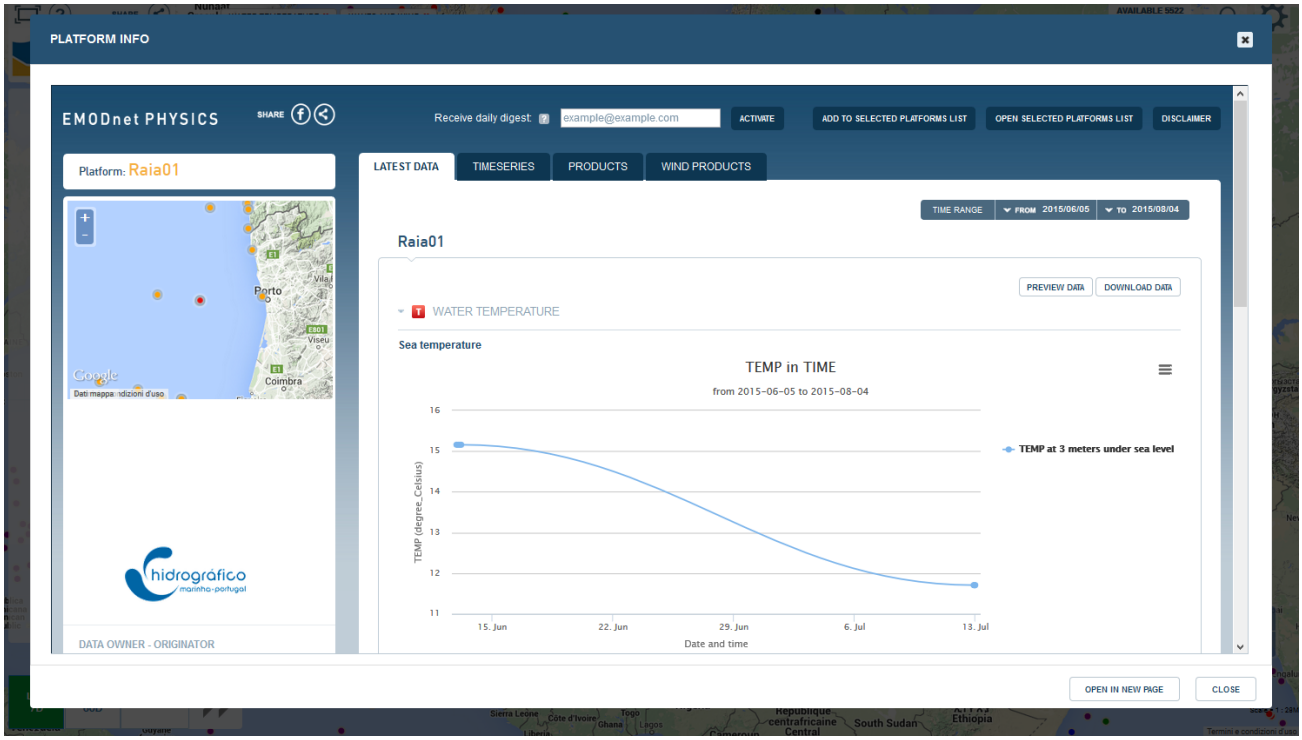


Figure 8 – Example of a platform page

Each platform has a unique EMODnet Physics internal reference id and can be used to directly access to the platform e.g. http://www.emodnet-physics.eu/Map/FeedPlatformInfo.aspx?id=8842

The platform gives access to metadata (left side), data and products (right side), and further features:

Platform page features:

1. daily digest: the system sends the platform latest information to the specified e-mail address
2. add to list of platforms
3. open/go to the selected platform list
4. disclaimer

From 5 to 8 – data plots and data products

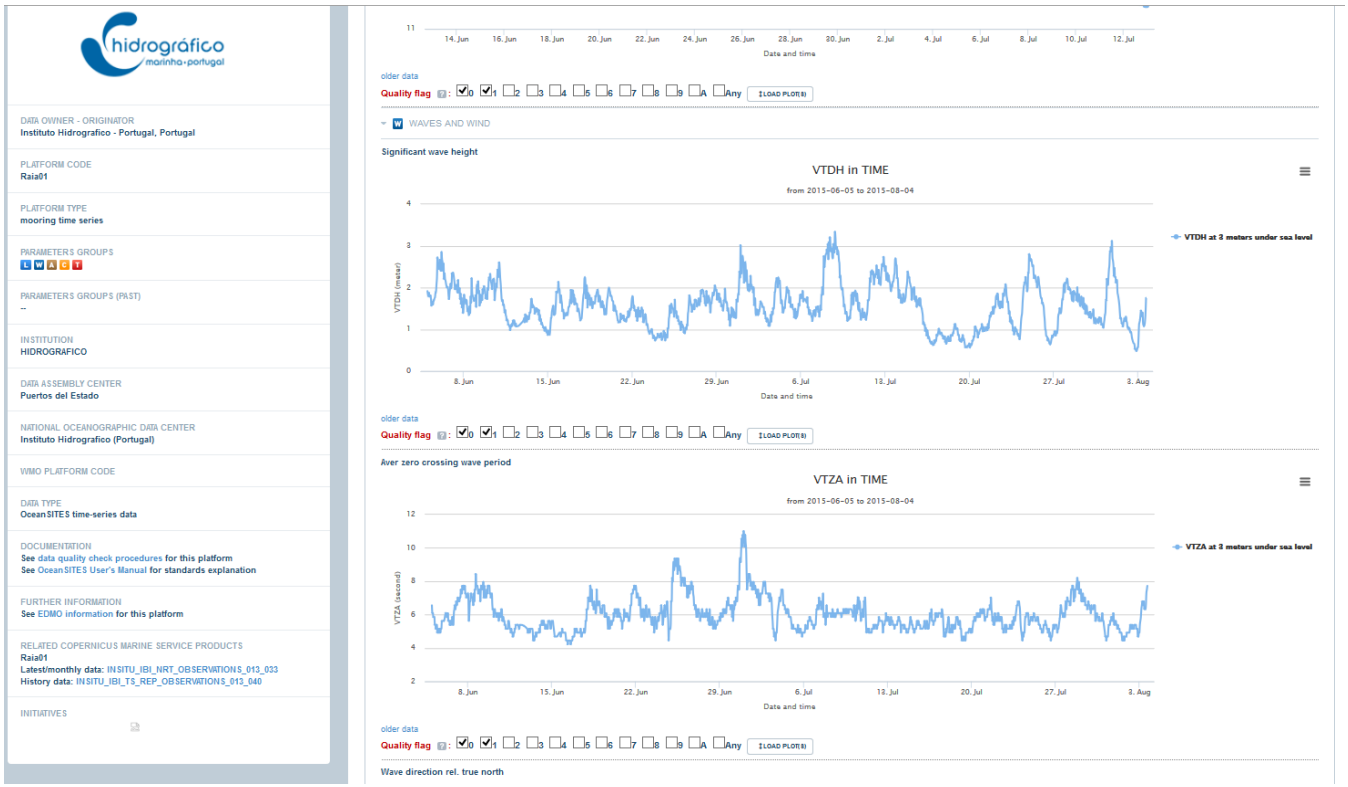


Figure 9. Example of latest data – plots for last 60 days Wave data

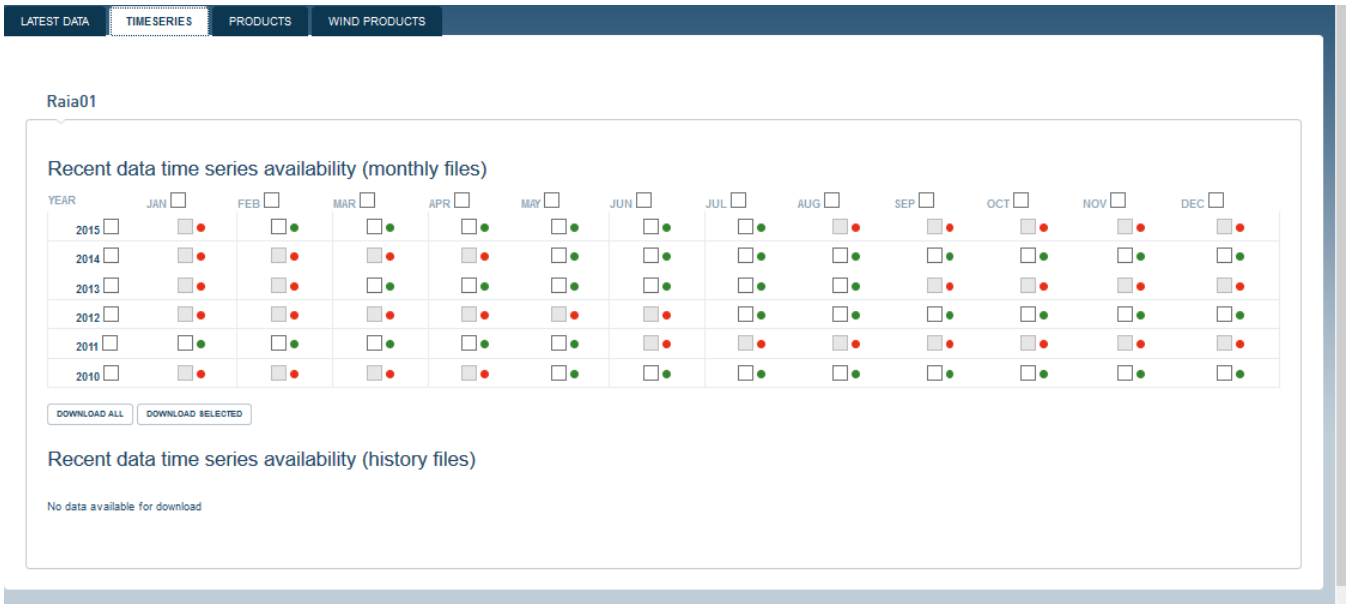


Figure 10. Example of data availability (green = data available for that month, red = no data available)

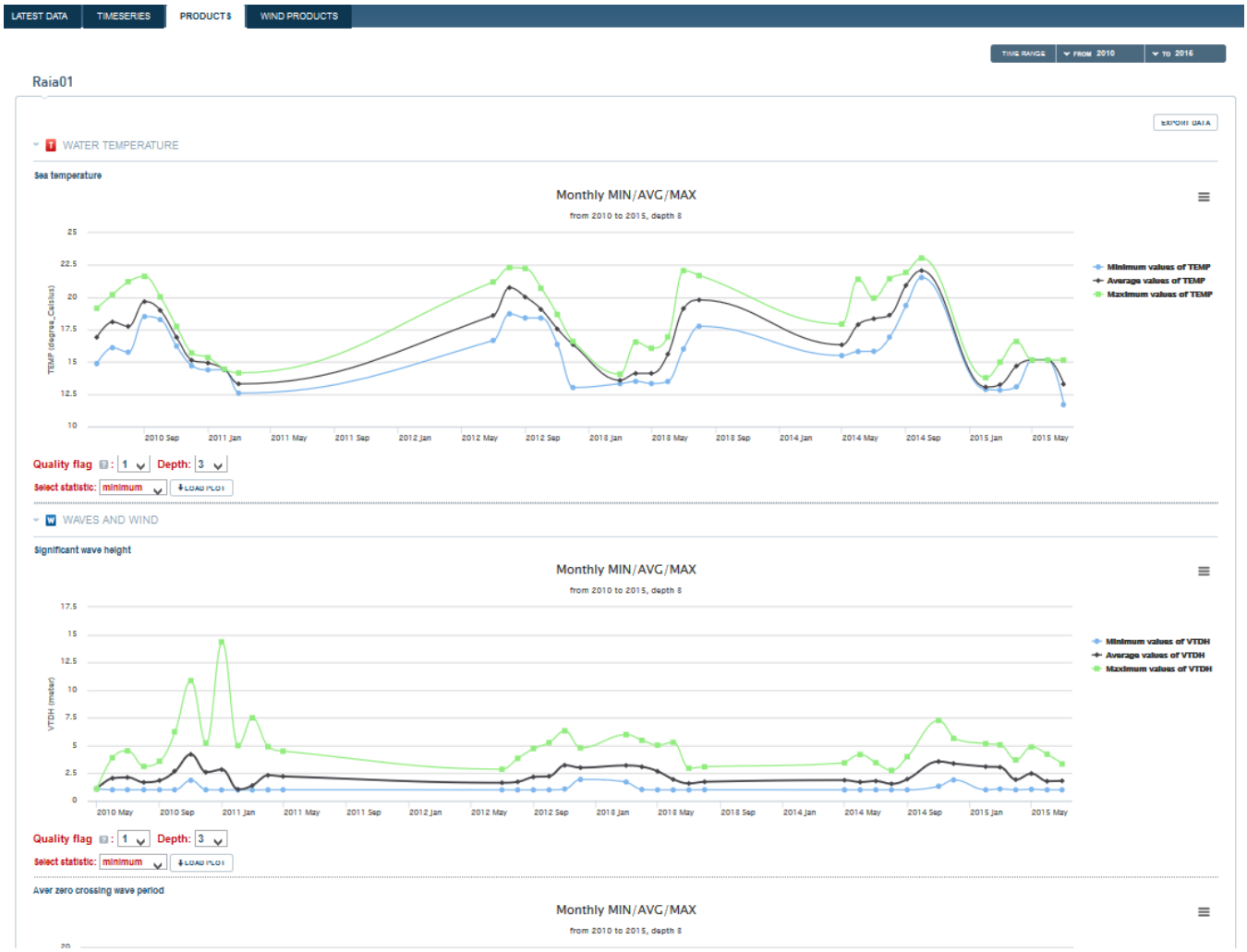


Figure 11. Example of products: monthly averages – maximum and minimum recorded parameter values

If the platform is recording wind data, the “wind product” section is available and the user can find:

1) Plot reporting the number of hours binned by wind strength for a given period
2) Plot reporting the maximum wind speed day by day for a given period
3) Plot reporting the max wind intensity binned by wind strength for a given period
4) Average wind strength hour by hour for a given period

Figure 12. Example of wind products – if the user modifies the time window (from - to, top right) data are reprocessed and plots are refreshed.

If the platform is a HF Radar, the platform page shows direction and velocity water of currents over the last 5 days (user can select a specific time or can play an animation).

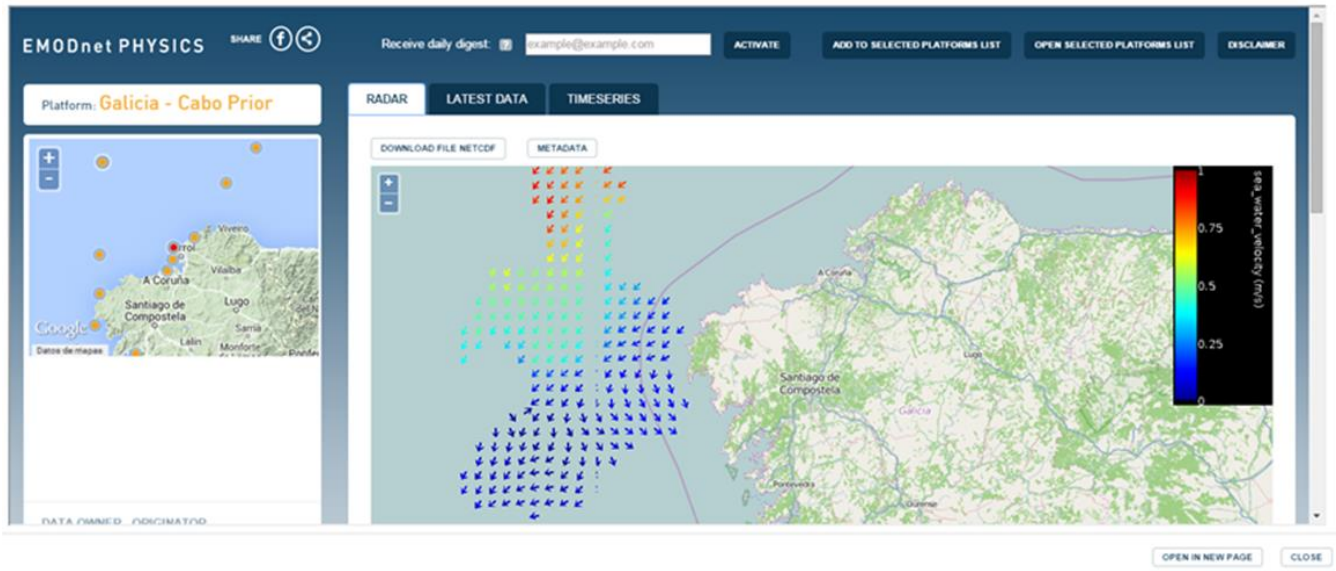


Figure 13. Example of HFR data

If the platform is an ARGO the page, the user can move on and check data from the different cycles. The ARGO route and cycle point is also presented.

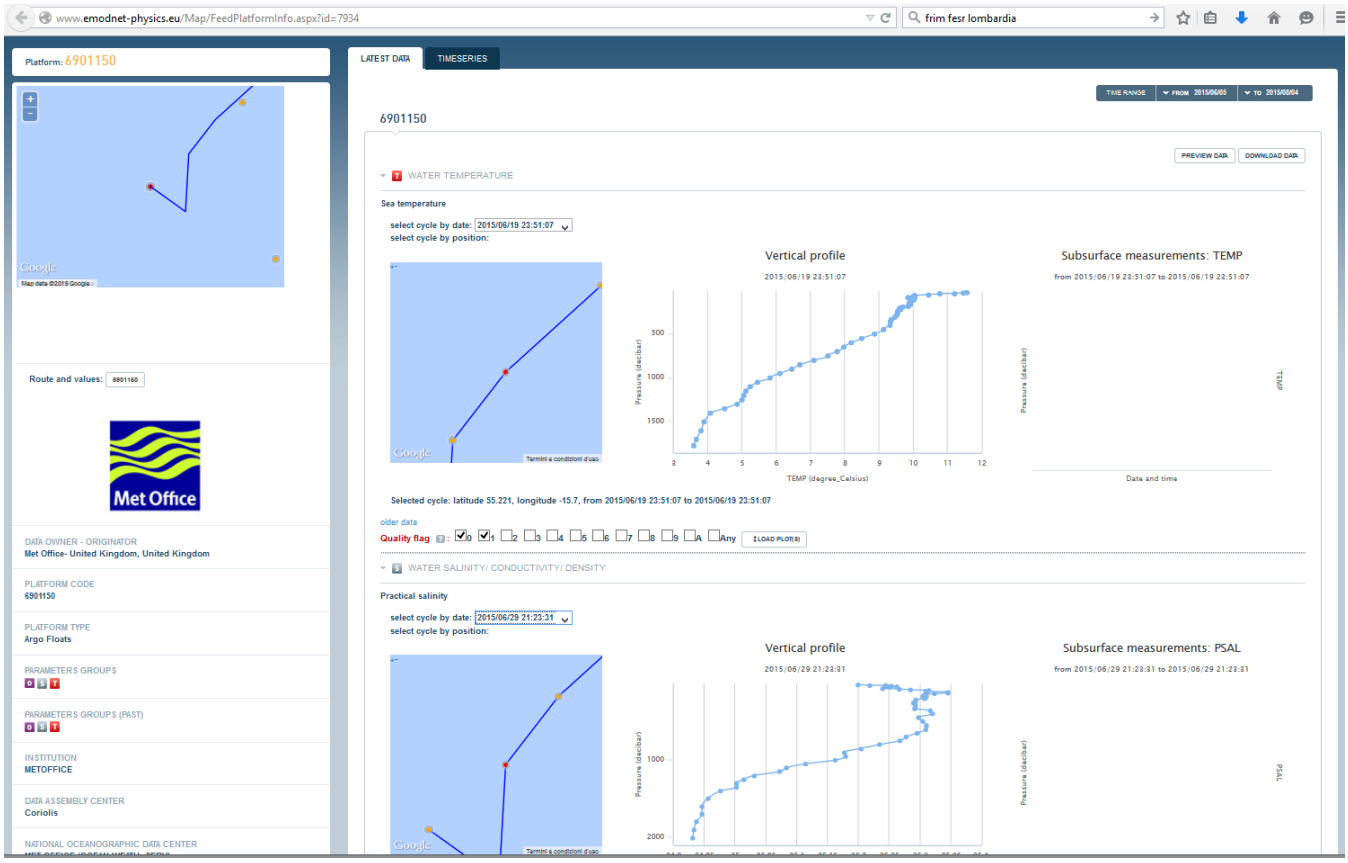


Figure 14- Example of an ARGO page

- ***Dashboard***: reporting service where users can view and export various statistics about the data portal content and usage. The EMODnet Physics dashboard represent a valuable tool to discover data availability and monitor performances of the infrastructure behind the portal. The tool also provides KPIs (key performance indicators) showing how much data and how many platforms are made available on a daily basis, extracting statistics on page access and data downloads etc.

- ***Interoperability Services***: the EMODnet Physics is developing interoperability services to facilitate machine to machine interaction and to provide further systems and services with European seas and ocean physical data and metadata. In order to improve the interoperability services and make them more OCG compliant the EMODnet Physics WMS/WFS etc. services were redeveloped for a geo-server.

The WMS, WFS and Web service pages provide the user with details about how to link and connect the EMODnet Physics available data and information.

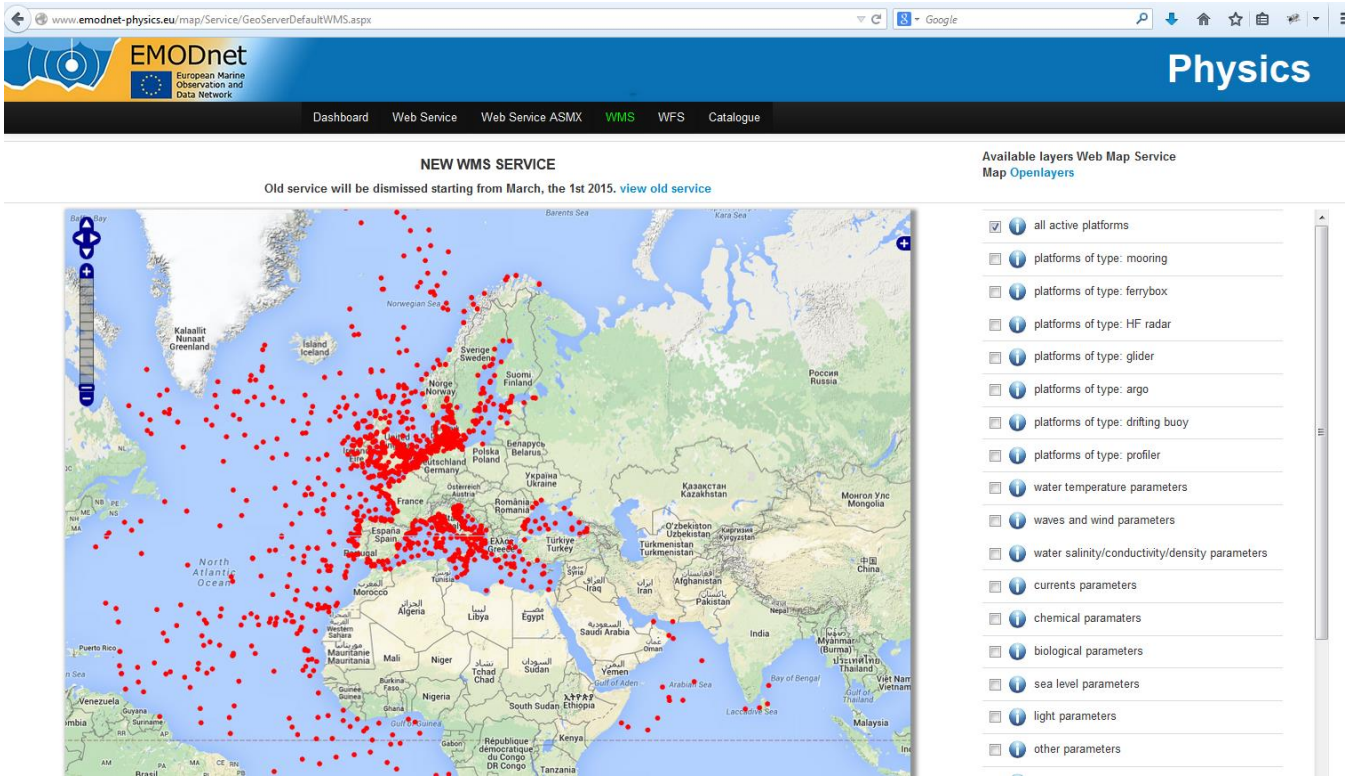


Figure 15. WMS services landing page

Full instructions on integrating available WMS are provided by clicking the “i”. To link the “all active platform” layer, for example, the OGC-Openlayers call is:

```
var customLayer = new OpenLayers.Layer.WMS("Name custom layer",
"http://151.1.25.219:8181/geoserver/emodnet/ows",
    {
    "format": "image/png",
    "transparent": true,
    "layers": ["platforms"]
    },
    { isBaseLayer: false, opacity: 1 });
```

http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms

See Indicator 8 for further information and details.

WP5 – Analysis, evaluation and feedback

Objectives:

- *To report on the effectiveness of the system in meeting the needs of users and other EMODnet portals*
- *To analyse what further steps need to be taken for improvement, expansion and sustainability*
- *To assess the operation value of the EMODnet Physics portal Information System; Validate the services of the portal*

Some of the most important results are the integration of the EMODnet Physics data into the EMSA internal system and the use of EMODnet Physics data to validate models (e.g. DHI MIKE model).

The meetings and dissemination activities were fundamental events that showed achieved progress and further involved both end users and providers. In general, feedback was very positive, and the ease of access to metadata and data, plot parameters, and download data was particularly appreciated, as was the transparency of the infrastructure giving full visibility to data provider, data curator, and assembly centres etc.

In general, when EMODnet and EMODnet Physics are presented, the discussion turns to the need for sustained observing systems and the need for free availability of data and how that can be made sustainable in the future. This underlined the importance of having data producers make their data available and accessible.

The recent EMODnet Jamboree event allowed the consortium to collect some further suggestions and indications, in particular providers are interested in having easy tools that inform on the use and visibility of their data. Providers are interested in having tools like the EMODnet Physics dashboard to access to KPIs such as who is using data, how often data is downloaded, which is the most downloaded platform etc. This could be an information page restricted to the platform owner on the EMODnet Physics platform page (e.g. Figure 16)

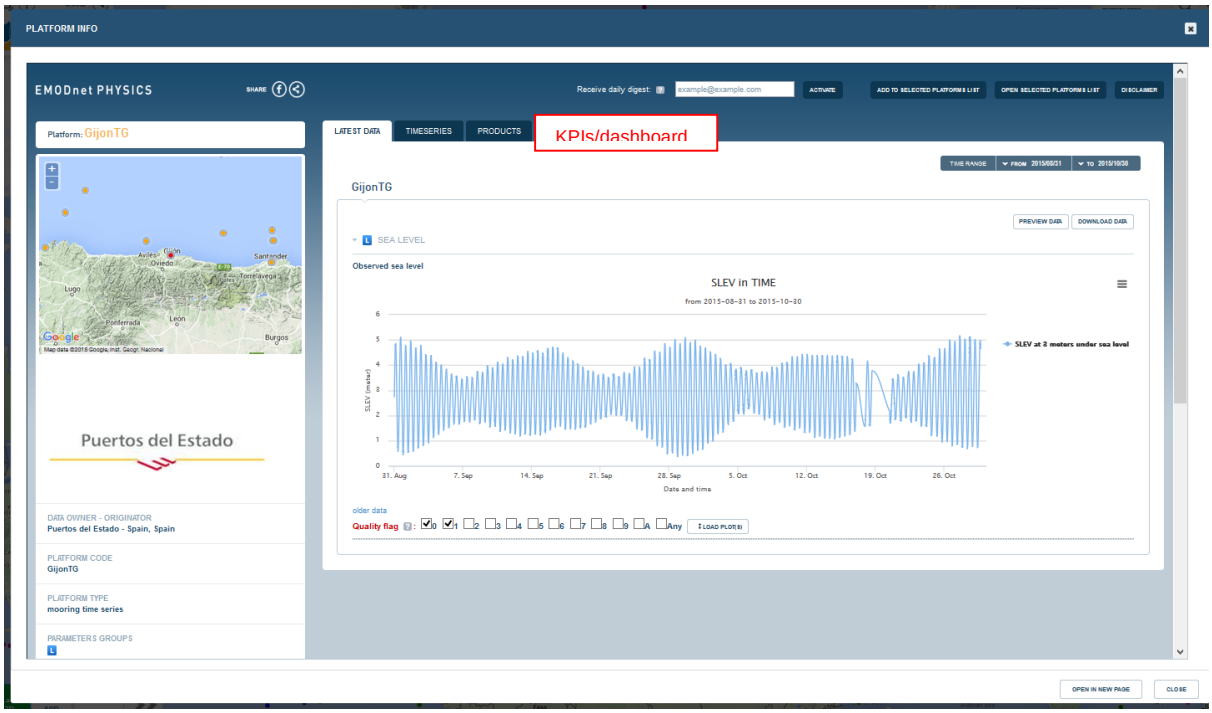


Figure 16. Platform page

They also asked to have links to the dashboard page from the landing page (Figure 17).

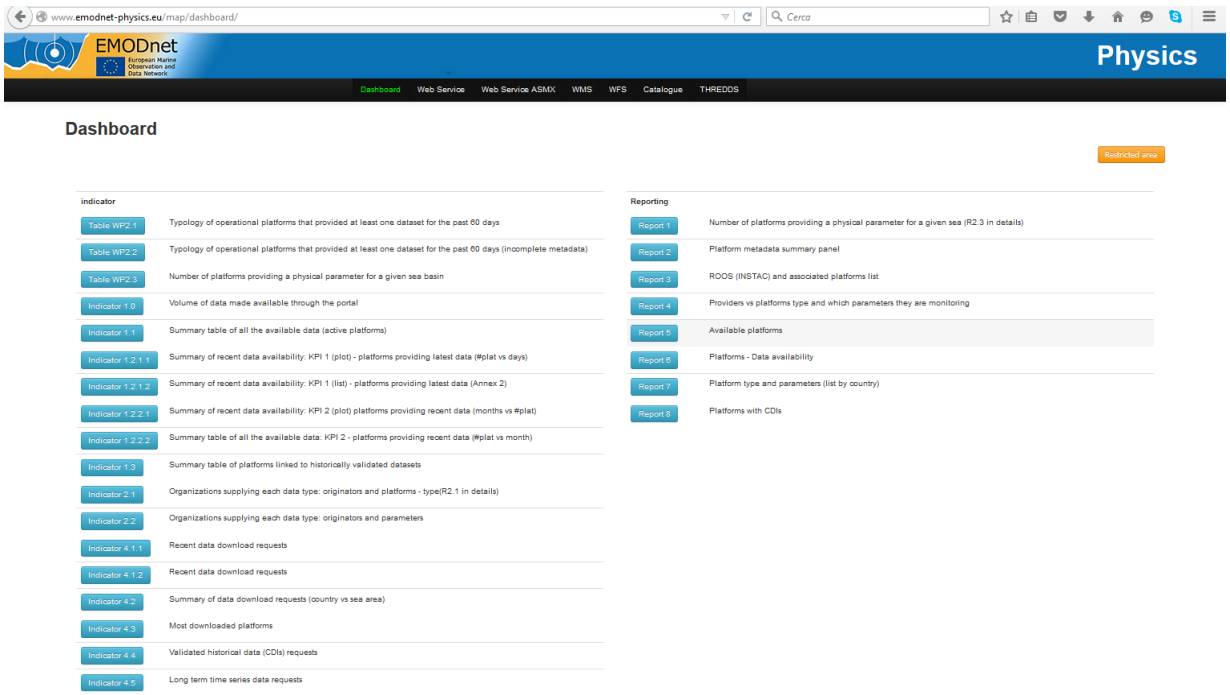


Figure 17. EMODnet Physics dashboard page

There is an increasing interest in HF Radar data. Besides the NRT data, users are interested in data older than the 5 days EMODnet Physics currently provides. EMODnet Physics phase II has been focused on proofing the concept and organizing the European HF Radar data. Next phase should focus on connecting additional radars and organize access to historical datasets by exploiting infrastructures and catalogues compatible with this big data format (i.e. THREDDS).

Users and providers are encouraging the EMDOnet Physics team to make data available in csv and acsii for multiple uses and to make ships of opportunity data – CTD/XBT accessible and downloadable. They also expressed a big interest in data collected by tagged sea mammals providing interesting data (NRT CTD profile data and the tracks i.e. movement of the mammals) in regions less accessible - e.g. the Arctic and complementing the fixed platforms, HF Radars and Ferryboxes in other areas) e.g. Figure 18, Figure 19.

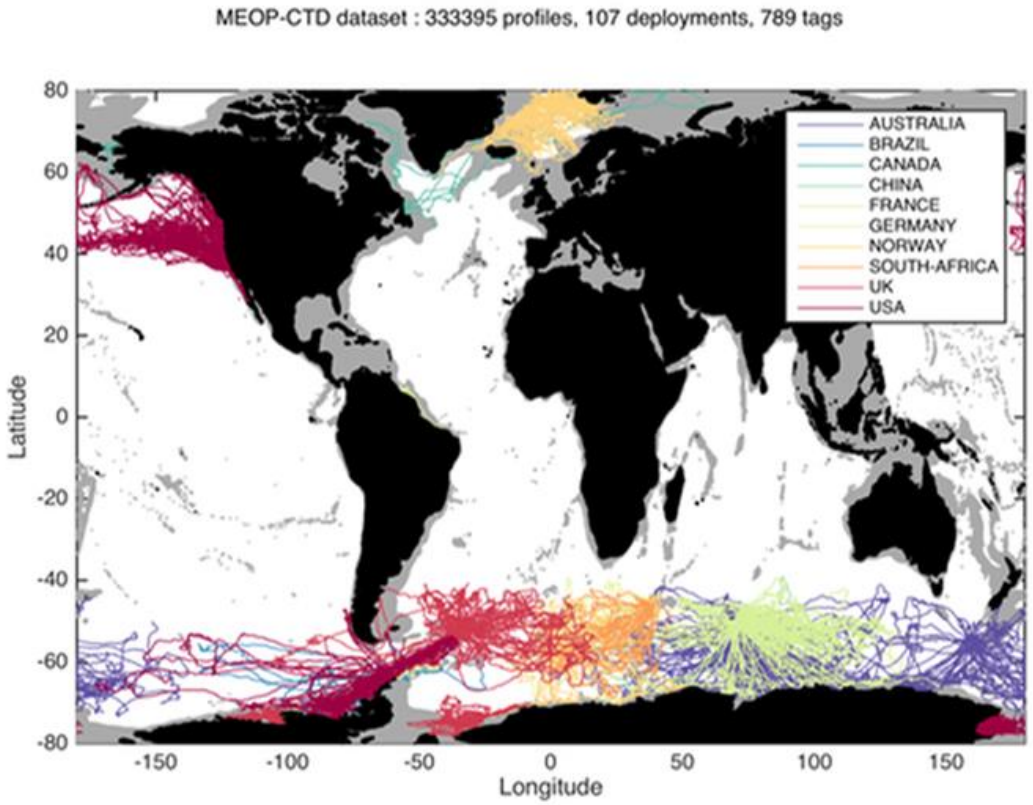


Figure 18. Sea mammals routes

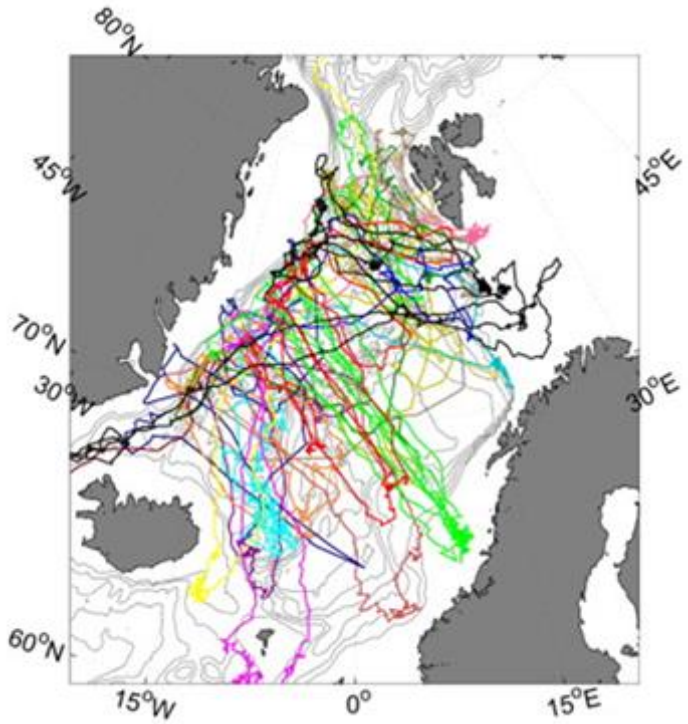


Figure 19. Sea mammals routes in the Arctic area

Further, there is an increased interest in underwater sea noise as it is particularly relevant for MSDF - Descriptor 11[21]:

- Indicator 11.1.1. Impulsive Noise - The aim of indicator 11.1.1 is to provide information describing temporal and spatial distribution of activities generating impulsive noise, allowing MS (member states) to assess possible cumulative impacts of displacement on marines species at the population level (a common strategy for all MS is not agreed yet). This data is also relevant to evaluate impact of tourism (e.g. ships) in/close to marine protected areas.
- Indicator 11.2.1. Ambient Noise - The aim of the indicator 11.2.1 is to determine annual trends within 1/3 octave bands 63 and 125 Hz (centre frequency).

There is also an increasing interest in near real time biogeochemical information where EMODnet Physics (and backbone in situ infrastructure) has been suggested as the landing/hosting place for this data. EMODnet Physics is already receiving BioARGO data. There is an interest in proofing if the developed data management flow can be applied to the new biosensors for fixed stations too.

[21] http://ec.europa.eu/environment/marine/pdf/MSFD_reportTSG_Noise.pdf

As already described in the annual report, user are also asking for a better connection between NODC and ROOSs for a continuous data flow from near real time to its validation, while ensuring easy accessibility to request data.

Wave data and wave products are one of the most required data sets. EMODnet Physic is now giving access to about 270 platforms providing wave data. Data are time series in discrete points. Users are interested in both in situ products (similar to what the portal is providing for wind data) and high resolution wave data products (provided as outputs from models that are assimilating in situ data – this will be further discussed and planned in cooperation with CMEMS.

Community also shows an interest and are asking for EuroGOOS/EMODnet physics data workshops to discuss the EMODnet program, EMODnet Physics and to help them to sort out data issues in countries and within regions and by this raising awareness and increasing the amount of data available.

The wind data products are much appreciated and it was suggested to disseminate and promote these products more. The possibility to access to a page showing these products from many platforms (one after the other) will make an even greater impact. Furthermore, from the analysis of the North Sea CP report we noted EMODnet Physics requires one further wind plot, and the “wind rose plot” will be developed.

EMODnet Physics must also develop new (aggregated) products to better match the Central Portal and its query tool.

8. User Feedback

Provide a complete record of feedback received from user (formal and informal) on your portal, your activities or those of other EMODnet projects/activities. Also provide any suggestions you have received for EMODnet case studies and/or future products/activities/events.
[Provide information in table - attach the documentation/full user feedback to the report]

Table 13 – user feedback

Date	Name	Organization	Type of user feedback (*e.g. technical, case study etc)*	Response time to address user request
13 Jan 2015	Foteini Baladima		Support to download data	1 day
10 Feb 2015	Hammarklint Thomas	SMHI – SE (BOOS DAC)	Request for development of a new KPI into the EMODnet Dashboard	1 day
6 Jul 2015	PAPP Marton	EMSA	Problems with WMS/WFS	1 day
29 Jun 2015	Iris Ehlert	BSH – DE	Problems with data discovery and access	Yet to understand the problem
24 jun 2015	Sara Loureiro Almeida	IH – PT	Wrong metadata	None (was already fixed)
11 Jun 2015	Helene Pineau	Actimar - FR	wave data errors at platforms L09 and K14	Feedback in 1 day, to manage 18 days
10 Jun 2015	Sabine SCHMIDT	EPOC – FR	Wrong metadata	2 days
31 Mar 2015	Sara Pensieri	CNR ISSIA - IT	Wrong metadata for the W1M3A buoy	1 day
9 Mar 2015	Kaitala Seppo	SYKE - FI	wrong owner info for Finnmaid Ferrrybox ferry	1 day

30 Jan 2015	Conor Delaney	JRC	congratulations on the new WFS/WMS
14 May 2015	Andrea Pedroncini	DHI Italia	Citation of EMODnet Physics into DHI new MWM product
29 jun 2015	Andrea Pedroncini	DHI Italia	Proposal for EMODnet Physics round table during the DHI Conference (TO - Italy) 14-15 Oct 2015

9. Outreach and communication activities

Please list all the relevant communications activities or products you have developed/executed during this period (including presentations, lectures, trainings, demonstrations and development of communication materials such as brochures, videos, etc.). Relevant scientific and/or popular articles you know have been published using/referring to EMODnet should be reported under indicator 11 in Section 7. [Provide information in table - Maximum 2 pages]

Table 14 – communication activities

Date	Event/Media	Description
16–18 June	JERICO Summer School, Delft, Netherlands	Oral presentation - Missing info in report 5
12 September	EMODnet presentation @SMHI, Sweden	Oral presentation
24 September	SeaDataNet Annual Meeting, Split, Croatia	Oral presentation
6 October	EMODnet pre-event EUROCEAN, Rome, Italy	Oral presentation
27 October	EuroGOOS - EMODnet HFR side event @ EuroGOOS conference	Oral presentation
29 October	EMODnet Physics @ EuroGOOS conference	Oral presentation
5-7 November	EMODnet Physics presentation @ EMODnet MED CheckPoint annual meeting, Bologna, Italy	Oral presentation
16-18 November	2nd International Ocean Research Conference (IORC) "One planet, one ocean, Barcelona, Spain22	Oral Presentation
22 November	EMODnet session @ PLOCAN Glider School, Las Palmas, Spain23	Oral presentation
26-27 November	EMODnet Physics presentation @ MonGOOS annual meeting, Lecce, Italy	Oral presentation
16-20 March	IODE-XXII, Bruges, Belgium	Oral presentation
12-13April	EGU, Vienna, Austria	Session O2.4
16 April	EGU, Vienna, Austria	Oral presentation
16 April	FixO3 Workshop "an introduction and practical use of European marine data infrastructures	Oral presentation
18-20 May 2015	Ocean 2015, Genoa, Italy	Oral presentation
28-29 May 2015	European Marine Days, Athens, Greece	
10-12 June 2015	Sea Level Workshop, Mallorca, Spain	Oral presentation
15-16 June 2015	9th GEO European Projects WS, Copenhagen, Denmark	Oral presentation

An EMODnet Physics article was also published in the Geomedia journal (Geomedia n.3 2014 pp.28-30 - Special Issue for Intergeo 2014). The paper is open and freely readable at: *http://issuu.com/geomedia/docs/geomedia_3_2014_speciale_intergeo_i*

DHI published a new brochure for their updated Mediterranean Wind – Wave Model and they mentioned and acknowledged EMODnet for enabling them to find more and better data.

[22] www.iocunesco-oneplanetoneocean.fnob.org.
[23] http://acamimusan.es/gliderschool/

10. Updates on Progress Indicators

Using the indicator as a header list the metrics collated and the time interval. If there was no activity to report leave the section under the indicator header blank.

Indicator 1 - Volume of data made available through the portal

See Table 1 to Table 6

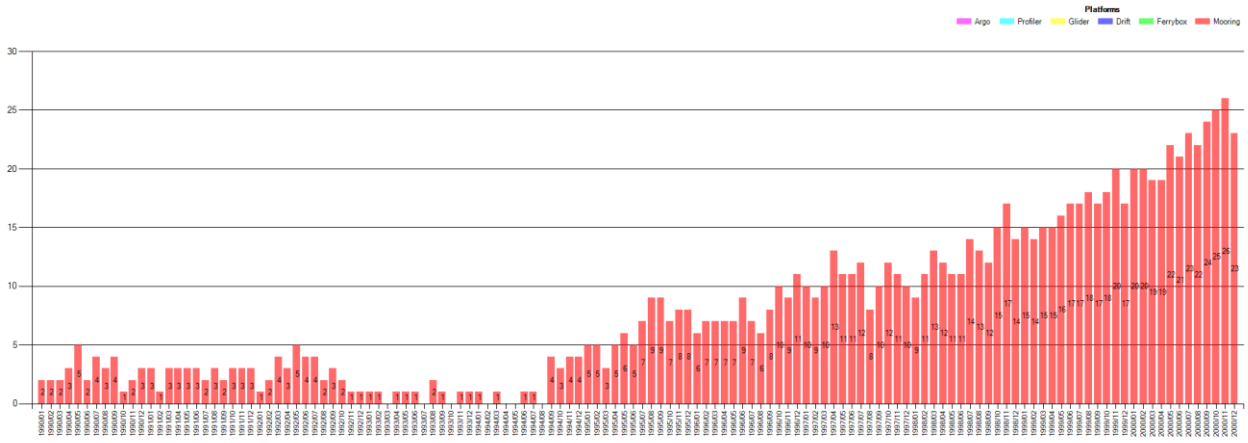


Figure 20,

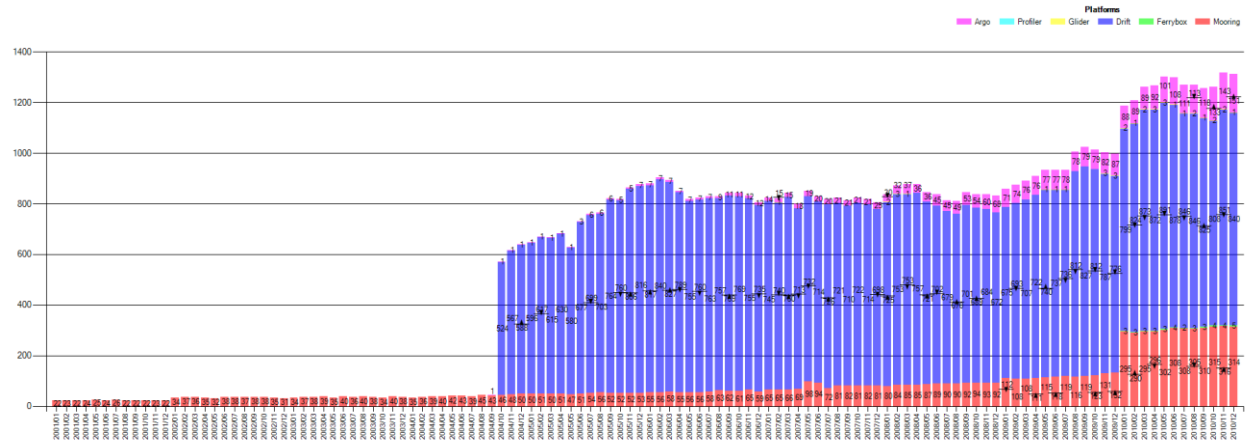


Figure **21** and

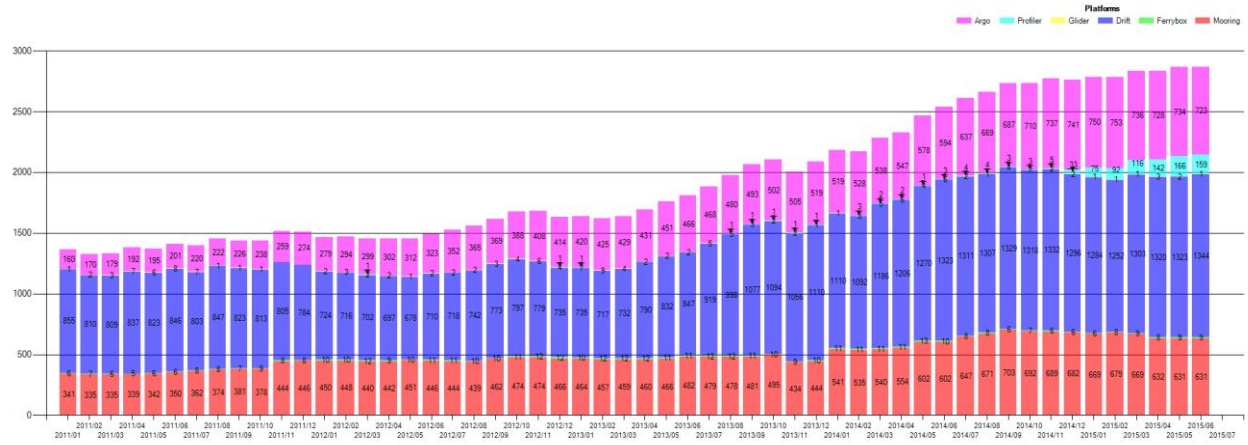


Figure **22** show the available data since 1990 (red=mooring/fixed station, cyan=profiling buoy, yellow=glider, blue=drifting buoy, green=ferrybox). The plots indicate how many platform are providing data for each month (e.g. in December 2000, there were data from 23 moorings)

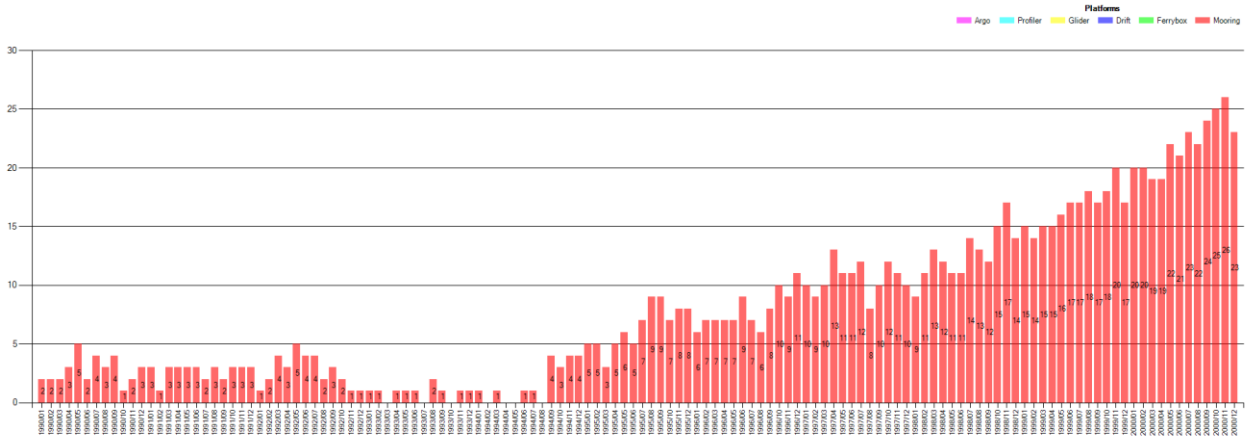


Figure 20. Available data (number of platforms providing data in that month) for the period 1990 - 2000

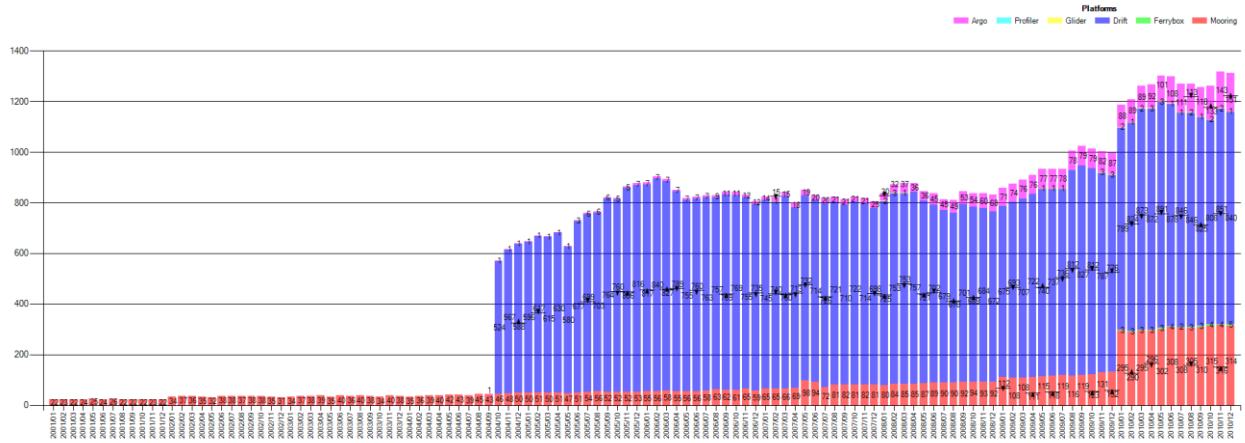


Figure 21. Available data (number of platforms providing data in that month) for the period 2001 - 2010

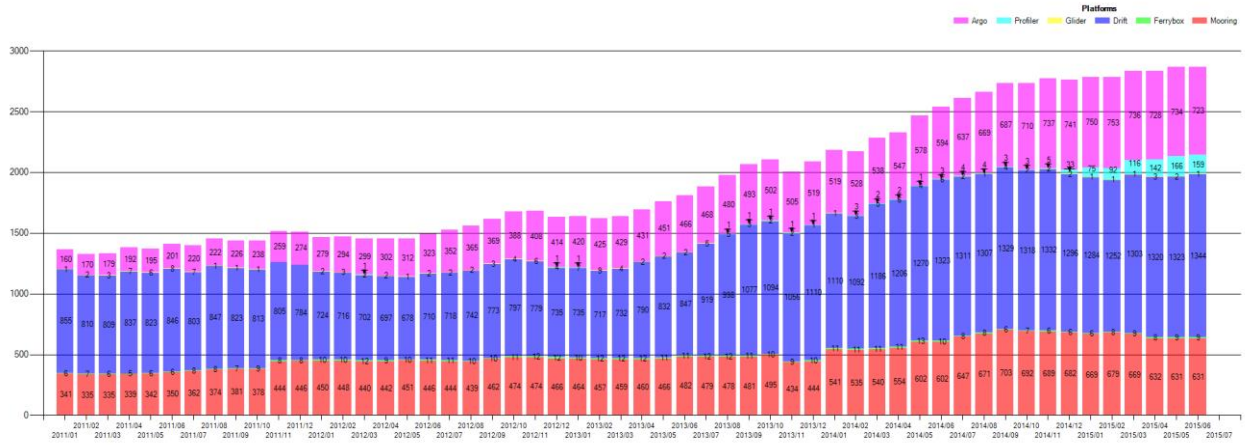


Figure 22. Available data (number of platforms providing data in that month) for the period 2011 - 2015

1. Summary table of all the available data (latest, recent, long term and validated historical) by Country, Organization, Platform type and Data availability

➔ see Annex I

2. Summary table of platforms linked to historically validated datasets.

The following table shows the figure for the historical datasets validated by the SeaDataNet - NODC network and made available/selectable via EMODnet Physics

Table 15 – SeaDataNet Platforms and CDIs

	Number of platforms	number of datasets (CDIs)
July 2014	795	11450
July 2015	878	11757

To download data, the user needs either a SeaDataNet or a MarineID login and password.

Indicator 2 - Organisations supplying each type.

See Indicator 1

Indicator 3 - Organisations that have been approached to supply data with no result, including type of data sought and reason why it has not been supplied.

Although, in general, data originators are supportive and keen to make their metadata and data available, sometimes there could be some potential issues:

- data originators/curators do not have enough manpower or technical expertise to make steps toward the infrastructure (e.g. formatting data, filling the metadata etc.)
- data originators/curators are not permitted to make their data accessible (data recorded under specific contracts, not UE originators/curators)
- “research” originators/curators tend to delay data accessibility until they complete their research activity and publish
- Data is new (new format, new infrastructure, no formal quality check procedures) and infrastructure is not ready to manage it

Indicator 4 - Volume of each type of data and of each data product downloaded from the portal

To map interaction with the EMODnet Physics data, the portal is tracking both the user IP address (which gives the country of the request) – internal requests (ETT IPs) are filtered out. To allow data download, the user ID is checked where applicable, i.e. in case of data older than 60 days, data that are provided in monthly files - each file provides the user with time series data for that month - or in one aggregated file (the long-term time series generally groups data for the last 20-30 years).

The long-term time series are not validated according by the NODCs network, and they consist of packages of data that from near real-time delivery are grouped into one file for a certain time period.

Table 16 shows (in alphabetical order) the requesting country and which data (how many platforms) were manually downloaded over the past year (from 01/08/2014 to 01/08/2015). As an example, from Belgium we recorded 13 platforms (or the same platform 13 times from different users) with latest data downloads.

Table 16 is showing that Portugal, Italy, Greece, Netherlands and France are the countries which used the system most.

Table 16 – data download

Country	Latest	Monthly	History	Any available	Total
Belgium	13	49	6	10	78
Brazil	0	1	0	0	1
Bulgaria	15	0	0	2	17
Canada	2	3	0	0	5
Denmark	9	30	23	4	66
Egypt	0	3	1	0	4
Estonia	4	1	5	0	10
France	33	875	22	21	951
Germany	35	99	76	3	213
Greece	10	137	1158	27	1332
India	1	0	0	0	1
Indonesia	0	0	0	456	456
Ireland	9	17	14	3	43
Italy	596	649	752	20	2017
Luxembourg	9	9	9	0	27
N.D.	3	5	14	0	22
Netherlands	10	401	740	4	1155
Norway	9	6	0	3	18
Peru	1	0	0	0	1
Poland	2	1	4	3	10

Portugal	3739	532	209	118	4598
Russia	10	3	4	7	24
Slovenia	1	0	0	0	1
South Africa	1	0	0	0	1
Spain	78	70	202	11	361
Sweden	20	6	1	4	31
Turkey	1	14	7	1	23
United Kingdom	80	79	187	19	365
United States	7	0	0	0	7
Total	**4698**	**2990**	**3434**	**716**	**11838**

Table 17 shows the country of the data (in alphabetical order) and how many platforms were requested over the past year (from 01/08/2014 to 01/08/2015). The most active countries are Belgium (Central Portal), Italy (DLTM, DHI, D'Appolonia), USA, Portugal (EMSA), Germany and France.

Table 17 – data downloads

Country	Web Service	Country	Web Service
Australia	3	Lebanon	1
Austria	4	Luxembourg	1
Belgium	71855	Morocco	1
Brazil	2	N.D.	11
Canada	80	Netherlands	350
China	310	New Zealand	1
Croatia	2	Pakistan	3
Czech Republic	4	Poland	9
Denmark	1	Portugal	1890
Egypt	1	Republic of Korea	9
France	742	Romania	1
Germany	937	Russia	263
Greece	3	Serbia	1
Hong Kong	1	Spain	10
Hungary	8	Sweden	2
India	9	Taiwan	1
Indonesia	1	Thailand	2
Iran	1	Turkey	2
Ireland	2	Ukraine	11
Italy	27424	United Kingdom	53
Japan	6	United States	3081
Latvia	1	Vietnam	2
	Total		**107102**

Table 18 presents the 30 most downloaded platforms (from 01/08/2014 to 01/08/2015)

Table 18 – most downloaded platforms

Platform	Manual download	Web service	Total
62068	22	6871	6893
Roscoff	2	6877	6879
RoscoffTG	2	6876	6878
FMLW	11	6846	6857
NieuwpoortTG	1	3266	3267
Westhinder	16	3248	3264
Millport	0	2844	2844
MillportTG	0	2805	2805
62091	34	2598	2632
ZeebruggeTG	2	1862	1864
Oostende	1	1617	1618
OostendeTG	1	1614	1615
Lysbris	0	1281	1281
62094	31	1217	1248
Milwaukee, WI	0	782	782
62142	6	709	715
62305	52	625	677
41702	0	673	673
K13a	34	350	384
K13a3	23	354	377
K13a2	23	350	373
K13Alpha	23	350	373
Europlatform	33	321	354
Europlatform2	26	321	347
Europlatform3	26	320	346
EuroplatformTG	24	321	345
13130	9	308	317
Oosterschelde4	12	225	237
WorkingtonTG	1	228	229

Table 19 shows the 30 most (manually) downloaded platforms (from 01/08/2014 to 01/08/2015)

Table 19 – most manually downloaded platforms

Platform	Manual download	Web service	Total
61280	72	26	98
68422	69	131	200
61277	67	26	93

ATHOS	66	11	77
61281	58	26	84
62107	56	85	141
61197	55	147	202
61198	53	27	80
62305	52	625	677
62304	49	95	144
SARON	49	11	60
61417	48	24	72
Finngrundet	46	11	57
buoy	46	11	57
DarsserS	45	11	56
62103	44	114	158
61430	44	24	68
61284	41	146	187
62443	39	175	214
61001	39	162	201
64046	39	20	59
62085	39	13	52
61002	37	144	181
62170	37	95	132
62163	37	51	88
61191	37	11	48
62001	36	28	64
61190	36	11	47
Monican02	36	11	47

Table 18 and Table 19 confirm the importance of machine-to-machine interoperability services to let users connect data to their work.

Indicator 5 - Organisations that have downloaded each data type

Table 20 shows the sea basins and the number of datasets downloaded from each country. The most active countries are Italy, Belgium and Portugal, and the most downloaded data are from “Atlantic, Bay of Biscay, Celtic Sea”, “North Sea” and Mediterranean Sea”.

The reported number only indicates how many data requests have been received and each data request could be for one specific dataset (e.g. a month) of one platform or for the full data availability (all platforms any available data).

Table 20 – available platforms and typology

Country	Artic, Barents, Greenland, Norwegian Sea	Atlantic, Bay of Biscay, Celtic Sea	Baltic Sea	Black Sea	Mediterranean Sea	North Sea	Global Oceans	All Seas and Oceans	Total
Austria	0	1	0	0	0	0	0	0	**1**
Belgium	2	48155	0	0	22	23093	274	288	**71834**
Brazil	1	0	0	0	0	0	0	0	**1**
Bulgaria	0	0	0	15	0	0	0	2	**17**
Canada	0	4	0	0	5	2	18	0	**29**
China	0	3	0	0	0	2	22	0	**27**
Croatia	0	0	1	0	0	1	1	0	**3**
Czech Republic	0	1	0	0	0	0	0	0	**1**
Denmark	2	7	13	0	1	34	6	4	**67**
Egypt	0	0	0	0	4	0	0	0	**4**
Estonia	0	0	7	0	0	0	0	4	**11**
France	28	665	0	0	124	20	374	21	**1232**
Germany	0	71	72	1	17	136	337	8	**642**
Greece	4	585	132	0	426	160	2	27	**1336**
Hungary	0	0	0	0	0	2	0	0	**2**
India	0	0	1	0	0	0	0	0	**1**
Indonesia	0	0	0	0	0	0	0	456	**456**
Ireland	0	45	0	0	0	0	0	4	**49**
Italy	1064	7396	1368	184	13234	3243	2323	138	**28950**
Luxembourg	0	3	0	0	0	6	0	0	**9**
N.D.	0	5	0	4	15	0	1	0	**25**
Netherlands	21	357	6	2	10	904	3	18	**1321**
Norway	6	2	0	0	0	7	0	3	**18**
Peru	0	1	0	0	0	0	0	0	**1**
Poland	0	0	6	0	0	0	1	3	**10**
Portugal	34	2872	538	0	516	2297	9	132	**6398**
Republic of Korea	0	1	0	0	0	0	0	0	**1**
Romania	0	0	0	0	1	0	0	0	**1**
Russia	1	19	11	2	1	6	55	7	**102**
Slovenia	0	0	0	0	3	0	0	0	**3**

South Africa	0	1	0	0	0	0	0	0	**1**
Spain	4	246	0	0	69	0	32	11	**362**
Sweden	1	1	12	0	2	8	0	7	**31**
Thailand	0	1	0	0	0	0	0	0	**1**
Turkey	0	1	0	0	22	0	0	1	**24**
United Kingdom	0	79	3	0	65	115	14	27	**303**
United States	0	634	1	0	37	23	292	0	**987**
total	**1168**	**61156**	**2171**	**208**	**14574**	**30059**	**3764**	**1161**	**114261**

Indicator 6 - Using user statistics to determine the main pages utilised and to identify preferred user navigations routes

Provide include information about how long the user spent on the website (residence time) and on which page the user quits their visit, or how they navigated the site.

1. Monthly portal views as reported by Google Analytics

Table 21 – monthly views landing page

Portal	Visits	visit duration (average)	Page views	New visitors	New visitors %
July 2014	188	01:40	347	110	58%
August 2014	190	01:55	492	105	55%
September 2014	280	03:02	705	160	67%
October 2014	280	02:54	693	133	65%
November 2014	462	02:44	1237	252	55%
December 2014	315	02:16	671	176	56%
January 2015	294	02:47	664	159	54%
February 2015	293	02:19	536	168	57%
March 2015	263	02:07	479	146	55%
April 2015	230	01:42	416	147	64%
May 2015	249	04:08	1103	147	51%
June 2015 (*)	281	02.38	615	156	55%
July 2015	249	02:47	558	122	67%

(*) data updated with data for last week of June

Table 22 – monthly views map page

Map Page	Visits	visit duration (average)	Page views	New visitors	new visitors %
July 2014	432	08:31	2724	128	30%
August 2014	334	07:20	2514	102	33%
September 2014	554	06:36	3869	158	31%
October 2014	442	07:42	4533	136	31%
November 2014	590	07:08	5726	209	35%
December 2014	669	05:57	5118	316	47%
January 2015	684	07:29	6458	306	45%
February 2015	559	05:32	5160	232	41%
March 2015	893	05:38	7486	524	59%
April 2015	713	05:44	6583	444	62%
May 2015	1112	03.51	6338	796	71%
June 2015 (*)	1261	03:15	6706	921	72%
July 2015	1075	05:50	6799	729	67%

(*) data updated with data for last week of June

2. Demography and Location of visitors

Table 23. Landing page visitors (01/08/2014 – 01/08/2015)

	Language	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Avg. Session Duration
		3520	54.80%	1,929	66.39%	2.41	00:02:38
1.	en-us	953(27.07%)	62.12%	592(30.69%)	68.10%	1.88	00:01:58
2.	it	514(14.60%)	34.63%	178(9.23%)	55.64%	5.24	00:05:55
3.	it-it	454(12.90%)	38.77%	176(9.12%)	65.42%	1.89	00:02:16
4.	en-gb	189(5.37%)	57.14%	108(5.60%)	67.20%	2.08	00:01:38
5.	pt-br	177(5.03%)	100.00%	177(9.18%)	100.00%	1.00	00:00:00
6.	sv	160(4.55%)	6.25%	10(0.52%)	51.25%	2.26	00:03:22
7.	es	151(4.29%)	49.67%	75(3.89%)	66.89%	2.01	00:02:12
8.	es-es	145(4.12%)	52.41%	76(3.94%)	65.52%	1.97	00:02:33
9.	fr	133(3.78%)	69.17%	92(4.77%)	64.66%	2.24	00:02:25
10.	de	82(2.33%)	71.95%	59(3.06%)	62.20%	2.04	00:02:04
11.	pt-pt	53(1.51%)	77.36%	41(2.13%)	77.36%	1.87	00:01:00
12.	nl	43(1.22%)	46.51%	20(1.04%)	53.49%	2.26	00:03:23
13.	sv-se	42(1.19%)	64.29%	27(1.40%)	71.43%	1.33	00:01:14
14.	pl	36(1.02%)	55.56%	20(1.04%)	52.78%	1.92	00:03:06
15.	de-de	35(0.99%)	74.29%	26(1.35%)	71.43%	5.11	00:03:34
16.	ru	28(0.80%)	67.86%	19(0.98%)	57.14%	2.11	00:04:05
17.	el-gr	27(0.77%)	55.56%	15(0.78%)	74.07%	1.63	00:02:23
18.	nl-be	23(0.65%)	8.70%	2(0.10%)	52.17%	3.78	00:09:22
19.	fr-fr	22(0.62%)	90.91%	20(1.04%)	77.27%	2.18	00:02:21
20.	nb-no	16(0.45%)	75.00%	12(0.62%)	50.00%	2.94	00:03:08
21.	el	12(0.34%)	41.67%	5(0.26%)	50.00%	1.50	00:01:10
22.	et	12(0.34%)	25.00%	3(0.16%)	83.33%	1.92	00:01:52
23.	nl-nl	12(0.34%)	91.67%	11(0.57%)	66.67%	2.00	00:02:36
24.	da	11(0.31%)	72.73%	8(0.41%)	72.73%	1.55	00:01:08
25.	gl-gl	11(0.31%)	63.64%	7(0.36%)	45.45%	2.45	00:01:37

Table 24. Map page visitors (01/08/2014 – 01/08/2015)

	Language	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Avg. Session Duration
		9092	54.55%	4,96	41.26%	7.61	00:05:38
1.	en-us	1,753(19.28%)	52.37%	918(18.51%)	27.50%	10.91	00:06:57
2.	it	1,276(14.03%)	16.22%	207(4.17%)	23.28%	10.33	00:10:44
3.	it-it	1,159(12.75%)	18.38%	213(4.29%)	30.03%	7.92	00:08:34
4.	en-gb	446(4.91%)	40.36%	180(3.63%)	32.06%	9.23	00:05:33
5.	fr	347(3.82%)	65.99%	229(4.62%)	19.60%	10.56	00:05:40
6.	es	242(2.66%)	53.31%	129(2.60%)	23.14%	7.88	00:04:20
7.	de	218(2.40%)	51.83%	113(2.28%)	23.39%	11.01	00:07:11
8.	es-es	177(1.95%)	63.84%	113(2.28%)	32.77%	8.81	00:04:34
9.	sv	165(1.81%)	9.09%	15(0.30%)	24.85%	10.07	00:07:39
10.	ru	98(1.08%)	32.65%	32(0.65%)	54.08%	6.27	00:04:04
11.	nl	93(1.02%)	53.76%	50(1.01%)	23.66%	6.82	00:03:49
12.	tr	91(1.00%)	93.41%	85(1.71%)	26.37%	4.69	00:01:46
13.	el-gr	73(0.80%)	72.60%	53(1.07%)	20.55%	8.05	00:04:02
14.	ru-ru	71(0.78%)	16.90%	12(0.24%)	70.42%	1.90	00:05:01
15.	el	64(0.70%)	92.19%	59(1.19%)	17.19%	6.69	00:02:28
16.	tr-tr	61(0.67%)	85.25%	52(1.05%)	44.26%	4.21	00:01:30
17.	fr-fr	60(0.66%)	60.00%	36(0.73%)	25.00%	15.03	00:03:09
18.	de-de	56(0.62%)	62.50%	35(0.71%)	16.07%	11.23	00:06:14
19.	sv-se	52(0.57%)	61.54%	32(0.65%)	26.92%	9.02	00:03:00
20.	pt-pt	47(0.52%)	65.96%	31(0.62%)	25.53%	12.26	00:08:13
21.	ca	44(0.48%)	63.64%	28(0.56%)	29.55%	13.52	00:08:03
22.	en	43(0.47%)	88.37%	38(0.77%)	74.42%	3.88	00:01:13
23.	pt	32(0.35%)	6.25%	2(0.04%)	12.50%	9.78	00:10:18
24.	nl-be	31(0.34%)	22.58%	7(0.14%)	32.26%	9.52	00:04:53

Table 23 and Table 24 give details about user interaction with the EMODnet Physics portal: users tend to spend about 3 minutes (2’38” in average) on the landing portal that is the time to read about basic info and background (2 pages). They stay more on the map portal, on which they spend about 6 minutes (5’38” in average) to check data for more than one platform (7 pages/platforms).

Indicator 7 - List of what the downloaded data has been used for (divided into categories e.g. Government planning, pollution assessment and (commercial) environmental assessment, etc.)

Note from the Secretariat: Thematic lots, which are able to report on this indicator, are invited to provide as much information as possible and indicate how they obtain this information. For those portals who currently have no means of obtaining this information, the Steering Committee Ad Hoc Technical Working Group will consider the matter and provide recommendations to the portals on possible modalities to report on this indicator.

As described in the last report, most of the users are using data for model assimilation and forecast, validation and re-analysis (e.g. MeteoFrance, Deltares, DLTM, DHI (commercial), and RINA – Dappolonia (commercial)) or local analysis.

We recorded an increasing number of contributors that are using EMODnet Physics to check if their data/system are working and feeding the infrastructure (SMHI, IFREMER, BSH, HCMR, CNR, etc.).

EMSA is using EMODnet Physics services (WFS and Web Services) for operational purpose (e.g. S&R - Search and Rescue activities).

Indicator 8 - List of web-services made available and overview of user organisations connected through these web-services

Note from the Secretariat: For this indicator, thematic lots are kindly invited to:

- *Provide an overview of all the web-services being made available via the thematic portal as well as to list those who are currenlty under development (please indicate when they are expected to become available);*
- *If you have clearly identifyable clients who are (systematically) making use of the web-services provided by the portal, please list hem here; and if possible, provide information about the main uses of data/products by clients connected via web-services*

Web Services (WS)

EMODnet Physics Web Services are accessible at the following links:

http://www.emodnet-physics.eu/map/Service/WSEmodnet2.aspx
http://www.emodnet-physics.eu/map/Service/WSEmodnet2.asmx

ASPX is the entry point for the available web services and it is based on XML based messages, it is more descriptive and provides also a txt output of the methods

ASMX is the entry point for the available web services and provides a guide which describes the available methods according the WSDL (Web Service Description Language) international standard, it is specifically designed for machine-to-machine interoperability.

Table 25 – WS methods

Method	method description	provided parameters	description
GetAllDataOwner ()	it gives the list and details of the data owners/contributors	DataOwnerID	EMODnet Physics internal DataOwner ID
		Code	Acronym
		Descr	DataOwner full name description
		website	website
		country	Country
		EDMO	EDMO code
GetAllLatestData60Days (PlatformID)	it gives the latest data (60 days) for the specified platform	LatestPlatformID	EMODnet Physics internal Platform ID
		PlatformID	EMODnet Physics external Platform ID
		Date	yyyy/mm/dd hh:mm:ss
		Depth	measurement depth
		ParamValue	ParameterCode 1 and value; ParameterCode 2 and value; … ; ParameterCode N and value;
GetAllLatestDataCode (PlatformID, ParamCode)	it gives the latest data (60 days) for the specified platform and parameter	LatestPlatformID	EMODnet Physics internal Platform ID
		PlatformID	EMODnet Physics external Platform ID
		Date	yyyy/mm/dd hh:mm:ss
		Depth	measurement depth

		ParamValue	ParameterCode and value
GetAllLatestDataFromTo(PlatformID, StartDate, EndDate)	it gives the latest data (up to latest 60 days) for the specified platform within the specified time window	LatestPlatformID	EMODnet Physics internal Platform ID
		PlatformID	EMODnet Physics external Platform ID
		Date	yyyy/mm/dd hh:mm:ss
		Depth	measurement depth
		ParamValue	ParameterCode 1 and value; ParameterCode 2 and value; … ; ParameterCode N and value;
GetAllLatestDataFromToCode(PlatformID, ParamCode, StartDate, EndDate)	it gives the latest data (up to latest 60 days) for the specified platform and parameter within the specified time window	LatestPlatformID	EMODnet Physics internal Platform ID
		PlatformID	EMODnet Physics external Platform ID
		Date	yyyy/mm/dd hh:mm:ss
		Depth	measurement depth
		ParamValue	ParameterCode and value
GetAllLatestDataParameterGroup (PlatformID, ParameterGroupID)	it gives the latest data for the specified platform and parameter	LatestPlatformID	EMODnet Physics internal Platform ID
		PlatformID	EMODnet Physics external Platform ID
		Date	yyyy/mm/dd hh:mm:ss
		Depth	measurement depth
		ParamValue	ParameterCode and value
GetAllParameters ()	it gives the prameters description and codes	ParameterID	EMODnet Physics internal parameter ID
		ParameterGroup	parameter description
		Code	international code acronym
		CFStandardName	standard parameter full name
		Descr	parameter description
		MeasurementUnit	measuremetn unit
GetAllParametersGroup ()	it gives the parameters groups	ParameterGroupID	EMODnet Physics internal parameter group ID
		Descr	parameter group description
GetAllPlatforms ()	it gives the platforms list and details	PlatformID	EMODnet Physics external Platform ID
		PlatformType	Type of the platform
		DataOwnerCode	data owner acronym
		HistoricalPlatformCDI	is the platform connected to any SeaDataNet CDI?
		PlatformCode	platform name
		WMOPlatformCode	WMO code (if available)
		MyOceanNumber	internal code to link to crosslink the platform and MYO products
		Parameters	recorded parameters (international code acronym)
		Latitude	Latitude
		Longitude	Longitude
		EDMO	EDMO code
		LastDataMeasured	date of the last measurement
		YearDataMeasured	list of the years when the platform worked
		Provider	data owner acronym
		InstitutionReference	data owner website
		Contact	principal investigator - data curator emails

		DataAssemblyCenter	data assembly full name
GetPlatformId (PlatformID)	it givest the platform details for the specified platform	PlatformID	EMODnet Physics external Platform ID
		PlatformType	Type of the platform
		DataOwnerCode	data owner acronym
		HistoricalPlatformCDI	is the platform connected to any SeaDataNet CDI?
		PlatformCode	platform name
		WMOPlatformCode	WMO code (if available)
		MyOceanNumber	internal code to link to crosslink the platform and MYO products
		Parameters	recorded parameters (international code acronym)
		Latitude	Latitude
		Longitude	Longitude
		EDMO	EDMO code
		LastDataMeasured	date of the last measurement
		YearDataMeasured	list of the years when the platform worked
GetAllPlatformsDataOwner (DataOwnerCode)	it gives the list of the platforms and details for the specified dataowner/contributor	PlatformID	EMODnet Physics external Platform ID
		PlatformType	Type of the platform
		DataOwnerCode	data owner acronym
		HistoricalPlatformCDI	is the platform connected to any SeaDataNet CDI?
		PlatformCode	platform name
		Parameters	recorded parameters (international code acronym)
		Latitude	Latitude
		Longitude	Longitude
		EDMO	EDMO code
		LastDataMeasured	date of the last measurement
		YearDataMeasured	list of the years when the platform worked
		Provider	data owner acronym
		InstitutionReference	data owner website
		Contact	principal investigator - data curator emails
		DataAssemblyCenter	data assembly full name
GetAllPlatformsParameterGroup (ParameterGroupID)	it gives the list of the platforms and details for the specified parameter group	PlatformID	EMODnet Physics external Platform ID
		PlatformType	Type of the platform
		DataOwnerCode	data owner acronym
		HistoricalPlatformCDI	is the platform connected to any SeaDataNet CDI?
		PlatformCode	platform name
		WMOPlatformCode	WMO code (if available)
		MyOceanNumber	internal code to link to crosslink the platform and MYO products
		Parameters	recorded parameters (international code acronym)
		Latitude	Latitude
		Longitude	Longitude
		EDMO	EDMO code

		LastDataMeasured	date of the last measurement
		YearDataMeasured	list of the years when the platform worked
		Provider	data owner acronym
		InstitutionReference	data owner website
		Contact	principal investigator - data curator emails
		DataAssemblyCenter	data assembly full name
GetAllRoos	it gives the ROOSs list and codes	RoosID	EMODnet Physics internal ROOS ID
		Code	ROOS acronym
		Descr	ROOS full name
GetAllPlatformsRoos (RoosID)	it gives the list of the platforms in the specified ROOS	PlatformID	EMODnet Physics external Platform ID
		PlatformType	Type of the platform
		DataOwnerCode	data owner acronym
		HistoricalPlatformCDI	is the platform connected to any SeaDataNet CDI?
		PlatformCode	platform name
		WMOPlatformCode	WMO code (if available)
		Parameters	recorded parameters (international code acronym)
		Latitude	Latitude
		Longitude	Longitude
		EDMO	EDMO code
		LastDataMeasured	date of the last measurement
		YearDataMeasured	list of the years when the platform worked
		Provider	data owner acronym
		InstitutionReference	data owner website
		Contact	principal investigator - data curator emails
		DataAssemblyCenter	data assembly full name
GetPlatformMonthlyCDIAvailability (PlatformID)	it gives the list of avaialble monthly data files and the list of available CDIs for the specified platform	PlatformID	EMODnet Physics external Platform ID
		PlatformType	Type of the platform
		PlatformCode	platform name
		EDMO	EDMO code
		Parameters	recorded parameters (international code acronym)
		Latitude	Latitude
		Longitude	Longitude
		LastDataMeasured	date of the last measurement
		Provider	data owner acronym
		CDISeriesID	list of available CDIs
		MonthlyAvailability	list of year-month when the platform worked
GetPlatformMinMaxAVG (PlatformID)	it gives the parameters monthly average, monthly max and min for the specified platform	PlatformID	EMODnet Physics external Platform ID
		Year	yyyy
		Month	the month (1 -12)
		Parameter	recorded parameters (international code acronym)

		Min	the min recorded value for that month
		Max	the max recorded value for that month
		AVG	the avg recorded value for that month
		Depth	depth of the measurement
		QC	quality flag of data (0 no QC, 1 good, >3 not good/problems) - only QC = 1 are used
		RoosID	EMODnet Physics internal ROOS ID
		TotalRecordAVG	internal code
		TotalRecord	internal code

Web Map Service (WMS) and Web Feature Services (WFS)

The EMODnet Physics Web Map Services and Web Feature Services are accessible at following link:

(WMS) http://www.emodnet-physics.eu/map/Service/GeoServerDefaultWMS.aspx
(WFS) http://www.emodnet-physics.eu/map/Service/GeoServerDefaultWFS.aspx

Both are developed by using GeoServer (http://docs.geoserver.org). The EMODnet Physics WMS provide a standard interface for requesting a geospatial map image (WMS 1.1.1).

The WMS page provides a user-friendly interface (

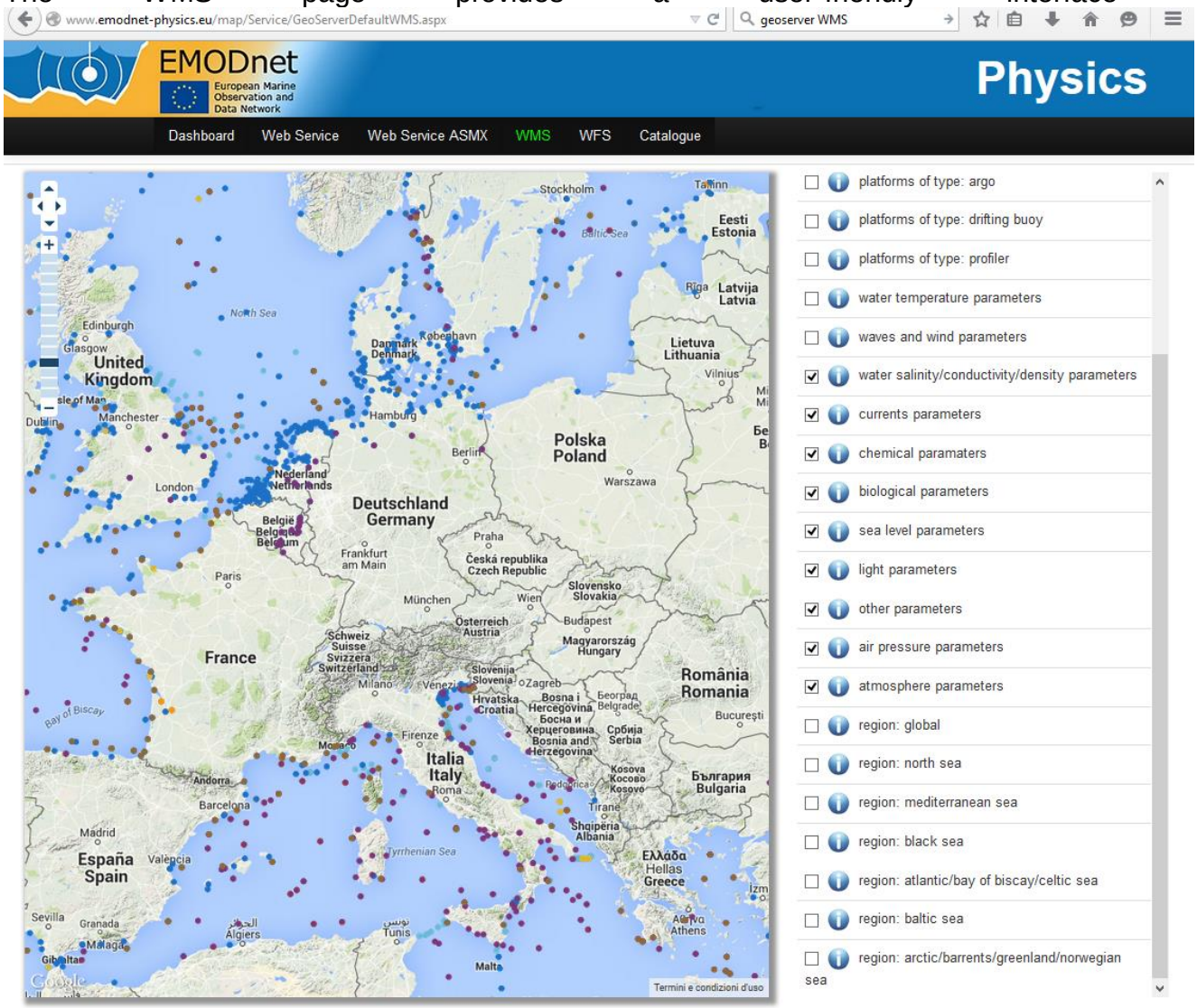


Figure **23**) to see and play with available layers and the details about how to link/import into their page/service.

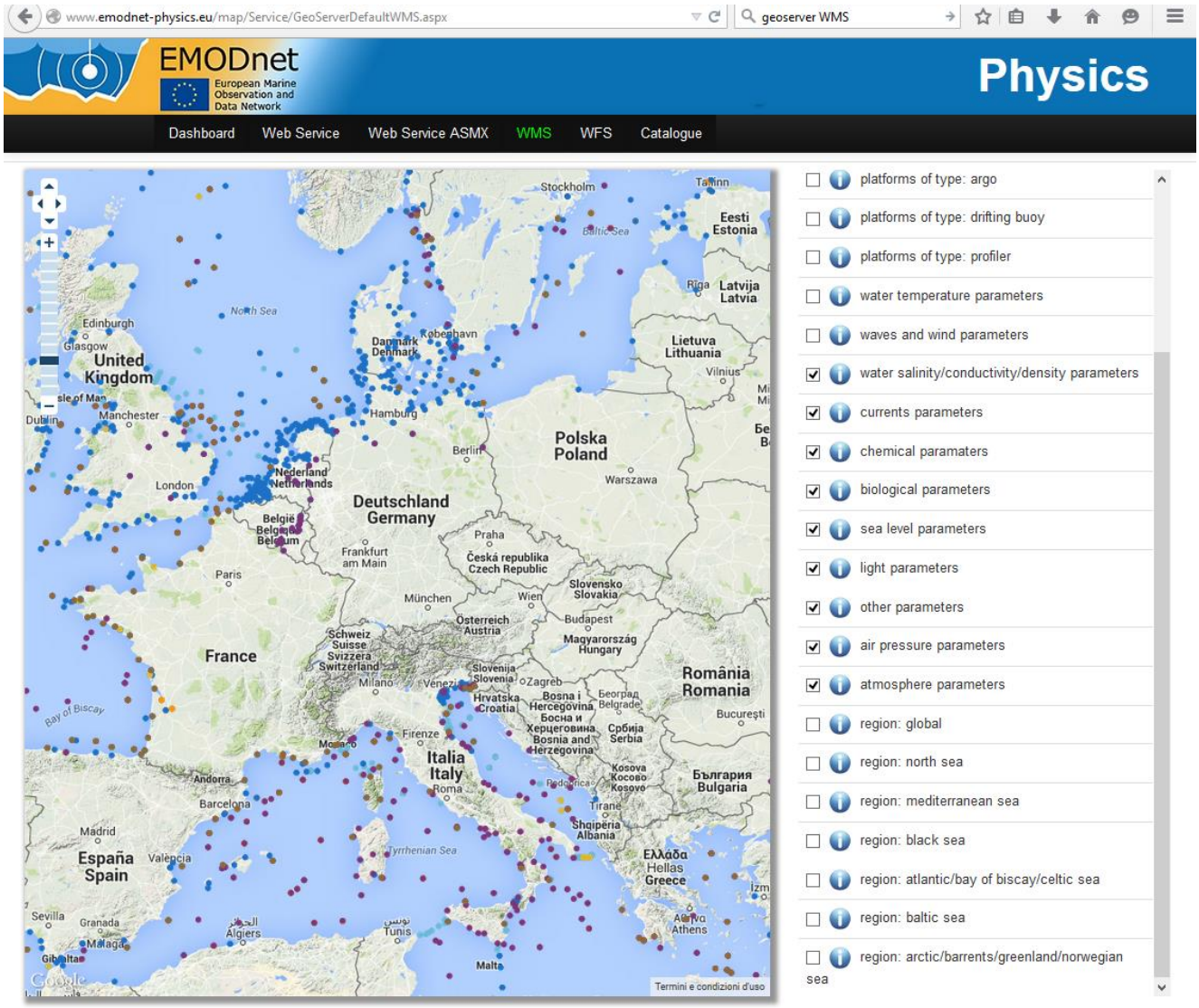


Figure 23. WMS page

Requests are made using a standard web URL. In addition to image data, WMS also supplies metadata about the available layers, server capabilities, and contact/publisher information:

http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetCapabilities

The WFS is a standard created by the Open Geospatial Consortium (OGC) for creating, modifying and exchanging vector format geographic information on the Internet using HTTP. A WFS encodes and transfers information in Geography Markup Language (GML), a subset of XML. The WFS can supply many details and links.

http://www.emodnet-physics.eu/map/Service/provawfs/GeoServerProxy/?request=GetFeature&service=wfs&version=1.0.0&typeName=platforms_MO&bbox=-84.859375,13.1640625,76.859375,96.8359375


```
- <wfs:FeatureCollection xsi:schemaLocation="http://151.1.25.219:8181/emodnet http://151.1.25.219:8181/geoserver/emodnet/wfs?service=WFS&version=1.0.0&request=DescribeFeatureType&
  typeName=emodnet%3Aplatforms_MO http://www.opengis.net/wfs http://151.1.25.219:8181/geoserver/schemas/wfs/1.0.0/WFS-basic.xsd">
  - <gml:boundedBy>
      <gml:null>unknown</gml:null>
    </gml:boundedBy>
  - <gml:featureMember>
    - <emodnet:platforms_MO fid="platforms_MO.925">
      - <emodnet:position>
        - <gml:Point srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
            <gml:coordinates decimal="." cs="," ts=" ">12.28083,41.7135</gml:coordinates>
          </gml:Point>
        </emodnet:position>
        <emodnet:platform_code>DRAGO-OSTIA DRA10</emodnet:platform_code>
        <emodnet:sea_region>Tirreno Sea</emodnet:sea_region>
      - <emodnet:platform_info>
          http://www.emodnet-physics.eu/Map/FeedPlatformInfo.aspx?id=171
        </emodnet:platform_info>
        <emodnet:platform_id>171</emodnet:platform_id>
        <emodnet:platform_type_description>fixed buoys or mooring time series</emodnet:platform_type_description>
        <emodnet:parameters_codes>AYMD;WVST</emodnet:parameters_codes>
        <emodnet:parameters_descriptions>, </emodnet:parameters_descriptions>
        <emodnet:data_type>HistoricalCDI</emodnet:data_type>
        <emodnet:country>Italy</emodnet:country>
      - <emodnet:data_owner>
          Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - Division of Oceanography - Italy
        </emodnet:data_owner>
      - <emodnet:logo>
          http://www.emodnet-physics.eu/map/includes/images/dataProviders/loghi/OGS.png
        </emodnet:logo>
        <emodnet:platform_type_code>MO</emodnet:platform_type_code>
      </emodnet:platforms_MO>
    </gml:featureMember>
```


Figure 24. Example of the XML in response to a WFS request

The WFS page provides a user-friendly interface (

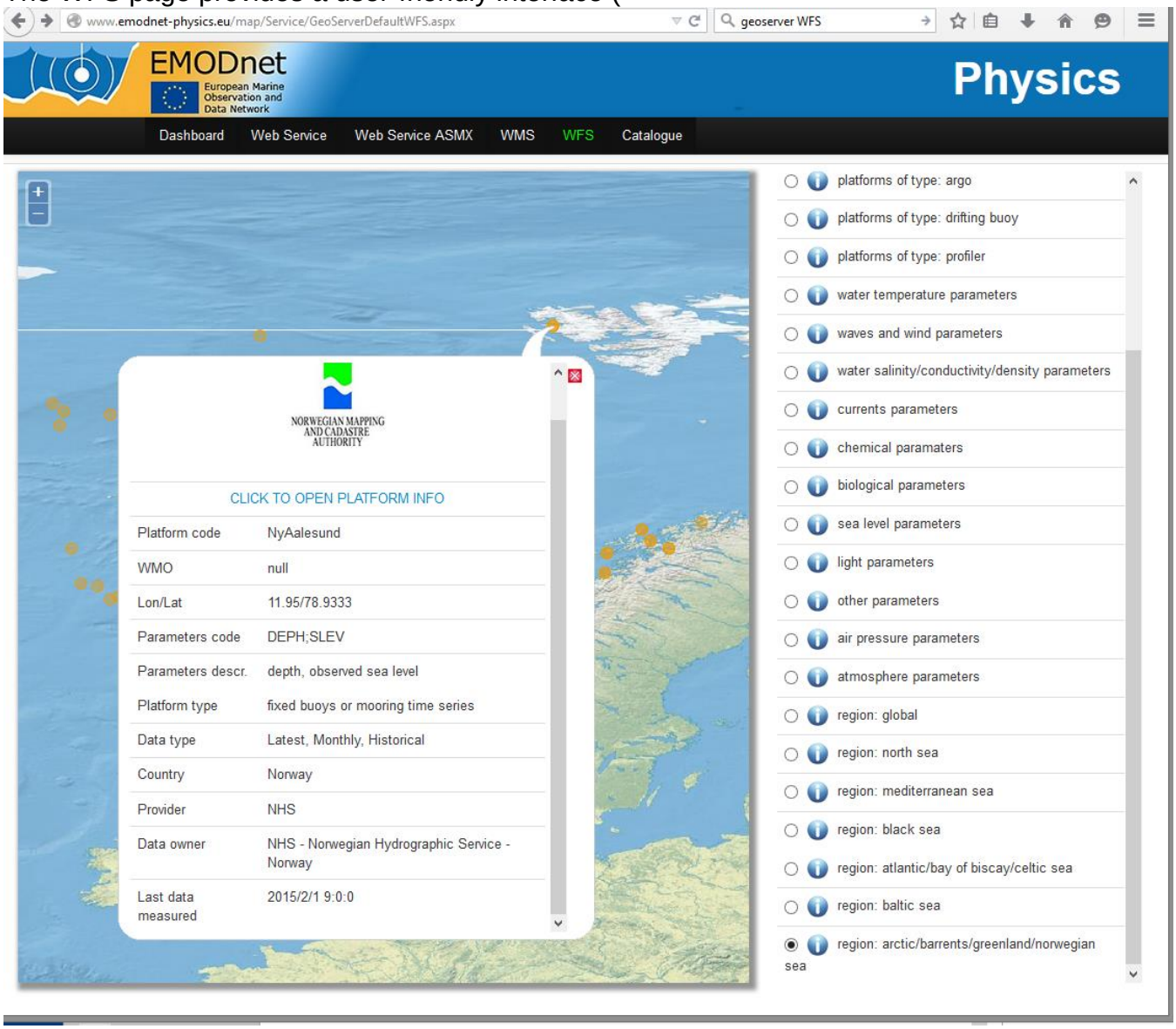


Figure **25**) to see and play with available layers and the details about how to link/import into their page/service

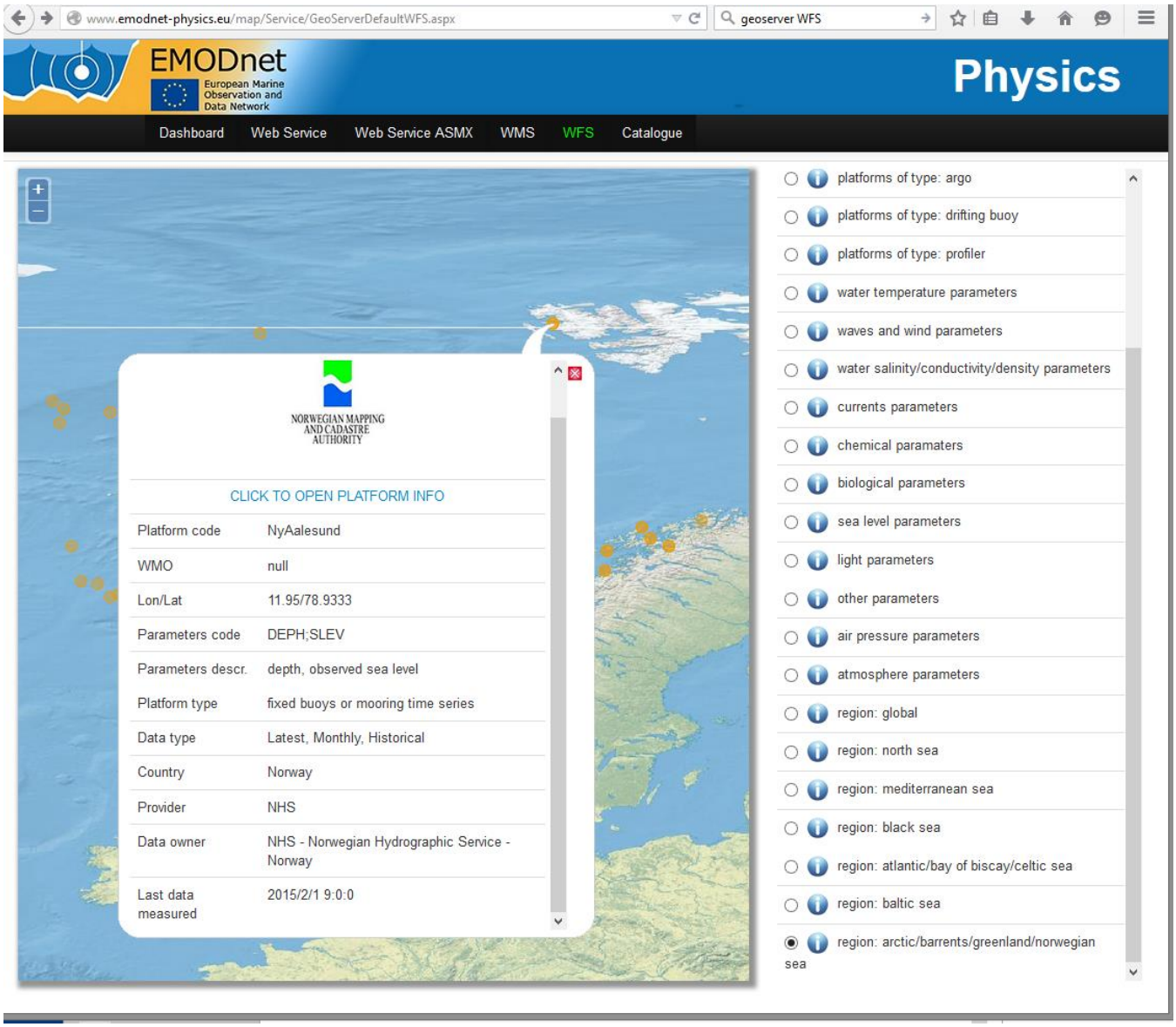


Figure 25. WFS page

The available map images are:

Table 26 – available WMS and WFS layers

layer	WMS Linking information	WFS

all active platforms	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms**
		
		},
		format: new OpenLayers.Format.GML({

	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms	featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

platforms of type: mooring	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_MO**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_MO
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_MO**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

platforms of type: ferrybox	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_FB**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_FB
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_FB**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

platforms of type: HF radar	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_HF**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_HF**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",

	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_HF	geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

platforms of type: glider	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_GL**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_GL
		ar wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_GL**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

platforms of type: argo	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_AR**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_AR
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_AR**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

platforms of type: drifting buoy	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_DB**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_DB**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",

	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_DB	geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

platforms of type: profiler	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_PF**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_PF
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_PF**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

water temperature parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_water_temperature**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_water_temperature
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_water_temperature**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

waves and wind parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_waves_wind**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_waves_wind**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})

	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_waves_wind	}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		})

water salinity/conductivity/density parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_water_sal_con_den**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_water_sal_con_den
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_water_sal_con_den**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

currents parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_currents**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_currents
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_currents**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

chemical paramaters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_chemical**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-
		ar wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_chemical**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {

	2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_chemical	strategies: [new OpenLayers.Strategy.BBOX()], visibility: true, protocol: new OpenLayers.Protocol.HTTP(wfs_options), });

biological parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_biological**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_biological
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_biological**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

sea level parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_sea_level**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_sea_level
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_sea_level**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

light parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_light**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,90
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_light**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],

	48672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_light	visibility: true, protocol: new OpenLayers.Protocol.HTTP(wfs_options), });

other parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_others**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_others
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_others**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

air pressure parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_air_pressure**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_air_pressure
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_air_pressure**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

atmosphere parameters	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_atmosphere**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,90
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_atmosphere**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,

	48672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_atmosphere	protocol: new OpenLayers.Protocol.HTTP(wfs_options), });
region: global	var customLayer = new OpenLayers.Layer.WMS("Name custom layer", "http://151.1.25.219:8181/geoserver/emodnet/ows", { "format": "image/png", "transparent": true, "layers": ["**platforms_GLOBAL**"] }, { isBaseLayer: false, opacity: 1 }); http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_GLOBAL	var wfs_options = { url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?", params: { request: "GetFeature", service: "wfs", version: "1.0.0", typeName: **platforms_GLOBAL** }, format: new OpenLayers.Format.GML({ featureNS: "http://ng.org/sf", geometryName: "wkb_geometry" }) } var wfs = new OpenLayers.Layer.Vector("WFS", { strategies: [new OpenLayers.Strategy.BBOX()], visibility: true, protocol: new OpenLayers.Protocol.HTTP(wfs_options), });
region: north sea	var customLayer = new OpenLayers.Layer.WMS("Name custom layer", "http://151.1.25.219:8181/geoserver/emodnet/ows", { "format": "image/png", "transparent": true, "layers": ["**platforms_NORTH_SEA**"] }, { isBaseLayer: false, opacity: 1 }); http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_NORTH_SEA	var wfs_options = { url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?", params: { request: "GetFeature", service: "wfs", version: "1.0.0", typeName: **platforms_NORTH_SEA** }, format: new OpenLayers.Format.GML({ featureNS: "http://ng.org/sf", geometryName: "wkb_geometry" }) } var wfs = new OpenLayers.Layer.Vector("WFS", { strategies: [new OpenLayers.Strategy.BBOX()], visibility: true, protocol: new OpenLayers.Protocol.HTTP(wfs_options), });
region: mediterranean sea	var customLayer = new OpenLayers.Layer.WMS("Name custom layer", "http://151.1.25.219:8181/geoserver/emodnet/ows", { "format": "image/png", "transparent": true, "layers": ["**platforms_MEDITERRANEAN_SEA**"] }, { isBaseLayer: false, opacity: 1 }); http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_MEDITERRANEAN_SEA	var wfs_options = { url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?", params: { request: "GetFeature", service: "wfs", version: "1.0.0", typeName: **platforms_MEDITERRANEAN_SEA** }, format: new OpenLayers.Format.GML({ featureNS: "http://ng.org/sf", geometryName: "wkb_geometry" }) } var wfs = new OpenLayers.Layer.Vector("WFS", { strategies: [new OpenLayers.Strategy.BBOX()], visibility: true, protocol: new OpenLayers.Protocol.HTTP(wfs_options),

		})

region: black sea	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_BLACK_SEA**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_BLACK_SEA
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_BLACK_SEA**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

region: atlantic/bay of biscay/celtic sea	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_ATLANTIC**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_ATLANTIC
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_ATLANTIC**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

region: baltic sea	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_BALTIC**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_BALTIC
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_BALTIC**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

region: arctic/barrents/greenland/norwegian sea	var customLayer = new OpenLayers.Layer.WMS(
	"Name custom layer",
	"http://151.1.25.219:8181/geoserver/emodnet/ows",
	{
	"format": "image/png",
	"transparent": true,
	"layers": ["**platforms_ARCTIC**"]
	},
	{ isBaseLayer: false, opacity: 1 }
	);
	
	http://151.1.25.219:8181/geoserver/emodnet/ows?service=WMS&version=1.1.1&request=GetMap&format=image/png&transparent=true&SRS=EPSG%3A900913&BBOX=-2101155.3884615,5291639.887125,1655877.4252884,9048672.700875&WIDTH=768&HEIGHT=768&LAYERS=platforms_ARCTIC
		var wfs_options = {
		url: "http://151.1.25.219:8181/geoserver/emodnet/wfs?",
		params: {
		request: "GetFeature",
		service: "wfs",
		version: "1.0.0",
		typeName: **platforms_ARCTIC**
		
		},
		format: new OpenLayers.Format.GML({
		featureNS: "http://ng.org/sf",
		geometryName: "wkb_geometry"
		})
		}
		
		var wfs = new OpenLayers.Layer.Vector("WFS", {
		strategies: [new OpenLayers.Strategy.BBOX()],
		visibility: true,
		protocol: new OpenLayers.Protocol.HTTP(wfs_options),
		});

THREDDS (HFR data only)

THREDDS (Thematic Realtime Environmental Distributed) platform was chosen because the THREDDS Data Server (TDS, http://www.unidata.ucar.edu/software/thredds/current/tds/) is a connectivity tool linking providers of scientific dataset to potential end-users.

The THREDDS server allows the end-user to choose which service will be employed to download data. This could be a direct download or carrying out a previous subsetting before downloading the data.

The THREDDS Data Server (TDS) communicates with clients by sending them a THREDDS Catalogue that describes what datasets the server has, and how they can be accessed. THREDDS Catalogues are logical directories of on-line data resources, encoded as XML documents, which provide a place for annotations and other metadata about the data resources.

EMODnet Physics THREDDS catalogue is available at the following link:

http://hfr-thredds.emodnet-physics.eu/thredds/catalog.html

Clearly Identifiable users

Table 27 – interoperability services users

User	Notes
EMODnet Central	WFS and WS to feed the “Query tool”
EMSA – European Marine Security Agency	WFS and WS in order to link EMODnet Physics data to internal system. In case of necessity, they need to identify and access in a quick and efficient way data around a specified position.
JRC IPSC- Institute for the Protection and Security of the Citizen - Maritime Unit	WMS and WFS for internal use
EMODnet Chemistry	It uses WMS, WFS and WS to harvest NRT chemical data and create timeseries
ODP – Ocean Data Portal	It uses the WS to get EMODnet Physics metadata and make the EMODnet Physics dataset available at global level according the IODE ODP internationally endorsed standards http://www.oceandataportal.net/portal/portal/odp2/home/eurogoos-profileWindow?action=a&windowstate=maximized&requestMode=catalog
DLTM – Ligurian Cluster of Marine Technology	In particular, some associated SMEs are using WS to create local downstream services to make Ligurian Sea data easily accessible to inexpert users.

11. Additional User Statistics

Please provide an overview of all user-statistics for your website and portal which have not been already provided in the section on progress indicators.

none

12. Annexes

Annex 1 – full list of the available platforms and typology of datasets

The EMODnet Physics portal makes the following data types available:

- **Latest data** → freely available up to 60 days (automatic quality check/flag procedures)
- **Recent data** → organised in monthly data files (post 60 days, automatic quality check/flag procedures[24], requires user registration)
- **Long Term time series data** → organized one data file for platform (automatic quality check/flag procedures, requires user registration)
- **Historical validated data** → organized in CDI - dataset files hosted by NODCs (validated data[25], requires user registration).

The following table lists the full data availability, in particular: the typology of platform (MO= mooring buoy/fixed platform, FB=ferrybox, GL= glider, DB = drifting buoy, AR = Argo); whether it is providing data (NRT true/false); recent data time coverage (from to) and number of files (if the first number is lower than the second there are temporal gaps in the monthly data files, if the first number is higher than the second the platform hosts different data acquisition sets – e.g. Arkona); long term time series files (from to); if there are historical validated data for that platform (CDI) in SeaDataNet-NODCs network (from to, and the number of available CDIs covering the specified time range).

[24] http://www.emodnet-physics.eu/map/ARH/QualityCheck/recommendations_for_rtqc_procedures_v1_2.pdf

[25] Validated according the SeaDatanet Quality Check procedure - http://www.seadatanet.org/content/download/18414/119624/file/SeaDataNet_QC_procedures_V2_%28May_2010%29.pdf

Summary table of all data (latest, recent, long term and historical validated) by Country, Organisation, Platform type and Data availability[26]

Country	Data provider	Platform	Type	Data assembly centre	Recent data From - To	Recent data #files	Long term TS From - To	CDI dataset ID - historical validated data From - To	CDI dataset ID #files	NRT true/ false

See the ExcelFile – "EMODnetPhysics_Annex"

Where N.D. means that metadata or data is not available yet or is under checking procedure.
M: YY/XX → if YY = XX there are no temporal gaps in monthly time series.

Sheet "Annex_1.1" reports the platforms with complete metadata and "Annex_1.2" reports the platforms with metadata to be completed.

[26] http://www.emodnet-physics.eu/map/Dashboard/Section1.aspx

Annex 2 – CMEMS vs SeaDataNet License Agreement

The two infrastructures propose a license agreement and the two licenses are available on the web[27], Table 28 summarizes some key elements:

Table 28 – license agreements comparison

	SeaDataNet	CMEMS - Service Level Agreement (SLA)
Written in	2007	2015
scope	Aimed at striking a balance between the rights of investigators and the need to widespread access through free and unrestricted SDN data, metadata and products	Aimed at outlining the range and level of services that the Copenicus Marine Service (CMEMS) supplies to the user
Parties	The Licensor[28] grants to the Licensee a non-exclusive and non-transferable licence to retrieve and use data sets and products from the SeaDatanet service in accordance with this licence	This Licence Agreement is a legal agreement between the Licensee and MERCATOR OCEAN and sets out the terms for use of the Copernicus Marine Service Products which will apply to the Licensee. Use of the Copernicus Marine Service Products means that the Licensee agrees to abide by all of the terms and conditions in this Licence
Data policy	SeaDataNet makes data available freely and without restriction. "Freely" means at no more than the cost of reproduction and delivery, without charge for the data itself. In practice, no charges at all. "Without restriction" means without discrimination against, for example, individuals, research groups, or nationality.	Costs are fully covered by the CMEMS as provided for in the Copernicus Regulation until the end of the CMEMS (31/12/2020). CMEMS service and products are free of charge to the user until this date.
Confidentiality	Not declared	A user enquiry is treated as commercially confidential and will not be transmitted outside the CMEMS[29]
Service access validation	SDN defines roles for its users; depending on role, accessibility to data varies. The roles are attributed by the NODCs of the user's country (or user-desk by default) after on line registration. Name, email and professional references are mandatory.	Personal data are linked to the generation of the login, the password is encrypted and invisible to the service. Other information regarding the organisation etc. are for internal statistics purposes. User has a right to access and correct his/her personal data. The CMEMS service desk is validated
Data distribution	Meta-data are freely and unconditionally accessible. As soon as registration is completed, the user receives a temporary license and public role, and may access non-restricted data. As soon as the NODC assigns a role, the user can access assets according to the assets access rights and the "role" of the user.	As soon as the SLA is validated by the service desk, the user receives a login and password to access products.
Data delivery delay	SeaDataNet data delivery is managed by RSM in a delayed mode: each CDI record indicates the	Data is downloadable as soon as login is effected.

[27] CMEMS - http://marine.copernicus.eu/web/27-service-commitments-and-licence.php;
SeaDataNet - http://www.seadatanet.org/content/download/3899/29604/file/SeaDataNet%20Data%20Policy%20.pdf
[28] the licensee is very well described by the "roles", the licensor is less clear
[29] in application of the Dir 95/46/EC of EP and Dir 2002/58/EC on data protection.

	condition of access of the associated dataset as set by the data set provider. Combined with the user-registered role as user this will determine whether user will get direct access, whether access will be denied to user, or whether user will have to await further consideration of their request by the data set provider. This can be seen in the RSM. Note that user request might concern several data set providers. Once the user has right of access to data, it must be manually downloaded from each NODC within 30 days from data request (after which data is no longer available unless user posts a new data request).	Download scripts – shortcuts are allowed as well as machine-to-machine data fetching robots.
Dataset updates	SeaDataNet data remains dependent on data contributions.	The service is operational and new data is delivered on a daily base or in delayed mode (according data type).
Permissions and liability	Non-exclusive and non-transferable licence. Retrieval, by electronic download, and the use of Data Sets is free of charge, unless otherwise stipulated. SeaDataNet and the data source do not accept any liability for the correctness and/or appropriate interpretation of the data.	This Licence is granted free of charge. Non exclusive, royalty free, perpetual licence
Citation	Users must acknowledge data sources (in particular for scientific publications). Data Users should not give third parties any SeaDataNet data or product without prior consent from the source Data Centre.	The Licensee will communicate to the public the source of the products and services by crediting the CMEMS[30] Copernicus Monitoring Environment Monitoring Service Credits shall be clearly visible on the home page of the Licensee's website or at least on the page giving access to the products.
Distribution	Data Users should not give third parties any SeaDataNet data or product without prior consent from the source Data Centre.	User can make and use such reasonable copies of Copernicus Marine Service Products: for internal use and back up purposes, as may be necessary; to modify, adapt, develop, create and distribute Value Added Products or Derivative Work from Copernicus Marine Service Products for any purpose; to redistribute, disseminate any Copernicus Marine Service Product in its original form via any media.

[30] In application of the Regulation (EU) n° 1159/2013 of the 12 July 2013 supplementing Regulation (EU) n°911/2010 of the European Parliament and of the Council on the European Earth monitoring programme,

Annex 3 – Use case of EMODnet Physics for discovery and access of archived data

The EMODnet Physics portal and the SeaDataNet shopping mechanism are interoperating. The user is asked to make many manual selections before he/she can start downloading data from each SeaDataNet datacentre. At present there are 102 data centres from 34 countries connected to the SeaDataNet infrastructure and giving discovery and access to their archived data sets.

As an example, let us consider a user accessing the EMODnet Physics portal to download validated historical datasets on the sea water temperature for past 25 years.

Once the user is onto the EMODnet Physics portal map page (Figure 26) he can interact with the filters (top left) and:

1. Select "Temperature" from the "Parameters" (Figure 27.A)
2. Open the time slider (bottom left) and select the time range (Figure 27.B)
3. Select "SeaDataNet" from the "Initiatives" (Figure 27.C)

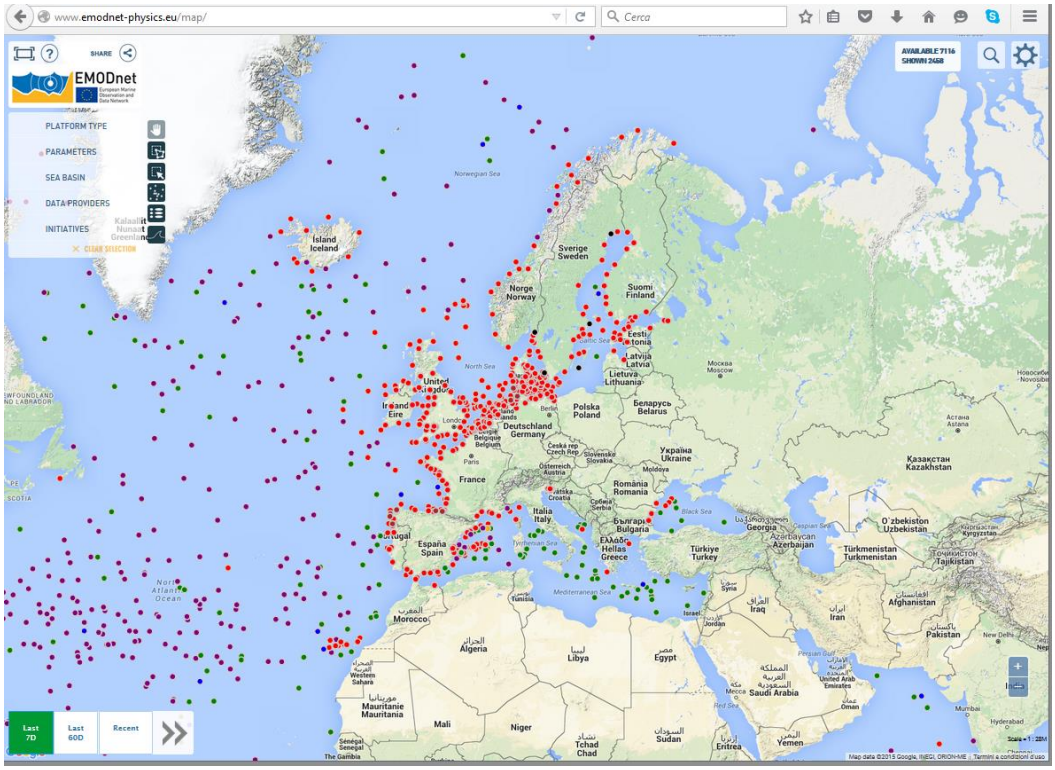


Figure 26. The EMODnet Physics map page: www.emodnet-physics.eu/map

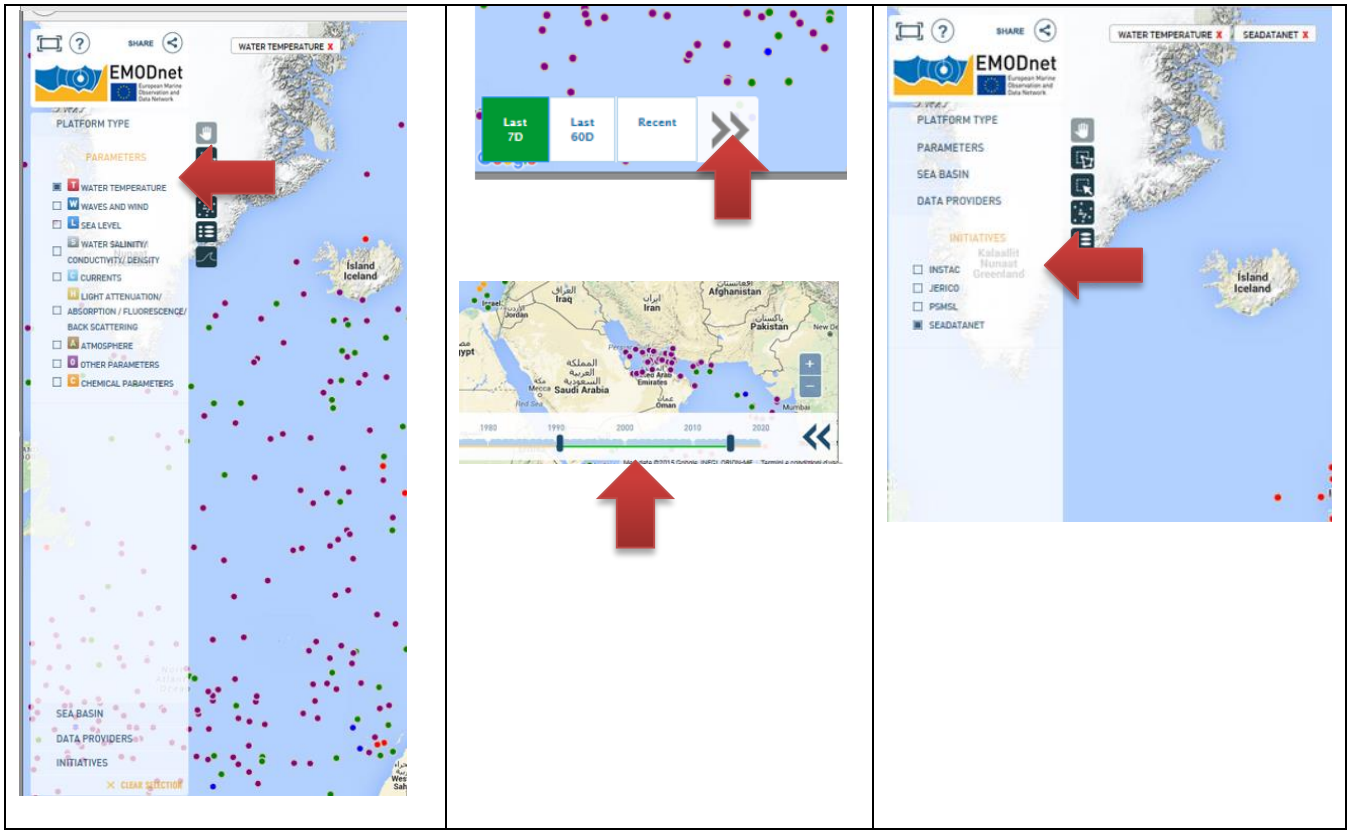


Figure 27. A) Parameters filter B) Time range C) Initiatives filter

The map page is updated and shows the available platforms matching the applied filters (Figure 28) and he can select them all and create a list by clicking the fourth button on the left side of the page (arrow in Figure 28).

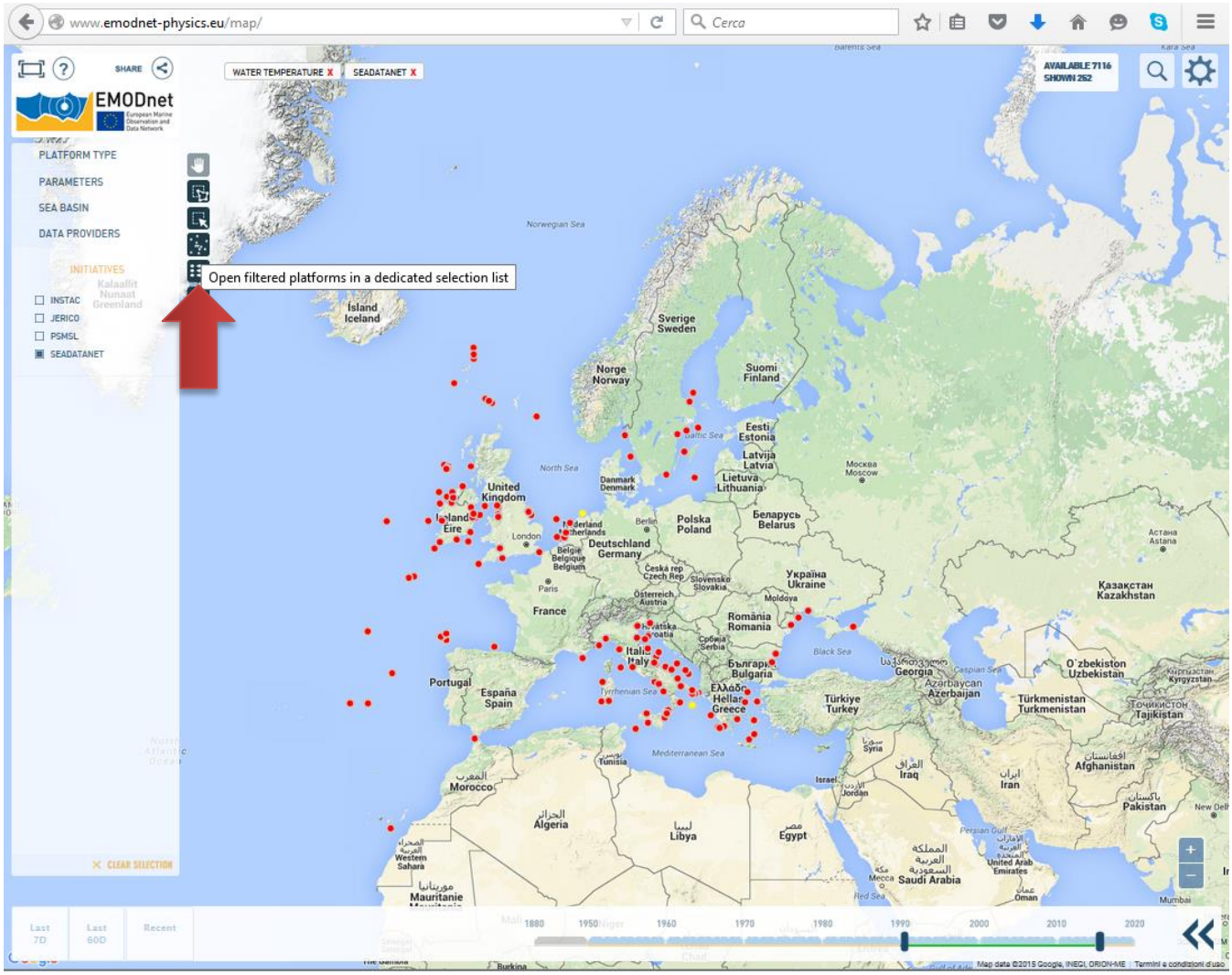
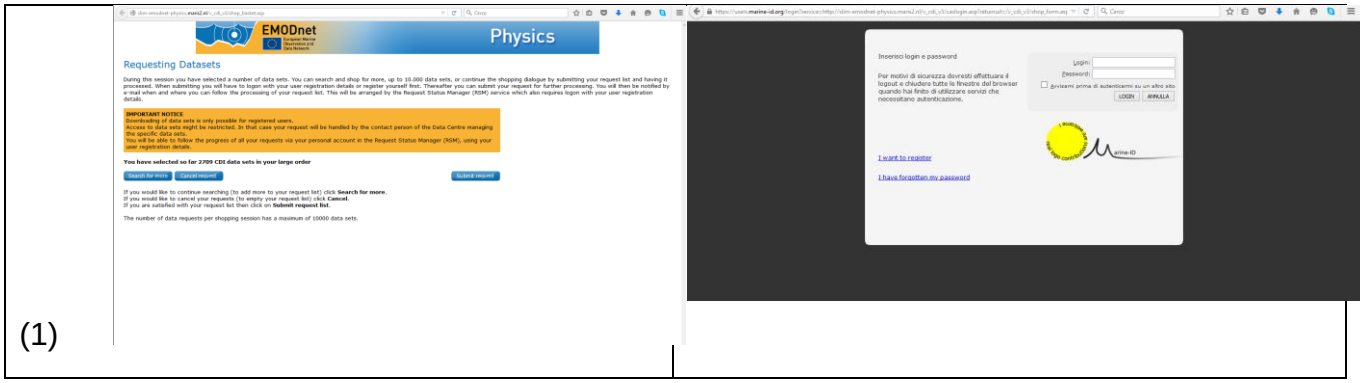


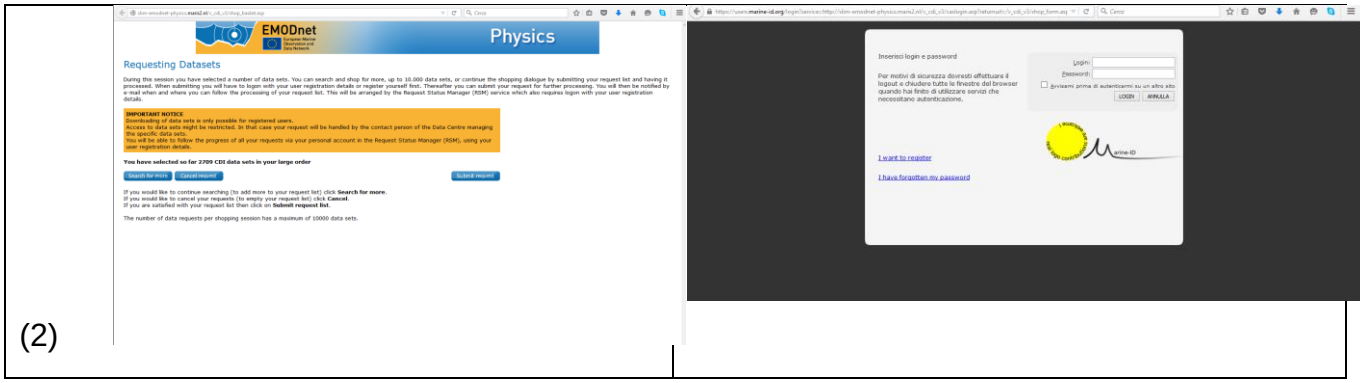
Figure 28. The EMODnet map page showing the available platforms that match the applied filters. Applied filters are reported on the page (top left).

The page shows a popup (Figure 29) to open the selected platforms list panel (Figure 30) that lets the user to request all the validated historical data either at once (arrow in Figure 30) or platform by platform. Let us consider the user requests all the available dataset: he clicks the "request all" button (Figure 30) and he is redirected to the SeaDataNet Request Status Manager for EMODnet Physics landing page



(1)

Figure 31.A) where he is asked to log-in (MarineID -



(2)

Figure 31.B)

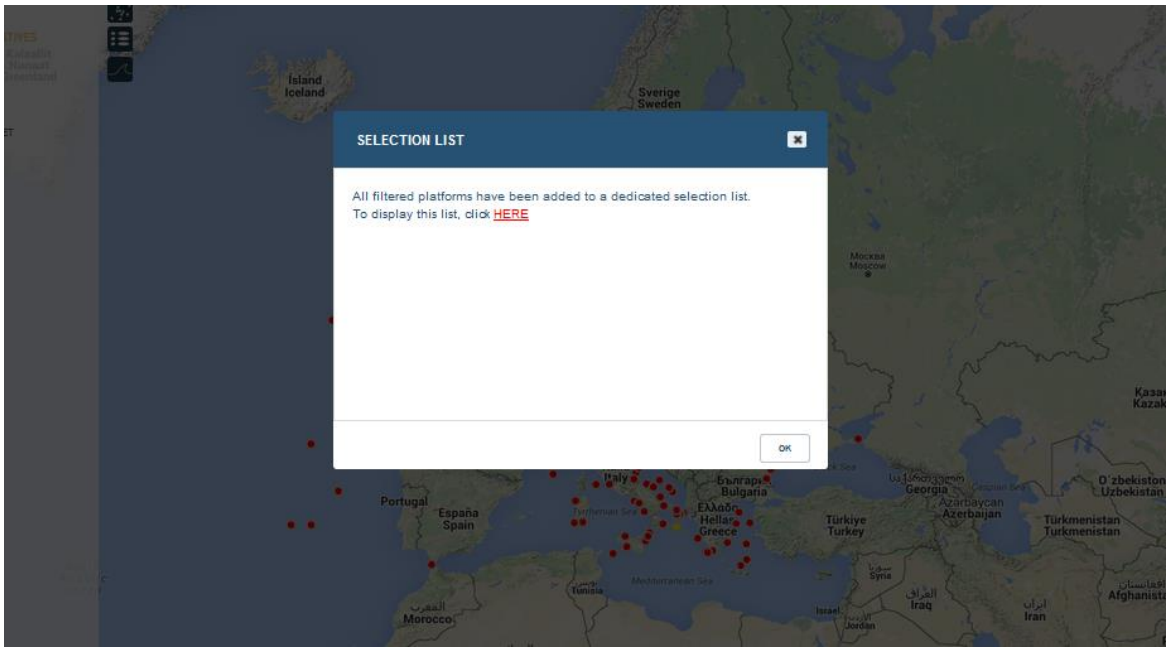


Figure 29. Popup to open the selected platforms list

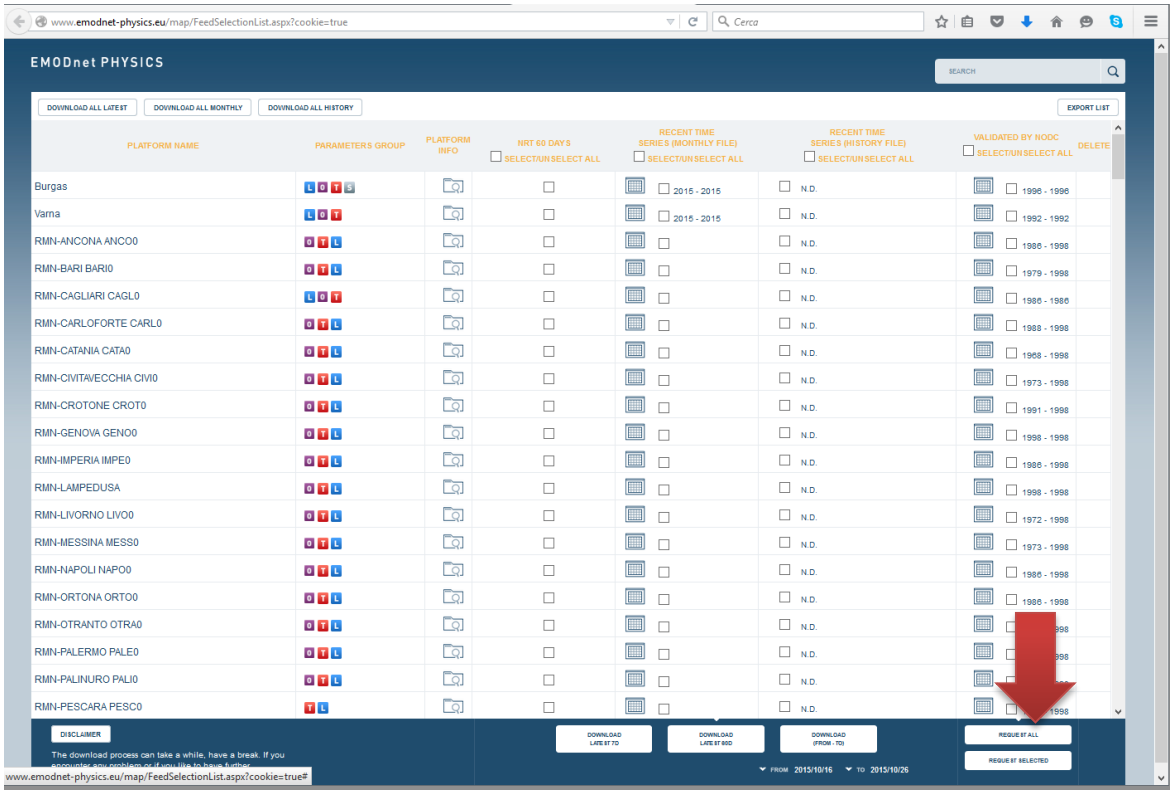


Figure 30. Platforms list and Validated Historical Data Request

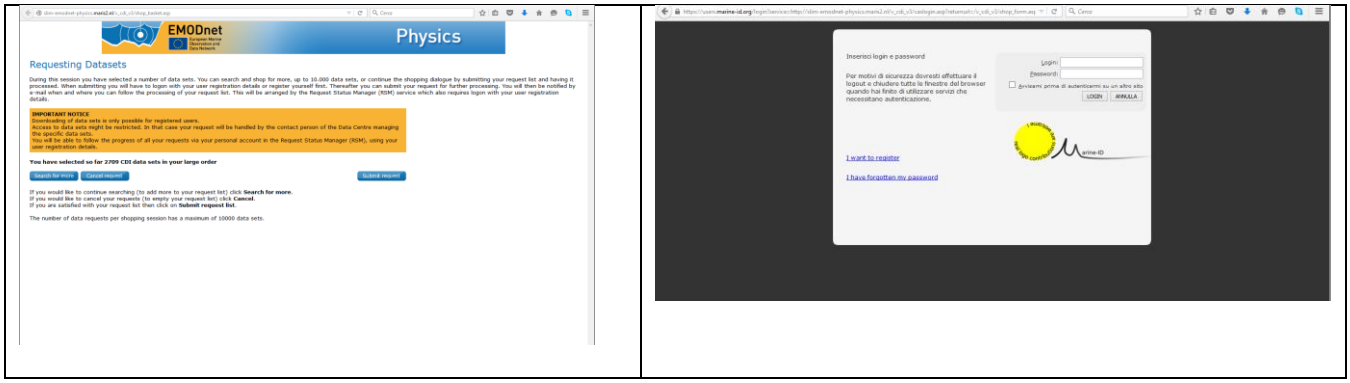


Figure 31. A) SeaDataNet Request Status Manager for EMODnet Physics landing page. B) MarineID log in

Let us assume the user is already registered in the system (in case he is not, he receives his credentials via e-mail in about 10-15 minutes after filling the registration form). The user is then asked to give a brief motivation for downloading and select the data format (Figure 33), and as soon as he submit the request the system provides him with a unique order number (Figure 33)

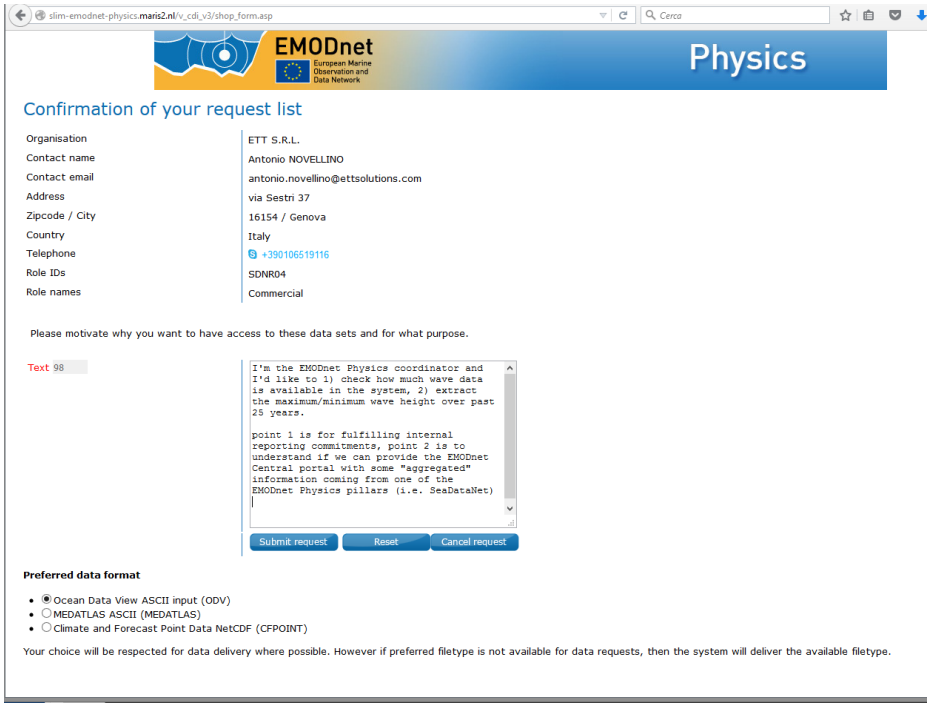


Figure 32. Request confirmation page

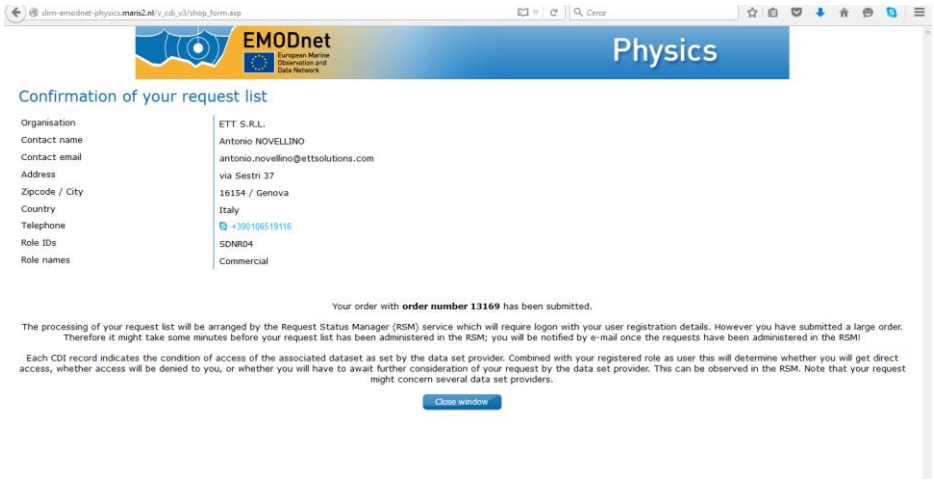


Figure 33. Request order number message

As soon as the data is ready for download, the user receives an email with links to the Request Status Manager (RSM) (Figure 34). The user can then log in (Figure 35.B) and access the standing requests (Figure 35.B – red arrow)

Figure 34. RSM confirmation email.

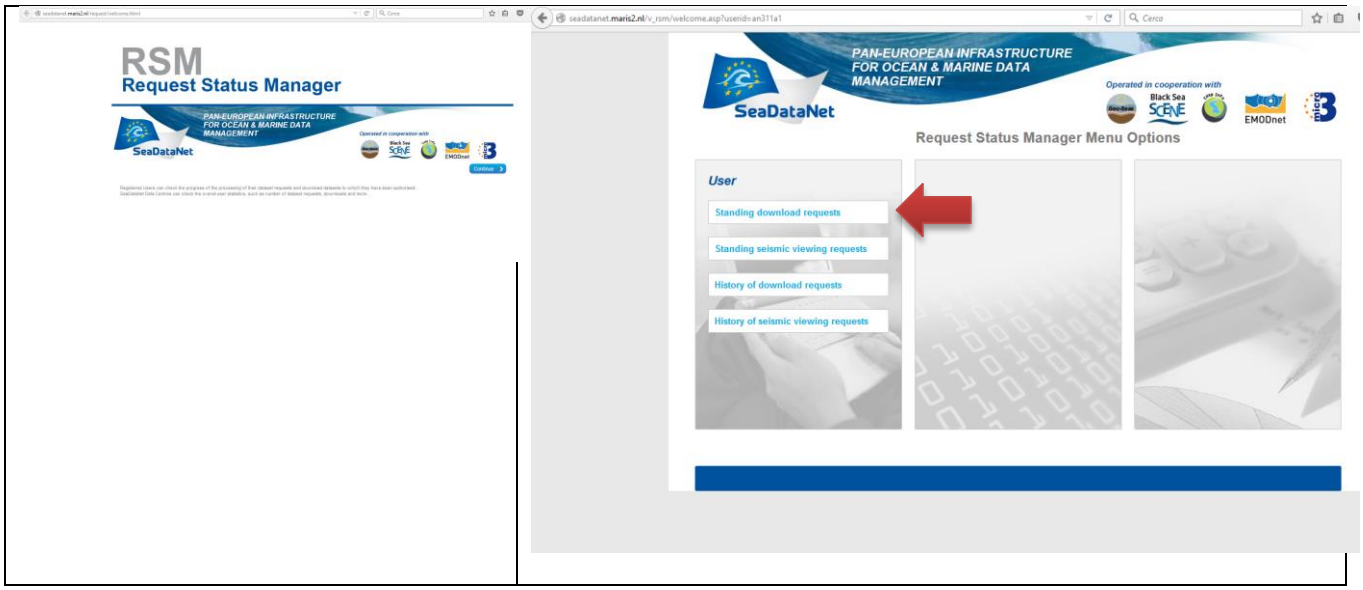
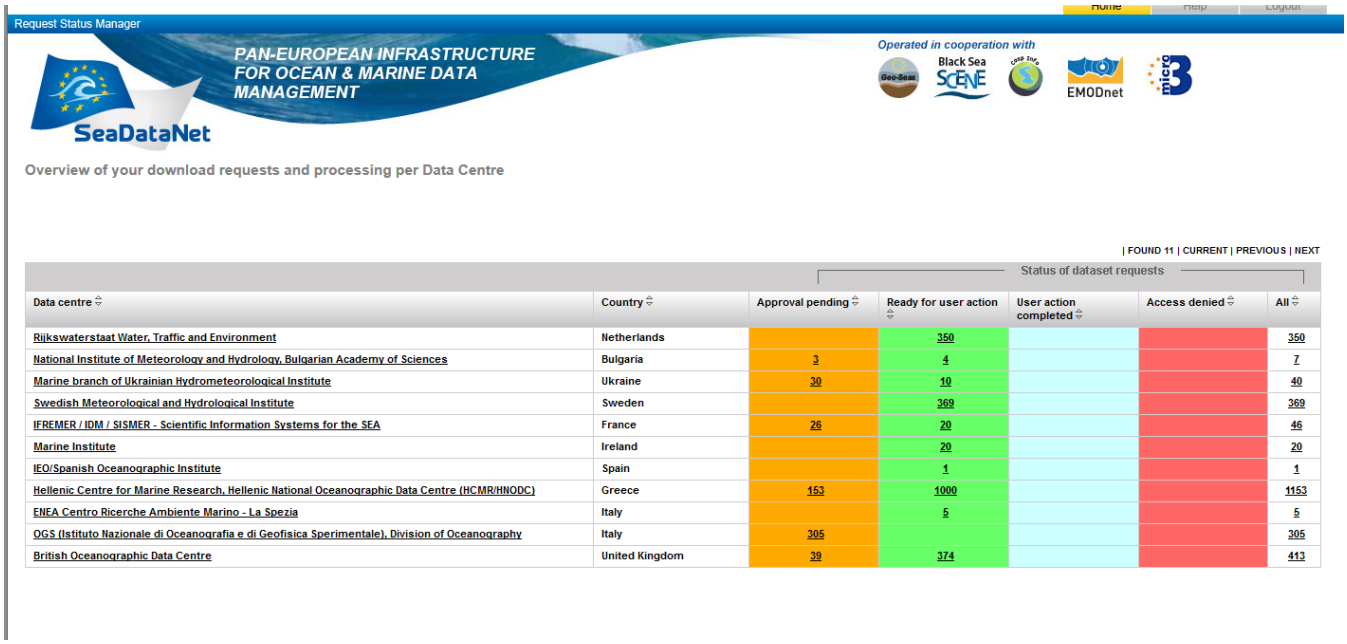


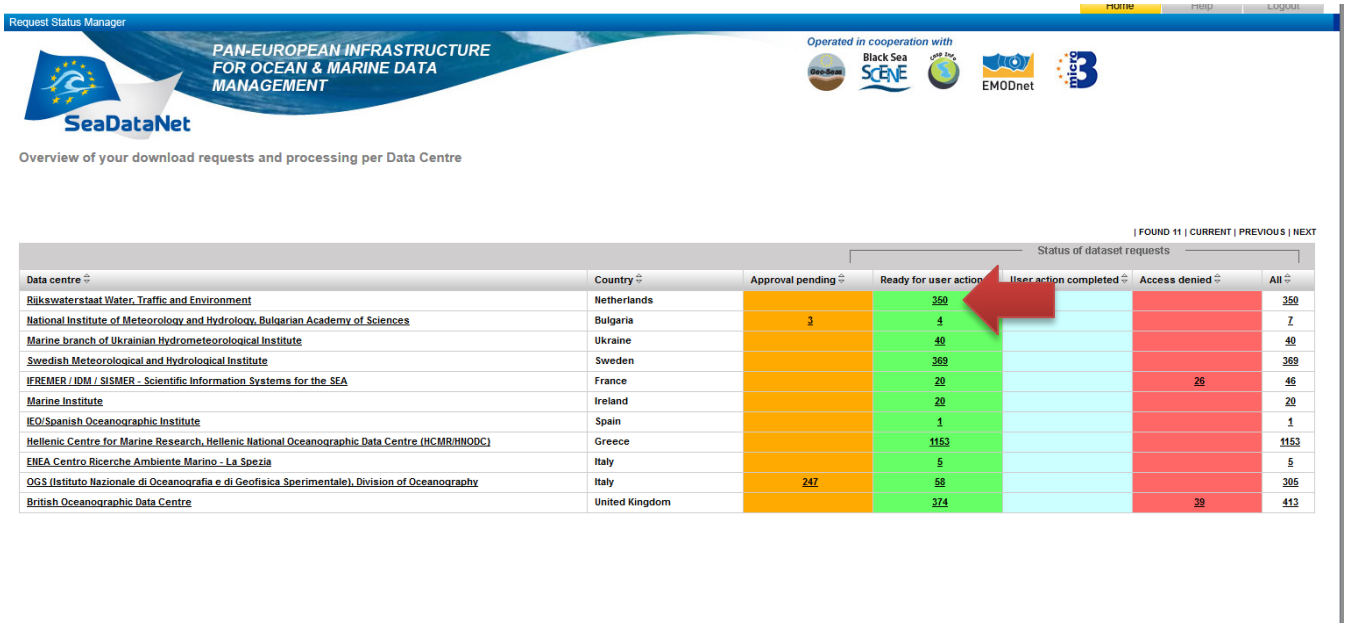
Figure 35. A) RSM log in page. B) RSM landing page

The RSM shows the status of the requests: each NODC that is hosting at least one of the requested datesets is listed and it has to validate the user request. Unrestricted data immediately are listed into the "green" column (Figure 36). As soon as the NODC validate the request more datasets are moved from the orange to the green column (Figure 37).



Data centre	Country	Approval pending	Ready for user action	User action completed	Access denied	All
Rijkswaterstaat Water, Traffic and Environment	Netherlands		350			350
National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences	Bulgaria	3	4			7
Marine branch of Ukrainian Hydrometeorological Institute	Ukraine	30	10			40
Swedish Meteorological and Hydrological Institute	Sweden		369			369
IFREMER / IDM / SISMER - Scientific Information Systems for the SEA	France	26	20			46
Marine Institute	Ireland		20			20
IEO/Spanish Oceanographic Institute	Spain		1			1
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece	153	1000			1153
ENEA Centro Ricerche Ambiente Marino - La Spezia	Italy		5			5
OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Division of Oceanography	Italy	305				305
British Oceanographic Data Centre	United Kingdom	39	374			413

Figure 36. RSM data download management page.

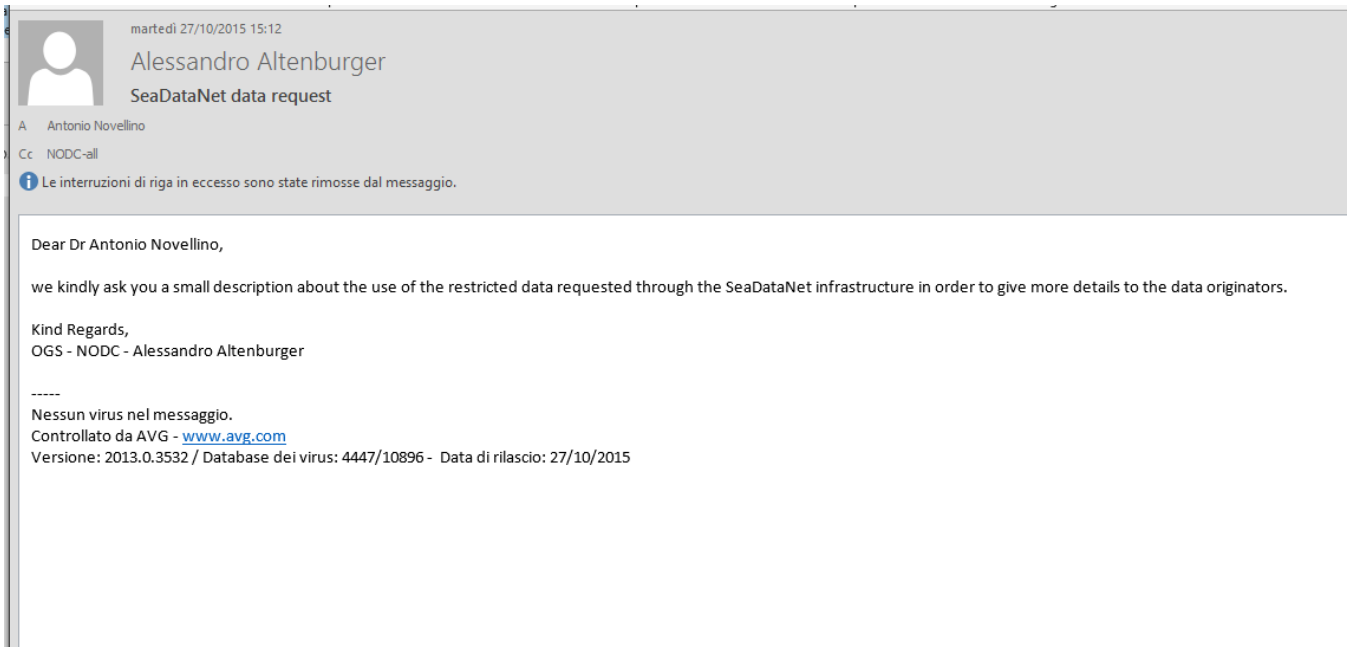


Data centre	Country	Approval pending	Ready for user action	User action completed	Access denied	All
Rijkswaterstaat Water, Traffic and Environment	Netherlands		350			350
National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences	Bulgaria	3	4			7
Marine branch of Ukrainian Hydrometeorological Institute	Ukraine		40			40
Swedish Meteorological and Hydrological Institute	Sweden		369			369
IFREMER / IDM / SISMER - Scientific Information Systems for the SEA	France		20		26	46
Marine Institute	Ireland		20			20
IEO/Spanish Oceanographic Institute	Spain		1			1
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece		1153			1153
ENEA Centro Ricerche Ambiente Marino - La Spezia	Italy		5			5
OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Division of Oceanography	Italy	247	58			305
British Oceanographic Data Centre	United Kingdom		374		39	413

Figure 37. RSM data download management page (same request – day after)

If any dataset requires a negotiation, an email is sent to the user to further motivate the use (Figure 38)[31].

[31] To note that for the presented example only one request for further details was received


martedì 27/10/2015 15:12

Alessandro Altenburger

SeaDataNet data request

A Antonio Novellino

Cc NODC-all

Le interruzioni di riga in eccesso sono state rimosse dal messaggio.

Dear Dr Antonio Novellino,

we kindly ask you a small description about the use of the restricted data requested through the SeaDataNet infrastructure in order to give more details to the data originators.

Kind Regards,
OGS - NODC - Alessandro Altenburger

Nessun virus nel messaggio.
Controllato da AVG - www.avg.com
Versione: 2013.0.3532 / Database dei virus: 4447/10896 - Data di rilascio: 27/10/2015

Figure 38. Request for more details

The user can start download requested datasets by clicking the link on the green column (Figure 37 – red arrow) and NODC by NODC he can see the list of requested datasets and the metadata (Figure 39). NODC by NODC, the user can select either some or all datasets, open the download page and download the zip containing the requested datasets (Figure 40, Figure 41, Figure 42, Figure 43).

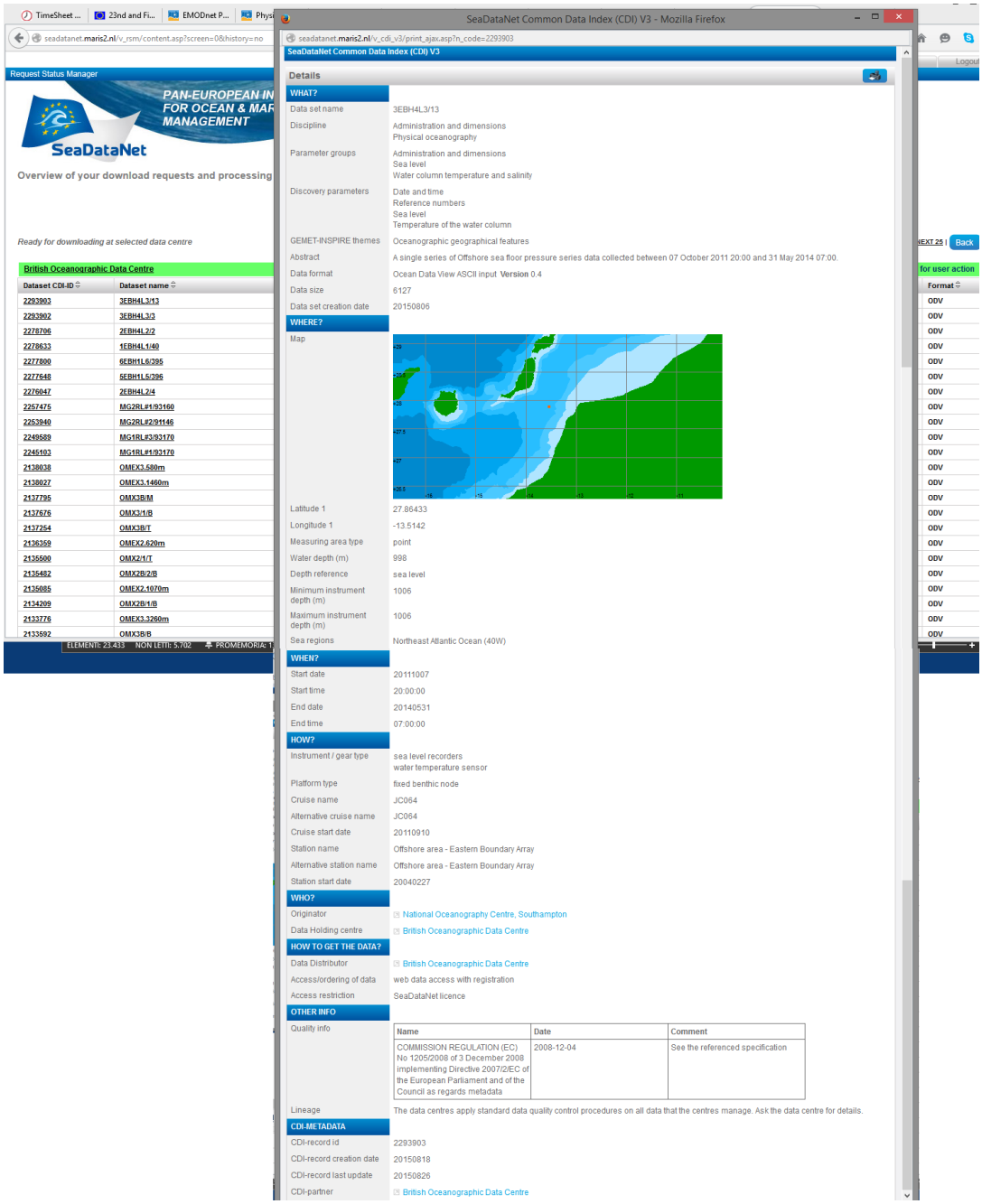


Figure 39. Metadata of a dataset from the British NODC.

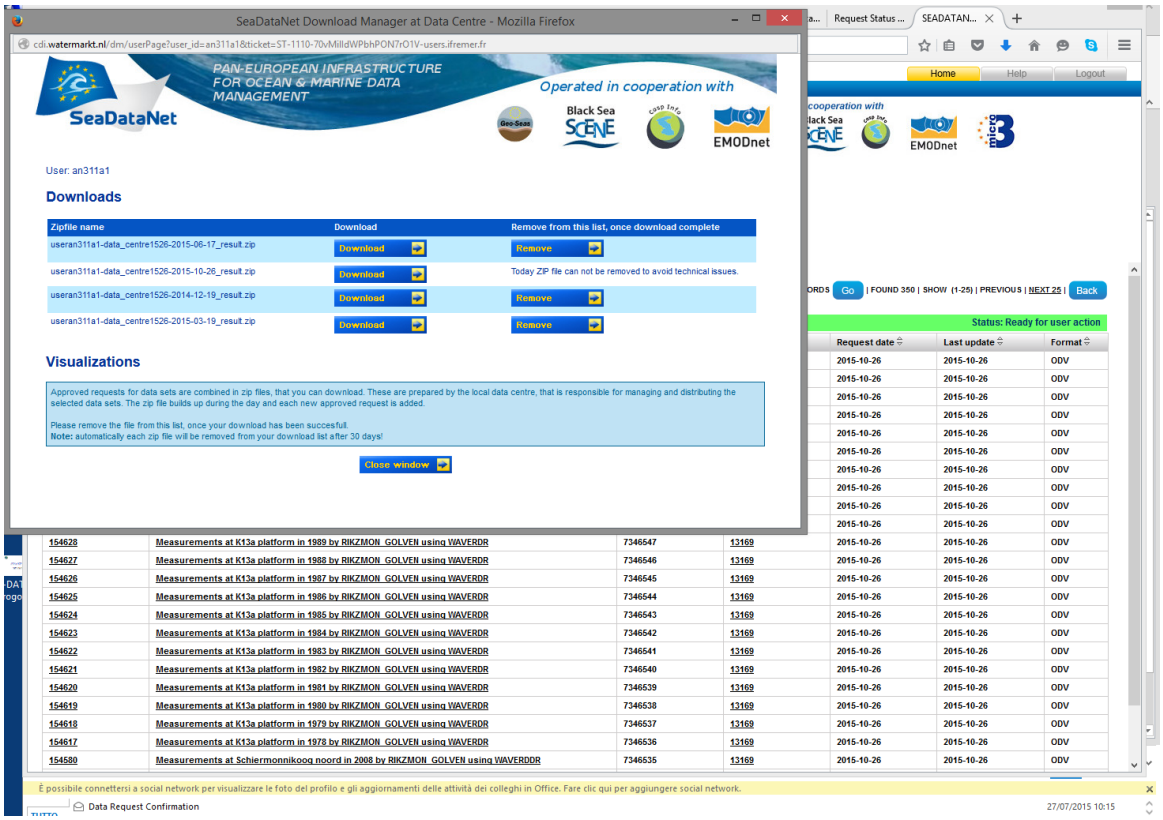


Figure 40. Requested datasets hosted by Dutch NODC (behind) and download page (front)

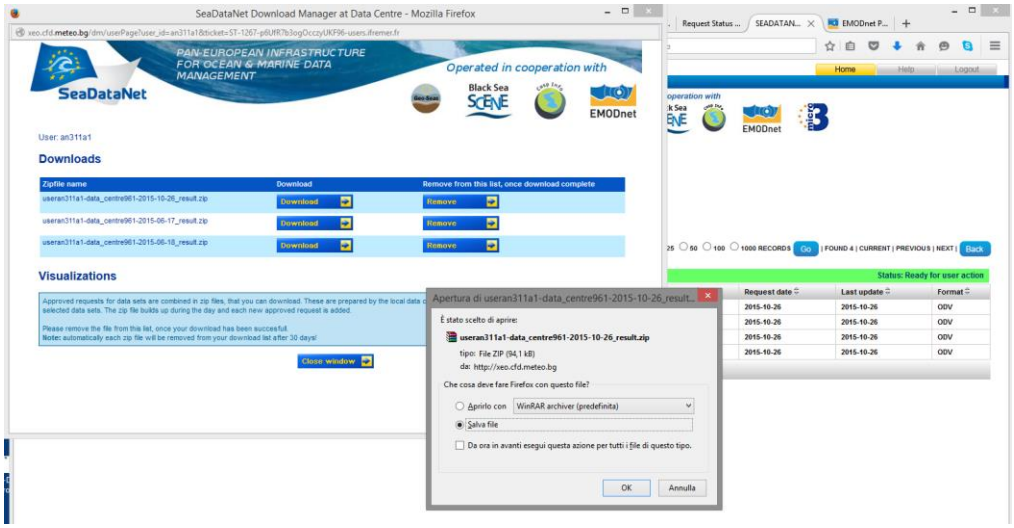


Figure 41. Requested datasets hosted by Bulgarian NODC (behind), download page (middle) and the zip file (front)

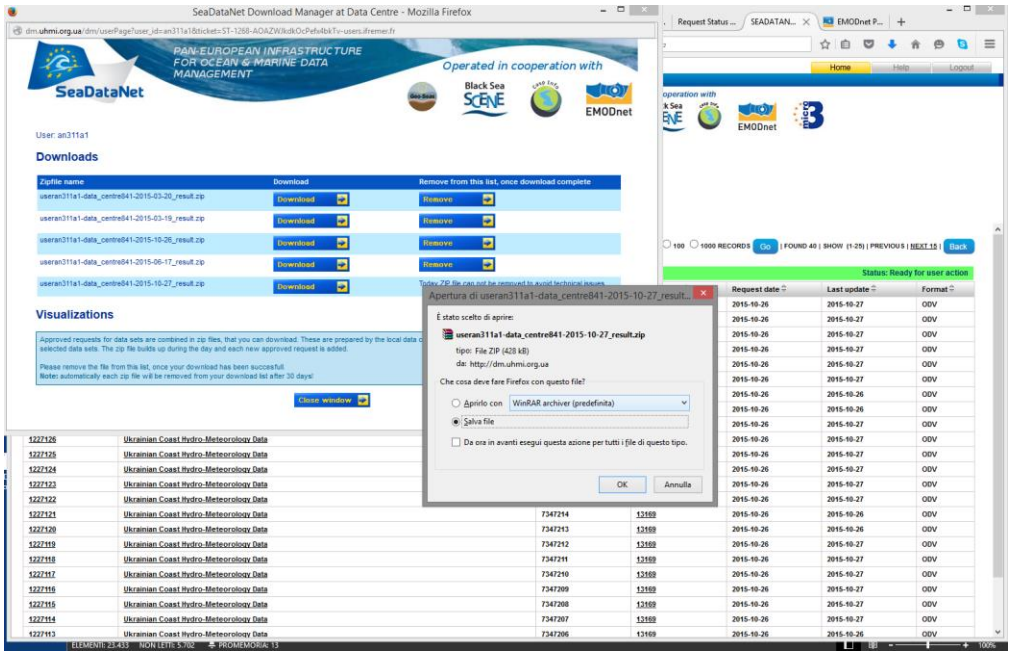


Figure 42. Requested datasets hosted by Ukrainian NODC (behind), download page (middle) and the zip file (front)

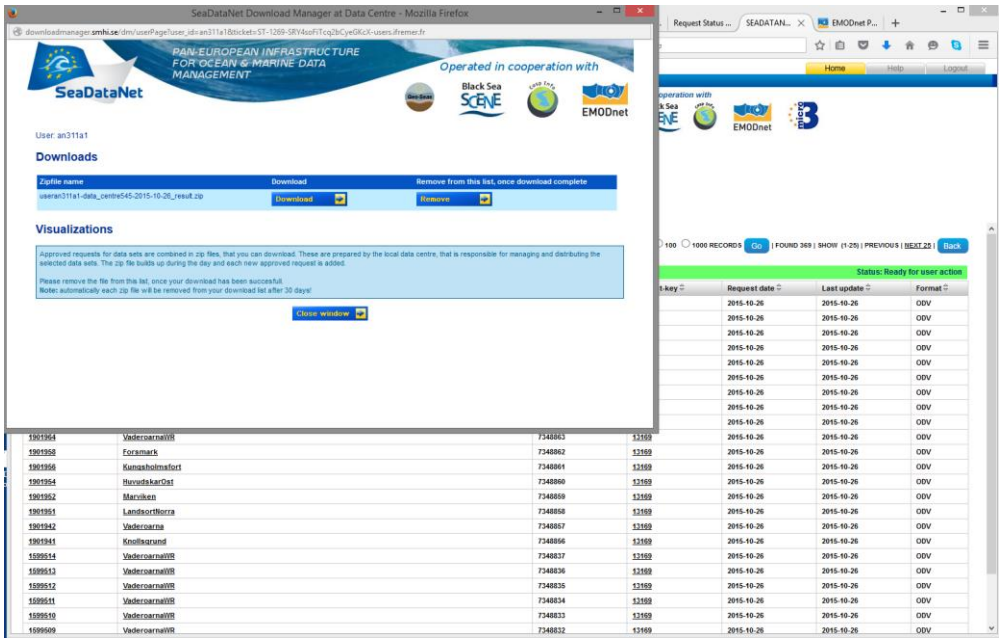


Figure 43. Requested datasets hosted by Swedish NODC (behind), download page (middle) and the zip file (front)

The presented user-case requested to access and download data from 11 NODCs.