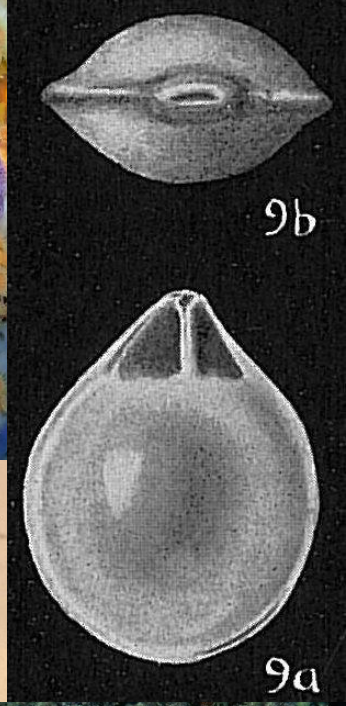
EMODnet Biology

EMODnet
European Marine Observation and Data Network

bio.emodnet.eu


9b
9a

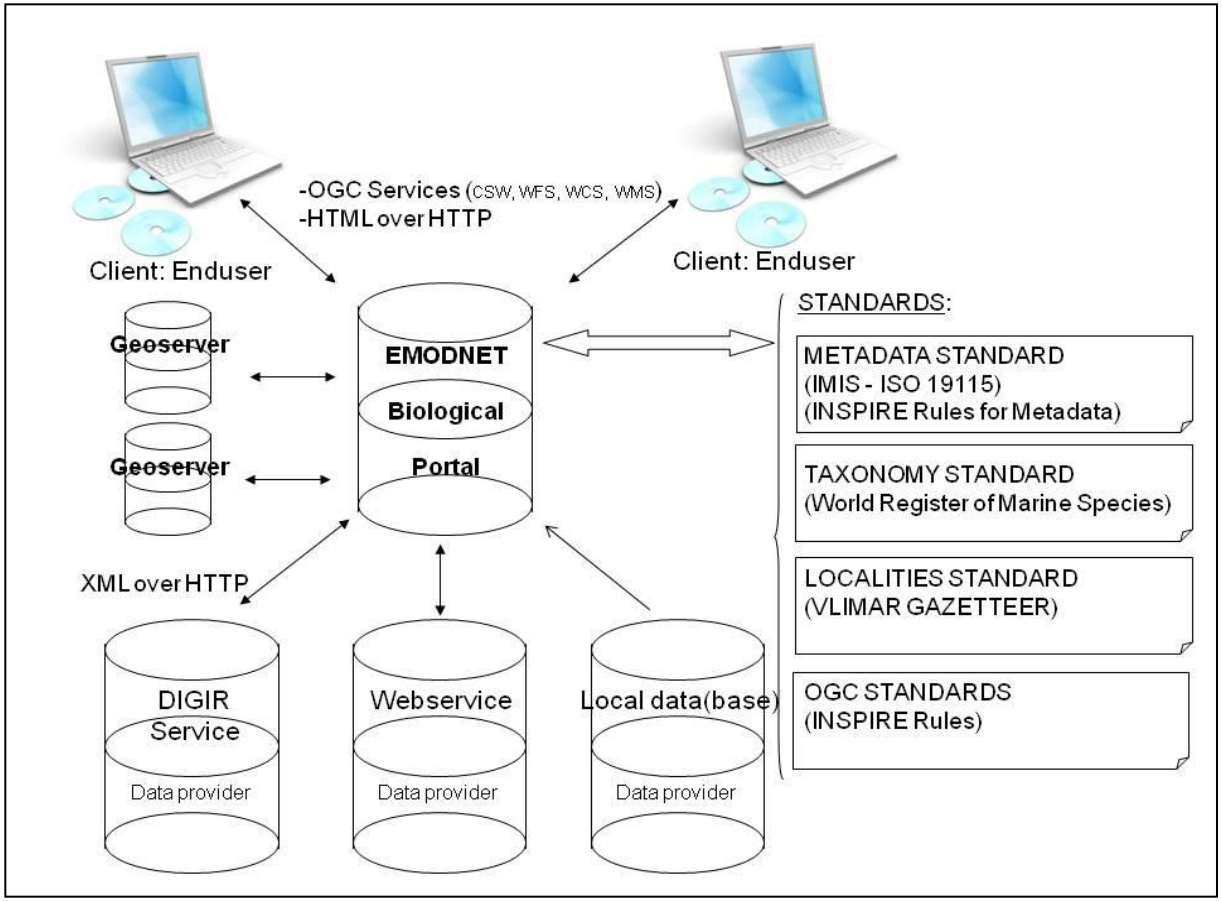
Building upon EMODnet preparatory action: 2009-2012

- Temporal/Spatial distribution Phytoplankton, Zooplankton, Angiosperms, Macro-algae, Invertebrate bottom fauna, fish, Birds, Sea mammals, Reptiles. Parameters: Abundance, Biomass. Geographic Focus: North Sea incl. Kattegat, Channel; Bay of Biscay, Iberian Coast

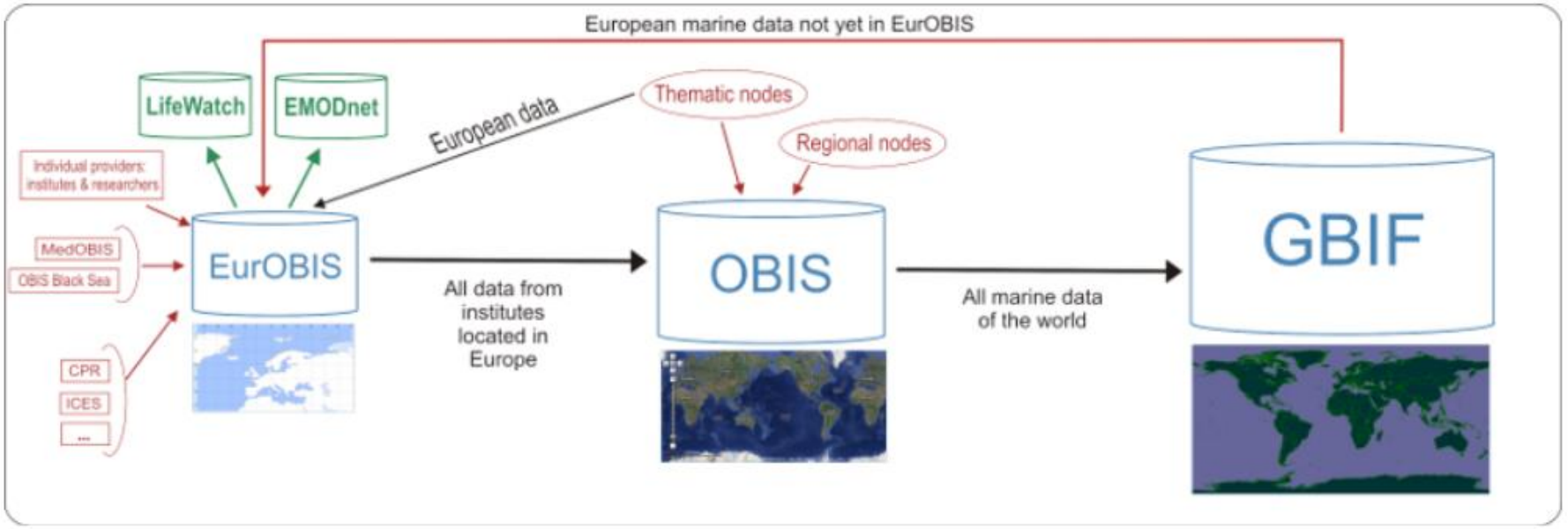
- 9 partners (mainly data centres and marine biology data networks)

The data portal system

→ Uses EurOBIS scheme for integrating spatio-temporal biogeographic data (Darwin Core)
→ Geographic standards: OGC compliant, Marine Gazetteer for geographic names



International data flows



Data standardisations

WoRMS World Register of Marine Species

INSPIRE · Infrastructure for Spatial Information in Europe

Marineregions.org

towards a standard for georeferenced marine names

CERTIFIED OGC® COMPLIANT

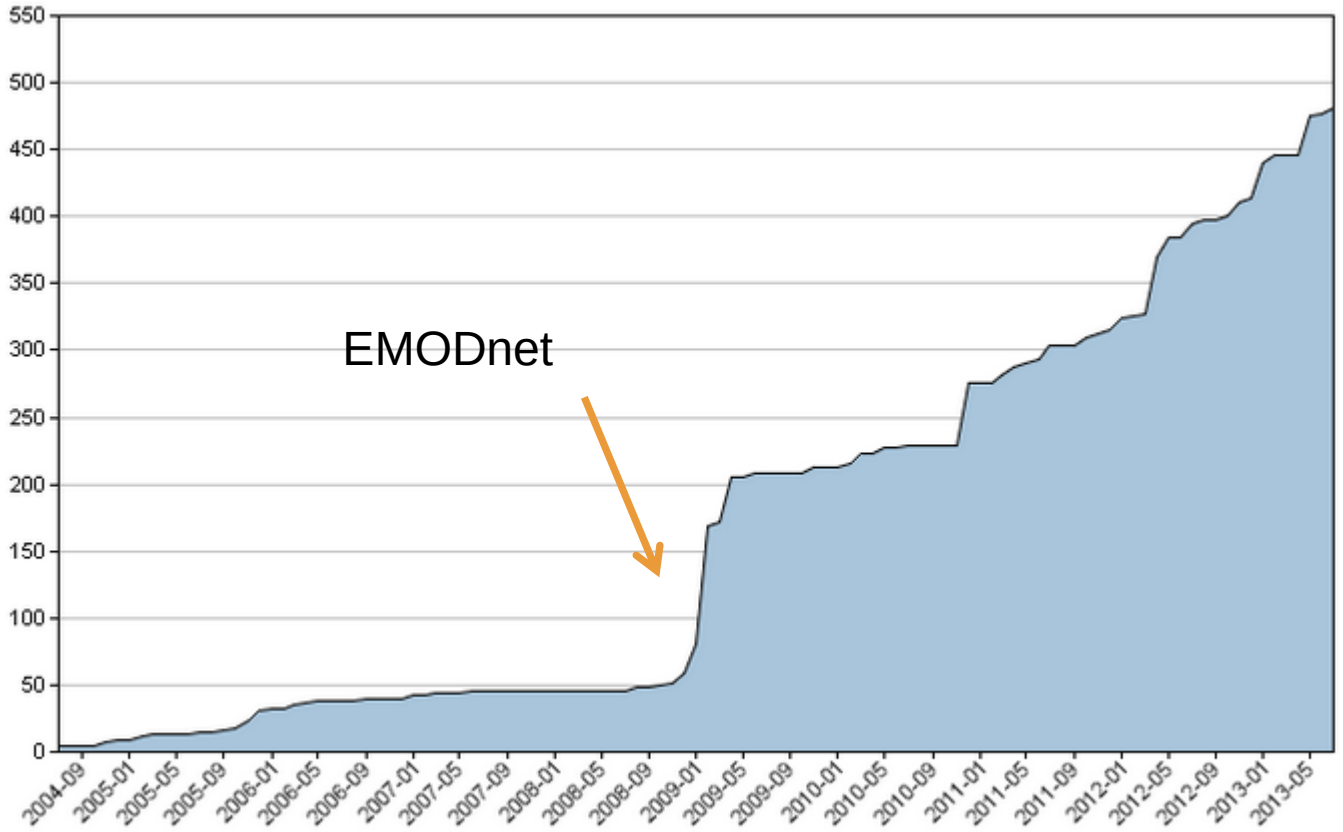
OBIS OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM

SeaDataNet

Term-by-term mapping of OBIS terms and Darwin Core Terms

		OBIS		DarwinCore
Name	Required	Type	Description	Type name

Data sets


550
500
450
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EMODnet
2004-09
2005-01
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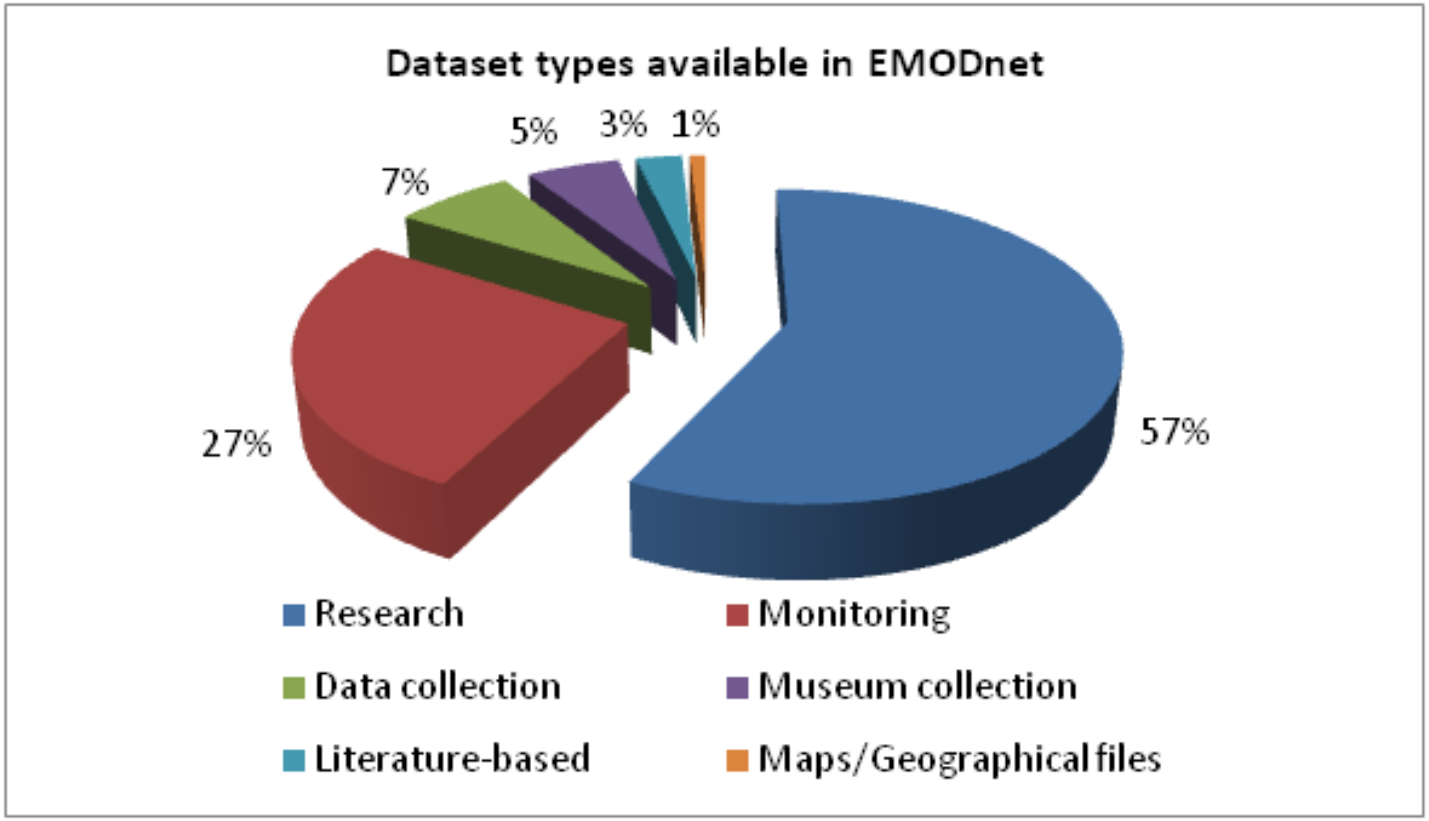
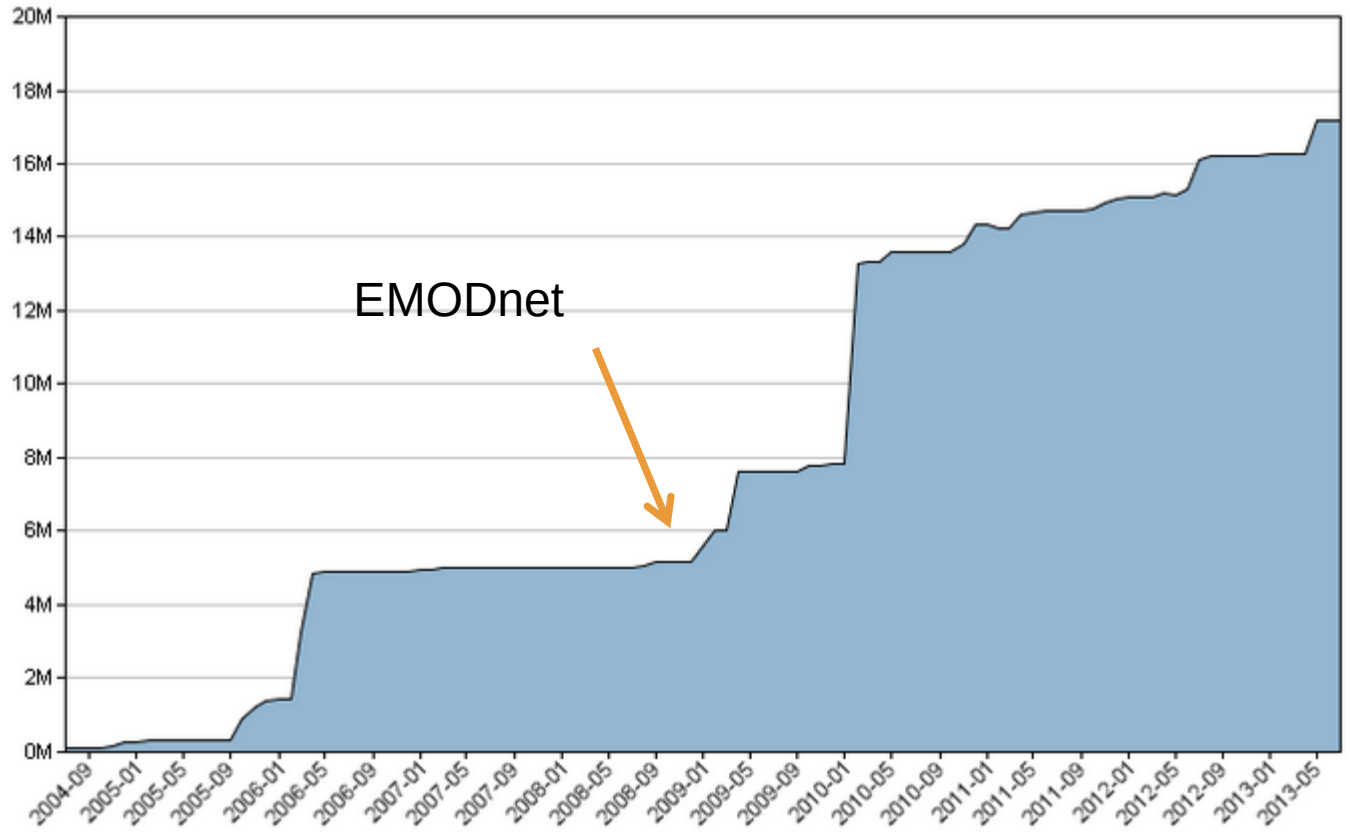
Data sets

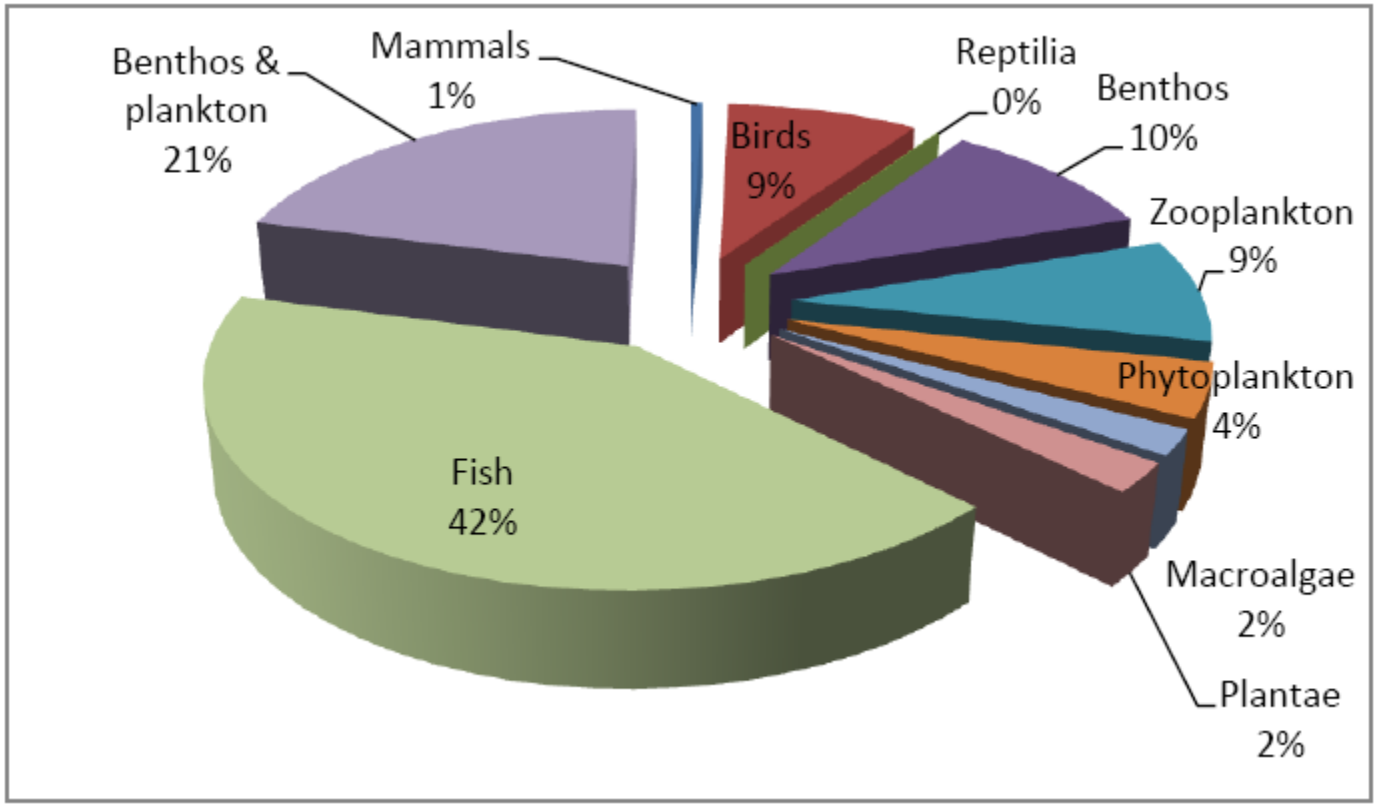

Dataset types available in EMODnet
5%
3%
1%
7%
27%
57%
Research
Monitoring
Data collection
Museum collection
Literature-based
Maps/Geographical files

Data records



Species groups: EurOBIS

Relative distribution Number of records per species group in EurOBIS (total=14.245.339)



EMODnet

Taxonomic Quality Control

Table 3 Diversity indices for rocky shore and pelagic data, per geographic region

	Species names before quality control					Species names after quality control				
	# Species	# Rare species	H'	$1 - D$	ES50	# Species	# Rare species	H'	$1 - D$	ES50
Rocky shore data										
ANE	219	15				187	11	4.45772	0.98509	36.25
Arctic	646	69				378	44	5.38261	0.99403	43.67
Mediteranean	1,120	238				834	159	5.49015	0.99105	41.74
North Sea	251	29				163	25	3.95956	0.97469	30.14
Pelagic data										
ANE	288	7				180	4	4.33821	0.97818	33.79
Baltic	592	94				483	82	4.76476	0.98216	37.13
Mediteranean	420	103				249	66	4.40238	0.97717	34.24
North Sea	118	15				64	9	2.06743	0.79005	10.80

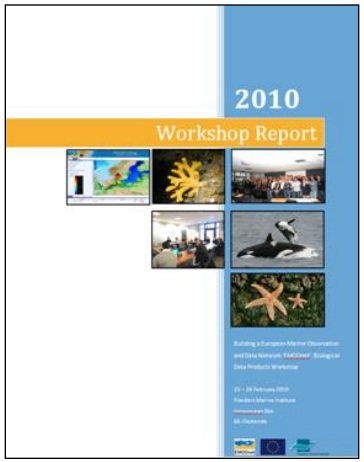
Species = number of distinct species; # Rare species = number of distinct species with only 1 distribution record; H' = Shannon's diversity index; $1 - D$ = Simpson's diversity index; ES(50) = Hurlbert's diversity index for 50 individuals. ANE = North-East Atlantic

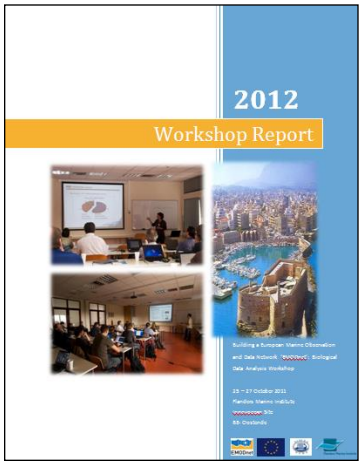
WoRMS World Register of Marine Species

www.marinespecies.org

Biological Data Workshops

- Engaging with community
- Defining priorities for biological data products
- Producing biological data products
- Data products:
  - Species attributes (Identify species by tags: invasives, HAB's, functional groups)
  - Gridded species distribution maps (maps based on actual data + prediction and possible range
  - Time-related maps (map growth, biomass, size-structures on yearly, seasonally, monthly)
  - Sensitivity and vulnerability maps (expert judgement necessary)

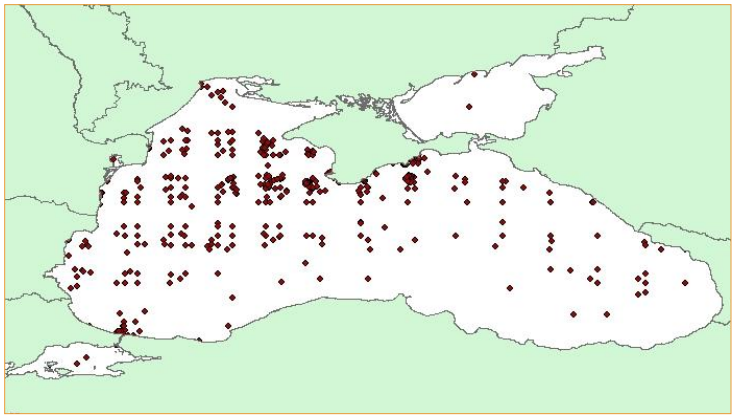




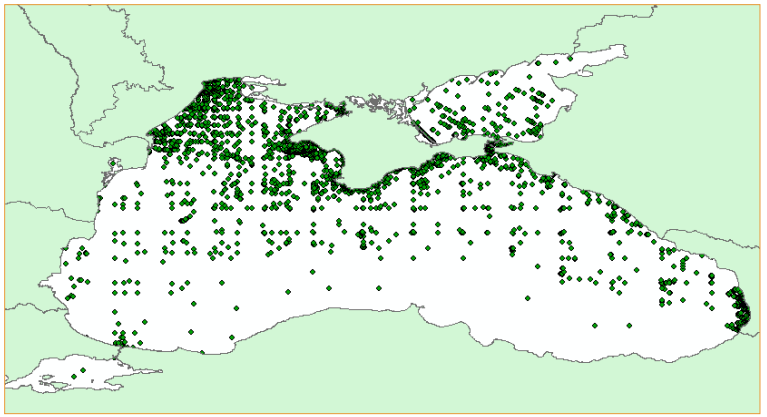
Data grant programme – Black Sea

Phase I: 2010-2011

- Coordination: VLIZ & IBSS
- 15 datasets digitized + QC'd + added to EMODnet
- Plankton, seagrasses, macro-algae, benthos, mammals
  - ✓ 2 905 stations (unique locations)
  - ✓ 100 554 distribution records (93% = abundance values)



Prior to data grant program (summer 2010)
599 stations



January 2012
2 905 stations

EMODnet

3rd Bi-annual **Black Sea Scientific Conference and UP-GRADE BS-SCENE** Project Joint Conference (Odessa, 31 October - 4 November 2011)

Availability of Marine Biological Data for the Black Sea

V. Vladymyrov[1], O. Sergeeva[1], K. Skuratova[1], F. Hernandez[2], S. Claus[2], L. Vandepitte[2]

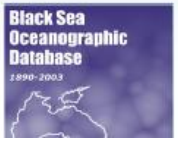
[1]Institute of Biology of the Southern Seas, National Academy of Sciences, Ukraine, Sevastopol

[2]Flanders Marine Institute, Belgium, Ostend

Data on CD and DVD

Detailed information http://nodc.ibss.org.ua

There are Black Sea biological and biophysical databases that are available on CD or DVD. They present three versions of the Multidisciplinary historical Black Sea database (released in 1998, 2003, and 2005); the Database on the Bioluminescence Field of the World's Ocean released in 2003; and EC MEDAR/ MEDATLAS project CD released in 2002.



First oceanographic data sets for the Black Sea available via Internet or on the digital data carriers appeared at the end of 1990th. From this time their number has been growing tremendously. We started to review these data sources in June 1999 and repeated this work with the interval of 1.5 - 4 years. In this review we analyze the marine biological data because availability of this type of data is less known and attract more interest nowadays.

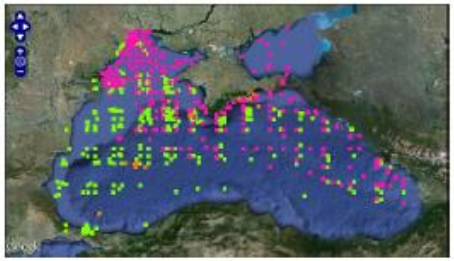
EMODNET-Biology

http://bio.emodnet.eu

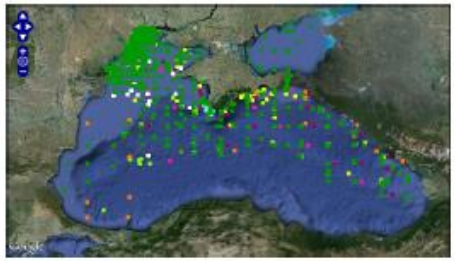
The Maritime Policy Blue Book, welcomed by the European Council in 2007, announced that the European Commission would take steps to set up a European Marine Observation and Data Network EMODNet to improve access to high quality marine data for private bodies, public authorities and researchers.

A set of preparatory actions (2009-2011) on biological data, hydrographic data, chemical data, geological data and broad scale habitats has been launched for a limited set of Sea Basins. It aims at gathering experience for a later permanent operational system.

Data available for the Black Sea through EMODNET:



Zooplankton



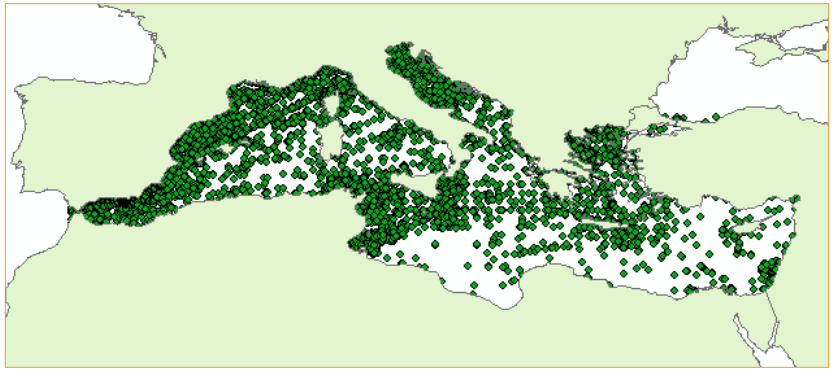
Phytoplankton

Cetacean

Data grants – Mediterranean Sea

Phase I: 2011-2012

- Coordination: VLIZ & HCMR
- Inventory in progress
- Already 13 datasets identified
- QC in progress for 7 datasets

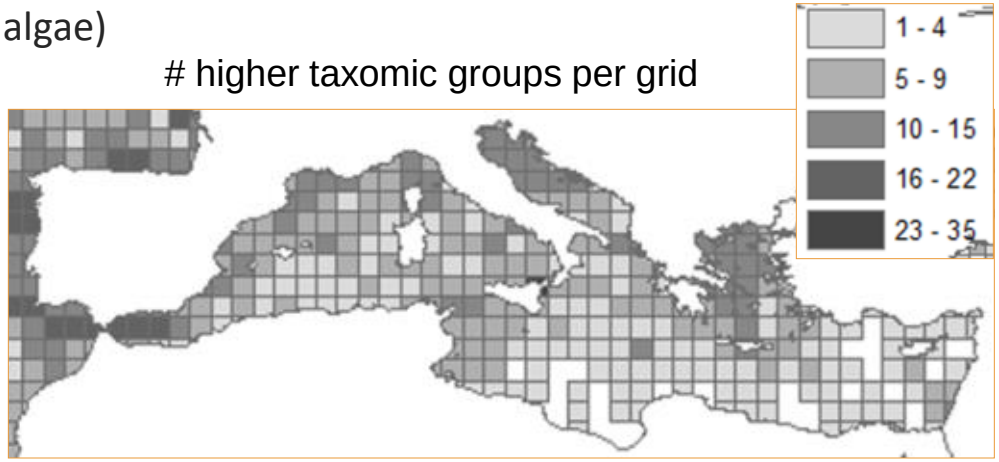


stations

Currently available in EurOBIS:

- 14 645 stations, 450 941 distribution records
- 10 600 taxa,
- mostly benthos (Crustacea & red algae)
- 79 datasets

higher taxomic groups per grid

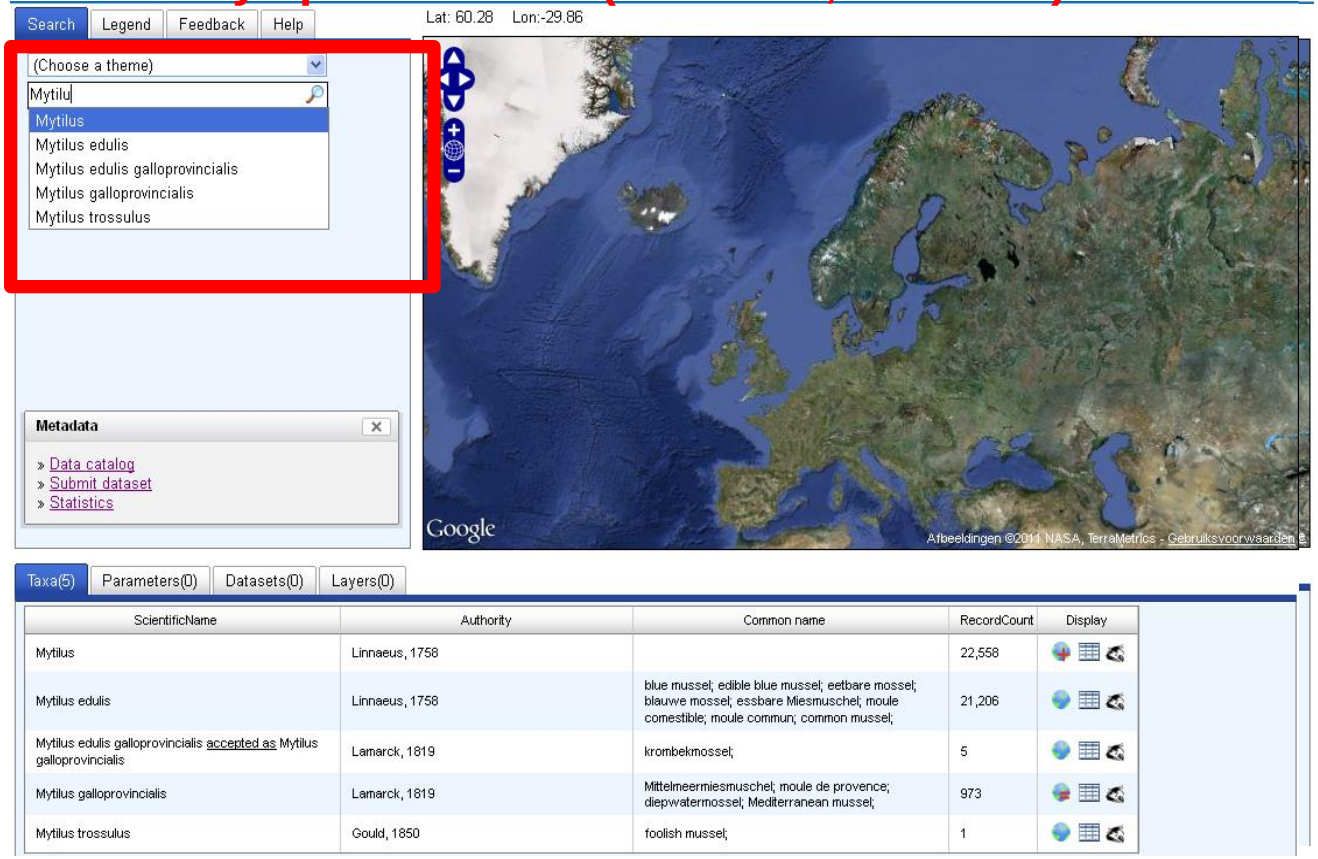


The data portal and (new) functionalities

http://bio.emodnet.eu/portal

→ Data querying (taxa; parameters, datasets, layers)

Search by species name (scientific, common)



WoRMS

View

List

Filter

Download

Metadata

The portal functionalities

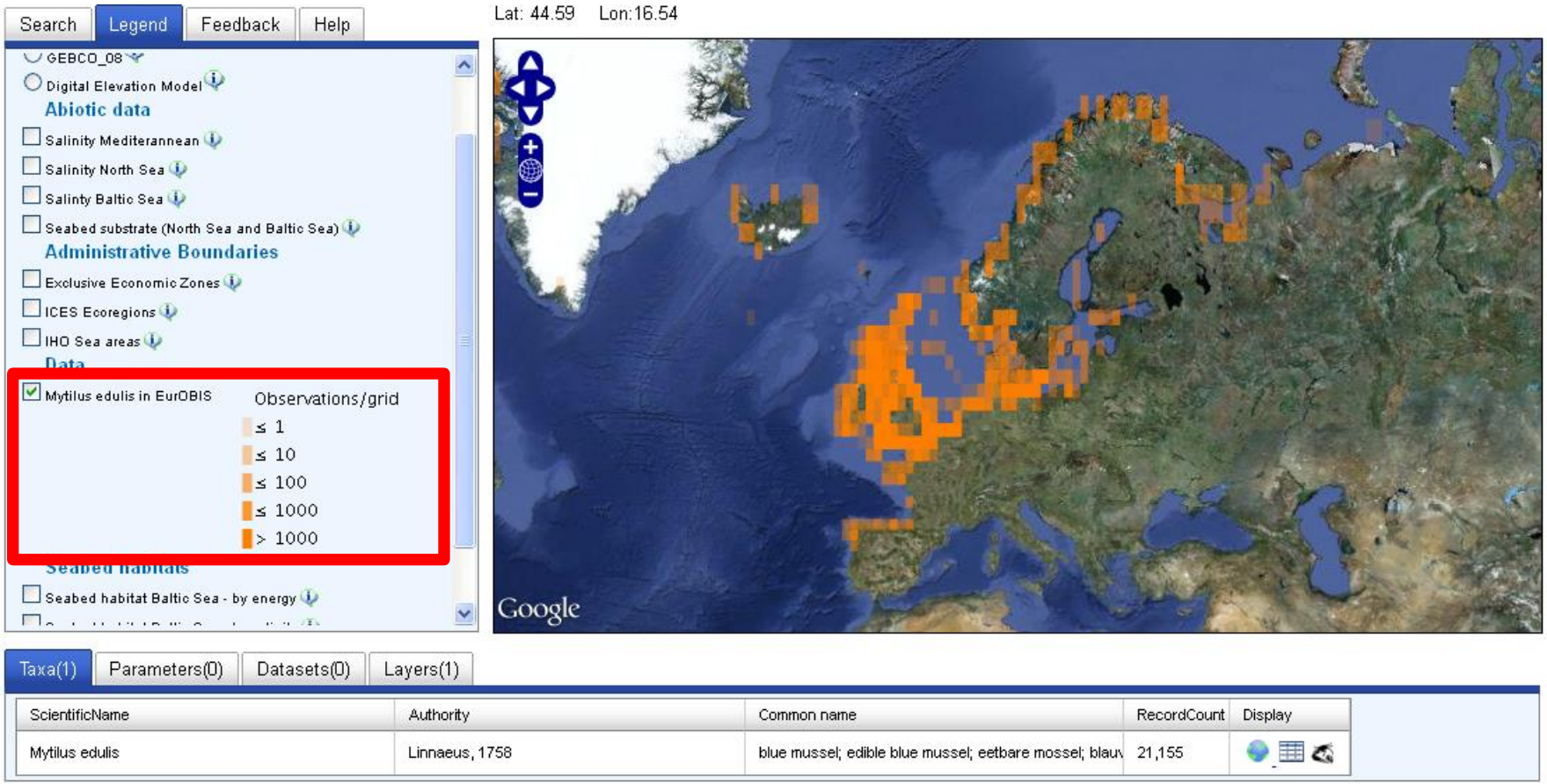
→ Taxonomic functionalities (WoRMS)

Autocompletion taxonomic search queries

Show map, include child taxa

Show map, including synonyms

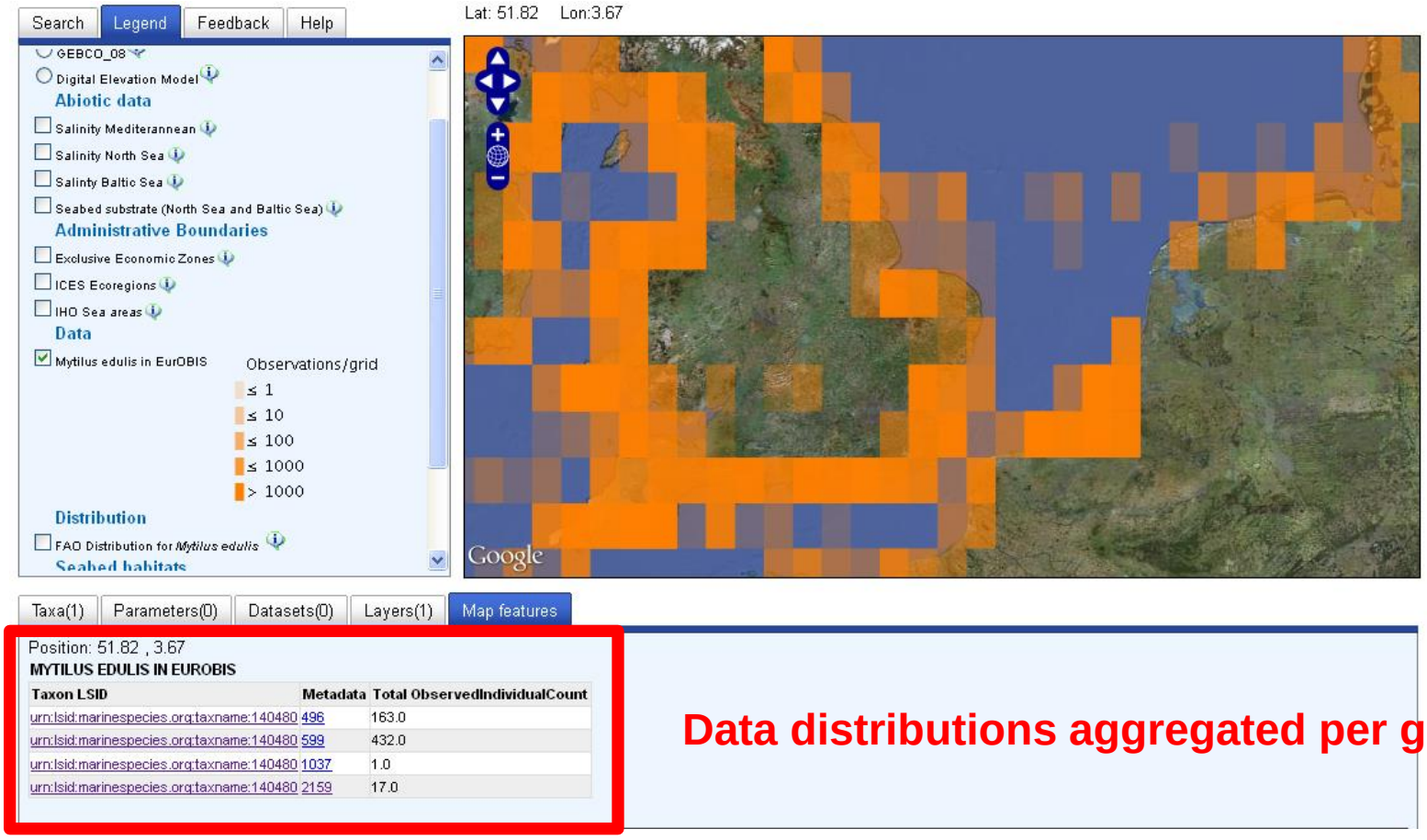
EMODnet The portal functionalities



Records aggregated: increased performance, overview data density

The portal functionalities

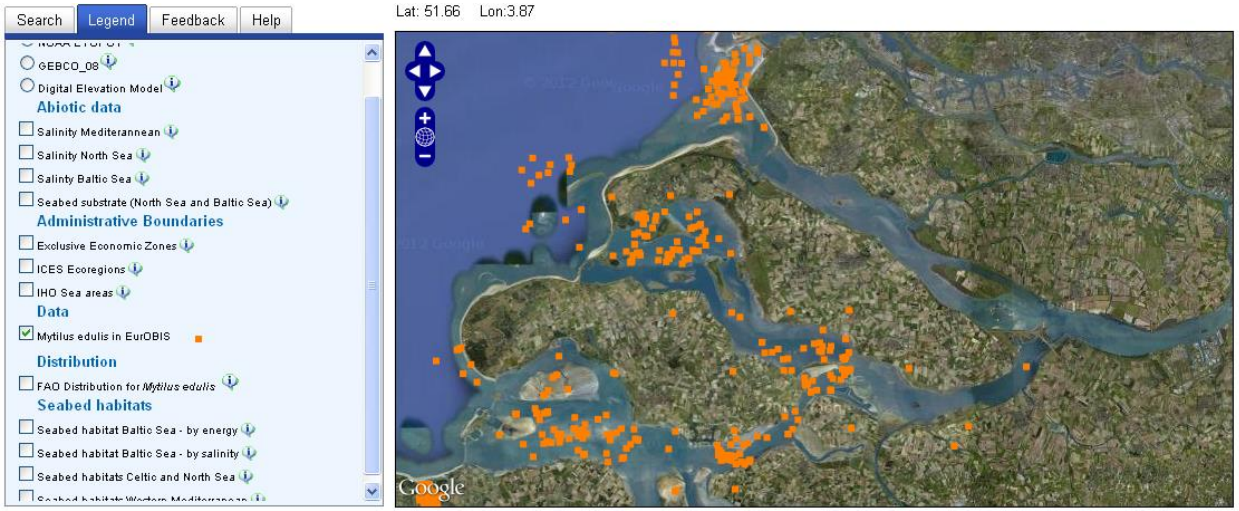
→ Data visualization



Data distributions aggregated per grid

The portal functionalities

→ Data visualization



Taxa(1) | Parameters(0) | Datasets(0) | Layers(1) | Map features

Position: 51.67 , 3.87

EUROBIS_POINTS

DateLastModified	CatalogNumber	ScientificName	Year	Month	Day	Locality	Longitude	Latitude	Precision (m)	MinDepth (m)	MaxDepth (m)	Sex	IndCount	SampleSize	InstitutionCode	Taxon LSID
2008-08-27	12143605	Mytilus edulis	1990	9	15		3.87	51.67	NULL	0	0				ICES	urn:lsid:marinespecies.org:taxname:140480
2008-08-27	12142788	Mytilus edulis	1986	6	15		3.87	51.67	NULL	0	0				ICES	urn:lsid:marinespecies.org:taxname:140480
2005-03-01	24817	Mytilus edulis	1985			Scheldt Estuary	3.87	51.67							CEME	urn:lsid:marinespecies.org:taxname:140480
2008-08-27	12142787	Mytilus edulis	1986	9	15		3.87	51.67	NULL	0	0				ICES	urn:lsid:marinespecies.org:taxname:140480
2008-08-27	12143911	Mytilus edulis	1988	9	15		3.87	51.67	NULL	0	0				ICES	urn:lsid:marinespecies.org:taxname:140480

Position: 51.66 , 3.81

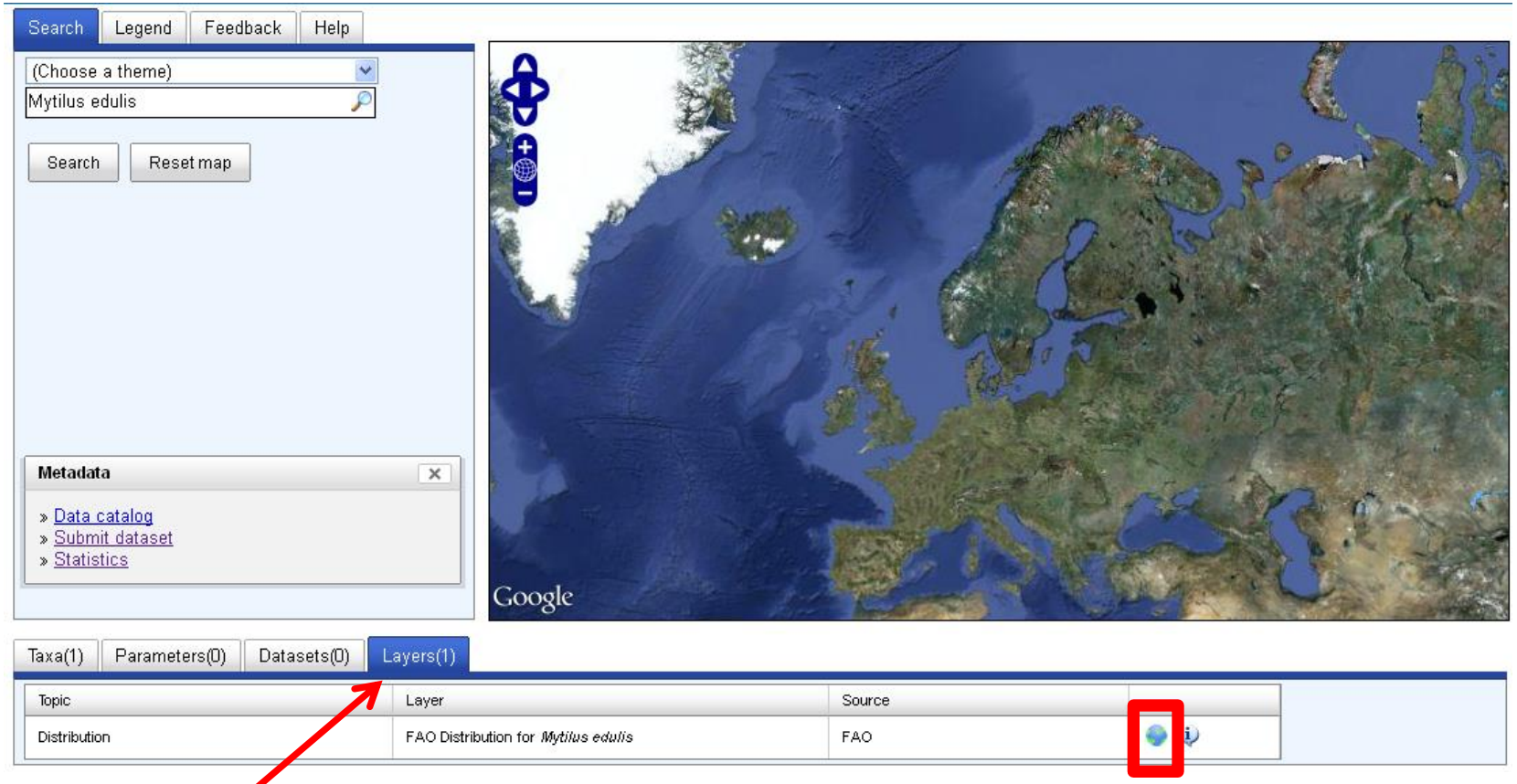
EUROBIS_POINTS

DateLastModified	CatalogNumber	ScientificName	Year	Month	Day	Locality	Longitude	Latitude	Precision (m)	MinDepth (m)	MaxDepth (m)	Sex	IndCount	SampleSize	InstitutionCode	Taxon LSID
2008-10-30	1388300	Mytilus edulis	1992	3	24	5655_Nederlands deltagebied_Oosterschelde	3.81	51.66		0				1 m²	MarBEF/LargeNet	urn:lsid:marinespecies.org:taxname:14048

Overview data attributes from EurOBIS

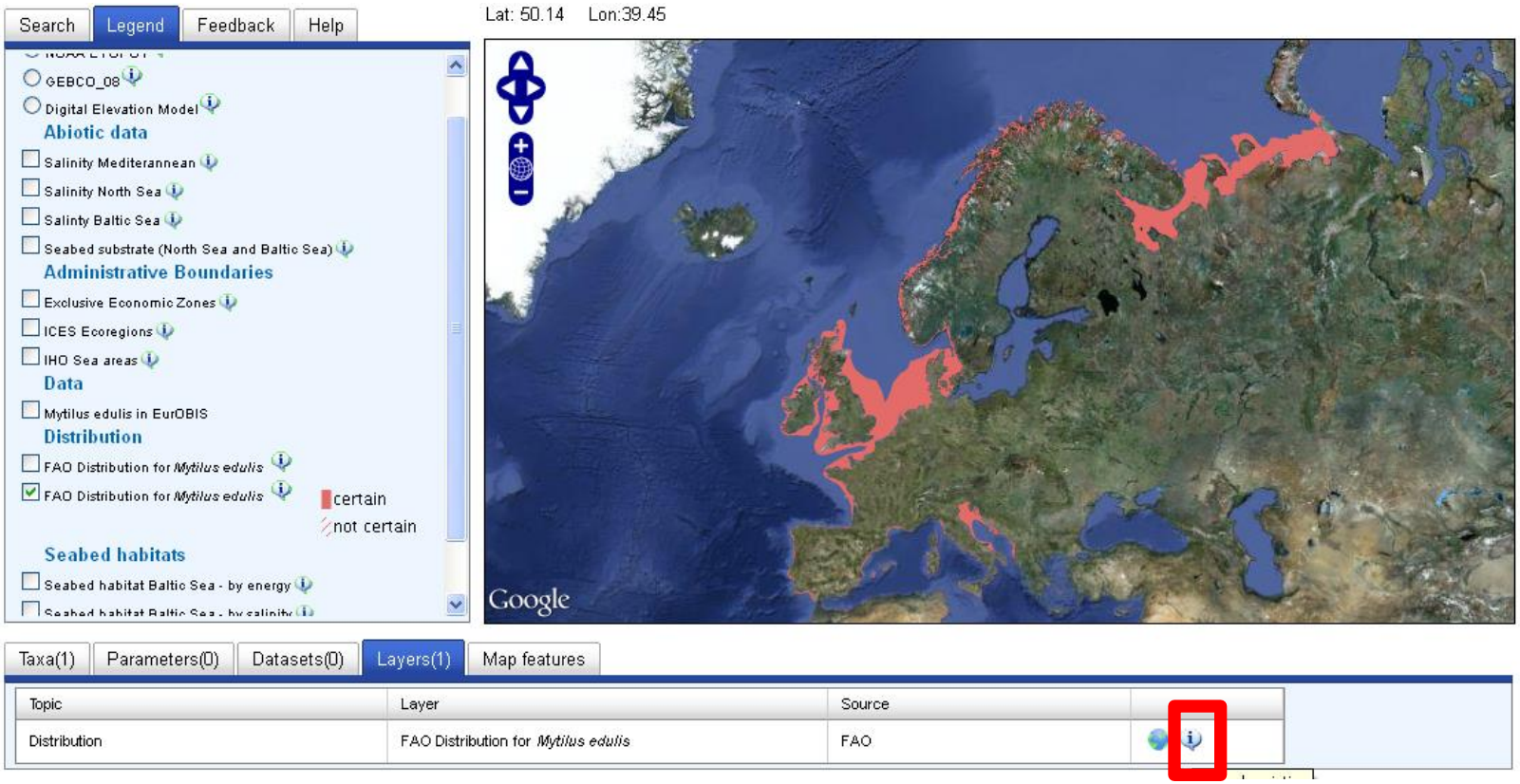
The portal functionalities

→ Data visualization



EMODnet The portal functionalities

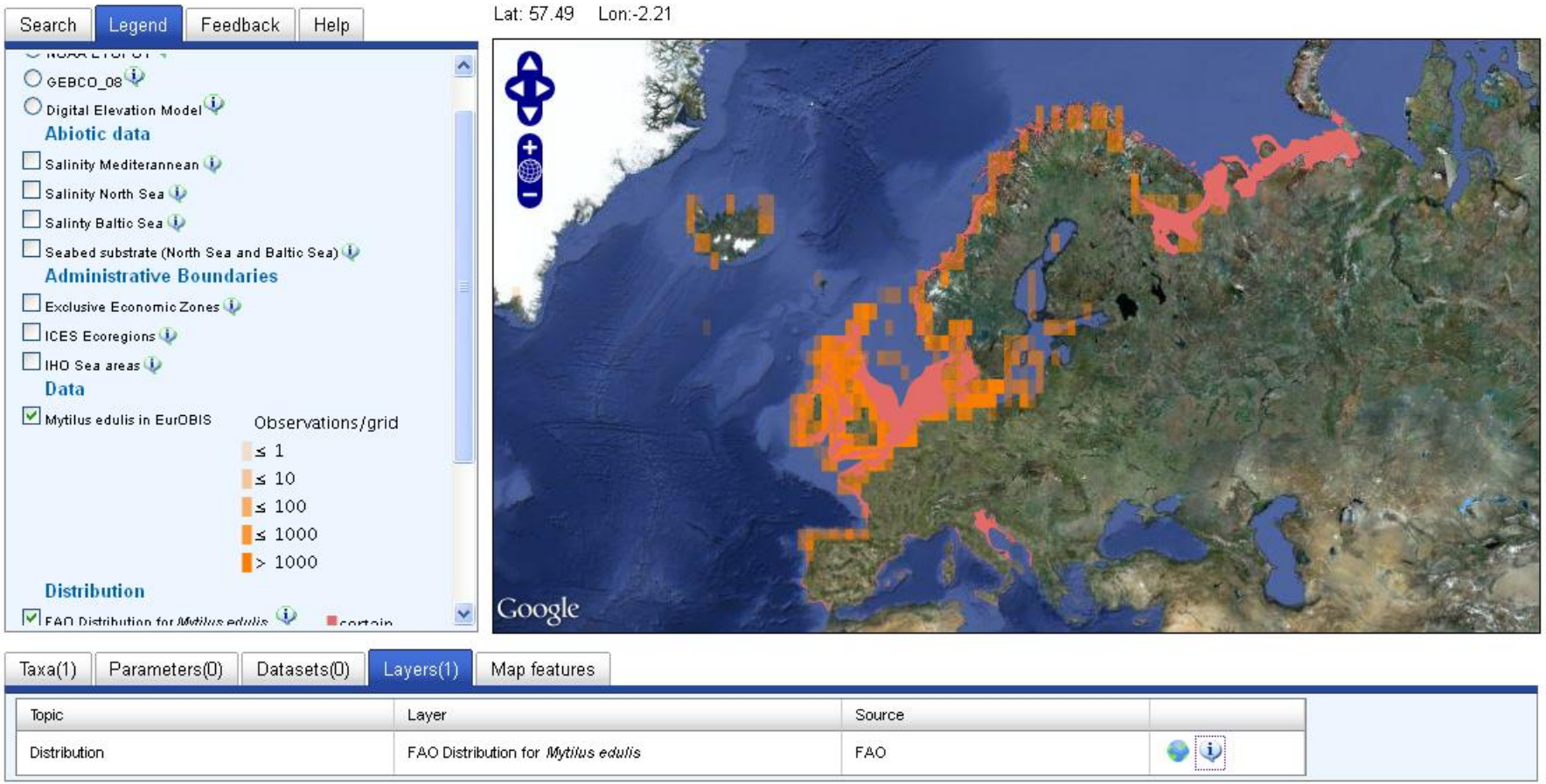
→ Data visualization



Layer and metadata served from FAO server through OGC

EMODnet The portal functionalities

Combine observation data with gridded distribution maps:
Data gaps / validation modelled distribution maps



EMODnet
European Marine Observation and Data Network

Pilot Portal For Biology
Data Discovery and Access Service

Search | Legend | Feedback | Help

Lat: 41.97 Lon:42.8

- Google Satellite
  - opacity:
- NOAA ETOPO1
- GEBCO_08
- Digital Elevation Model

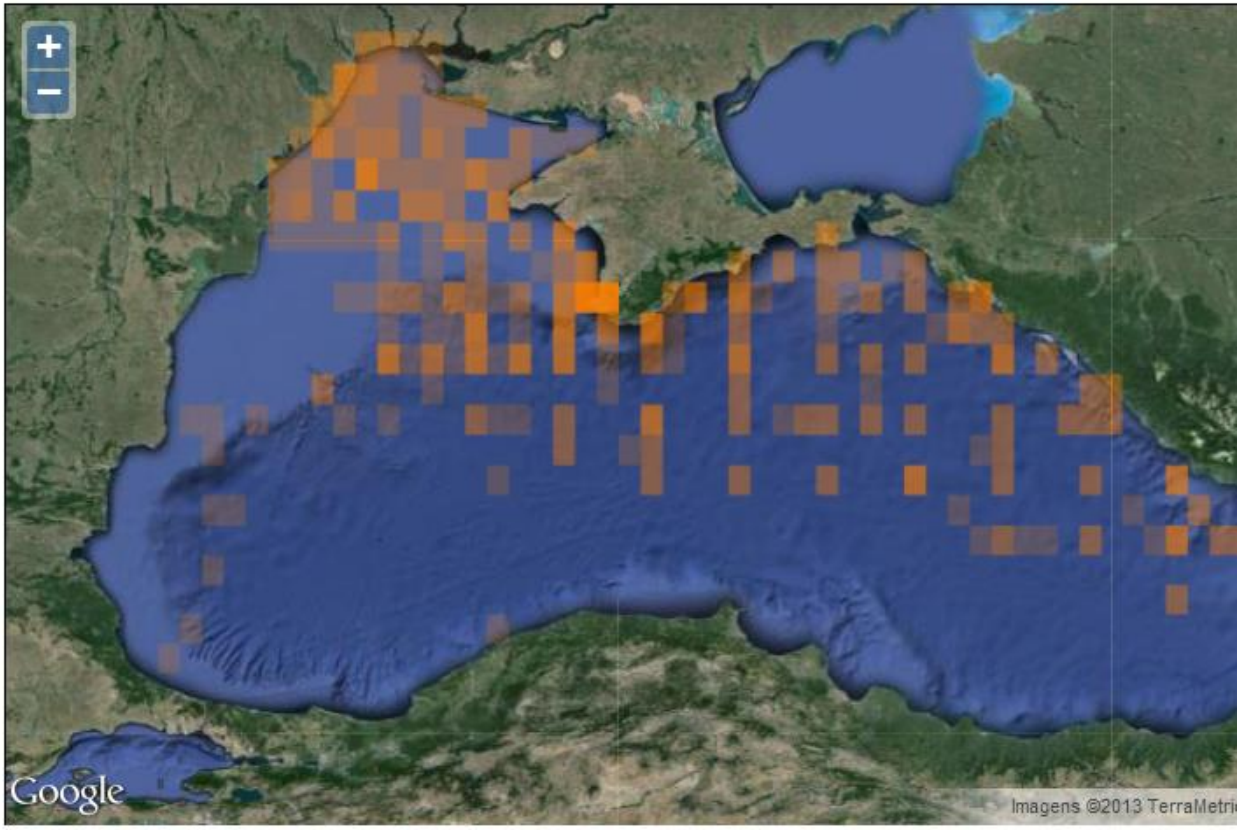
Abiotic data
- EMODNET Bathymetry
- Seabed substrate (North Sea and Baltic Sea)

Administrative Boundaries
- Exclusive Economic Zones
- ICES Ecoregions
- IHO Sea areas

Reference Grids
- EEA 10 km reference grid
- EEA 100 km reference grid

Seabed habitats
- Seabed habitat Baltic Sea - by energy
- Seabed habitat Baltic Sea - by salinity
- Seabed habitats Celtic and North Sea
- Seabed habitats Western Mediterranean

Data



Taxa(1) | Parameters(0) | Datasets(3) | Layers(0)

ScientificName	Authority	Common name	RecordCount QC	Display
Mnemiopsis leidyi	A. Agassiz, 1865	sea walnut; Amerikaanse ribkwal; Leidy's ribkwal; An	1,752	

Mnemiopsis leidyi only 1752 records

EMODnet
European Marine Observation and Data Network

Pilot Portal For Biology
Data Discovery and Access Service

Search | Legend | Feedback | Help

Lat: 45 Lon:32.49

- Google Satellite
  opacity:
- NOAA ETOPO1
- GEBCO_08
- Digital Elevation Model

Abiotic data
- EMODNET Bathymetry
- Seabed substrate (North Sea and Baltic Sea)

Administrative Boundaries
- Exclusive Economic Zones
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Reference Grids
- EEA 10 km reference grid
- EEA 100 km reference grid

Seabed habitats
- Seabed habitat Baltic Sea - by energy
- Seabed habitat Baltic Sea - by salinity
- Seabed habitats Celtic and North Sea
- Seabed habitats Western Mediterranean

Data
- Mnemiopsis leidyi in EurOBIS
  opacity:
  hide legend

Taxa(1) | Parameters(0) | Datasets(3) | Layers(0) | Map features

Position: 45 , 32.5

EUROBIS_POINTS

DateLastModified	CatalogNumber	ScientificName	Year	Month	Day	Locality	Longitude	Latitude	Precision (m)	MinDepth (m)	MaxDepth (m)	Sex	IndCount	SampleSize	InstitutionCode	Taxon L
2011-06-16	Krenkel-59, station 41?	Mnemiopsis leidyi	1992	12	10		32.5	45		25	50		2.3	ind/m²	Ukrainian Scientific Center of Ecology of Sea (Ukr	urn:lsid:n
2011-06-16	Parshin-22, station 93/90	Mnemiopsis leidyi	1999	5	27		32.5	45		0	82		0.12	ind/m²	Ukrainian Scientific Center of Ecology of Sea (Ukr	urn:lsid:n
2011-06-16	Krenkel-59, station 41?	Mnemiopsis leidyi	1992	12	10		32.5	45		0	10		18.6	ind/m²	Ukrainian Scientific Center of Ecology of Sea (Ukr	urn:lsid:n
2011-06-16	Krenkel-58, station 41?	Mnemiopsis leidyi	1992	9	26		32.5	45		0	10		33	ind/m²	Ukrainian Scientific Center of Ecology of Sea (Ukr	urn:lsid:n
2011-06-16	Ushakov-61, station 38b	Mnemiopsis leidyi	1992	5	23		32.5	45		50	70		0.6	ind/m²	Ukrainian Scientific Center of Ecology of Sea (Ukr	urn:lsid:n

EMODnet

EMODnet
European Marine Observation and Data Network

Pilot Portal For Biology
Data Discovery and Access Service

Search | Legend | Feedback | Help

Lat: 54.62 Lon:2.01

- Google Satellite
- NOAA ETOPO1 #
- GEBCO_08
- Countries

Admininstrative Boundaries

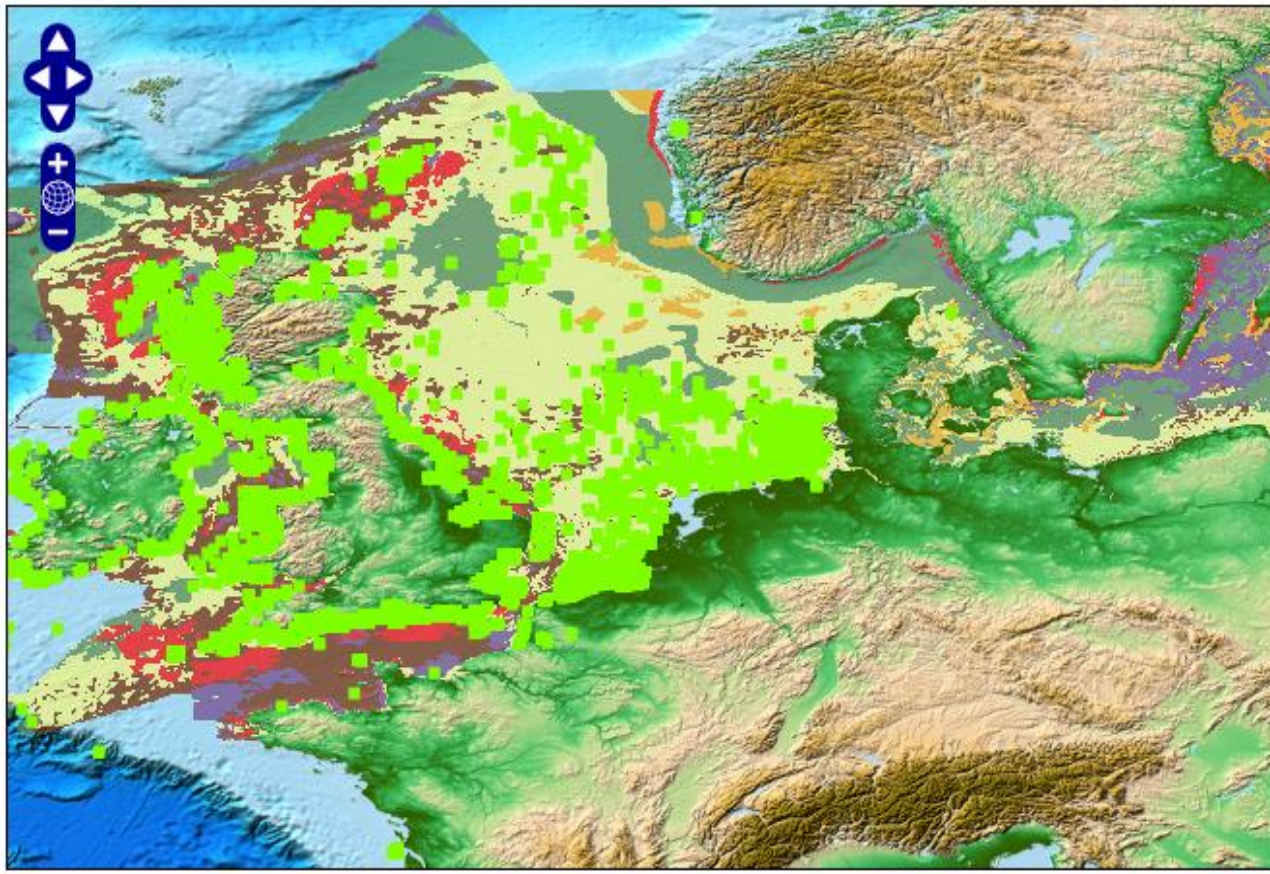
- Exclusive Economic Zones
- ICES Ecoregions
- IHO Sea areas
- World grid 5°

Data

- Lanice conchilega in EurOBIS

Geology

- Sea Bed Substrate, North Sea & Baltic Sea
  - 1. Mud to sandy mud
  - 2. Sand to muddy sand
  - 3. Coarse -grained sediment
  - 4. Mixed sediment
  - 6. Diamicton (Till)
  - 7. Bedrock

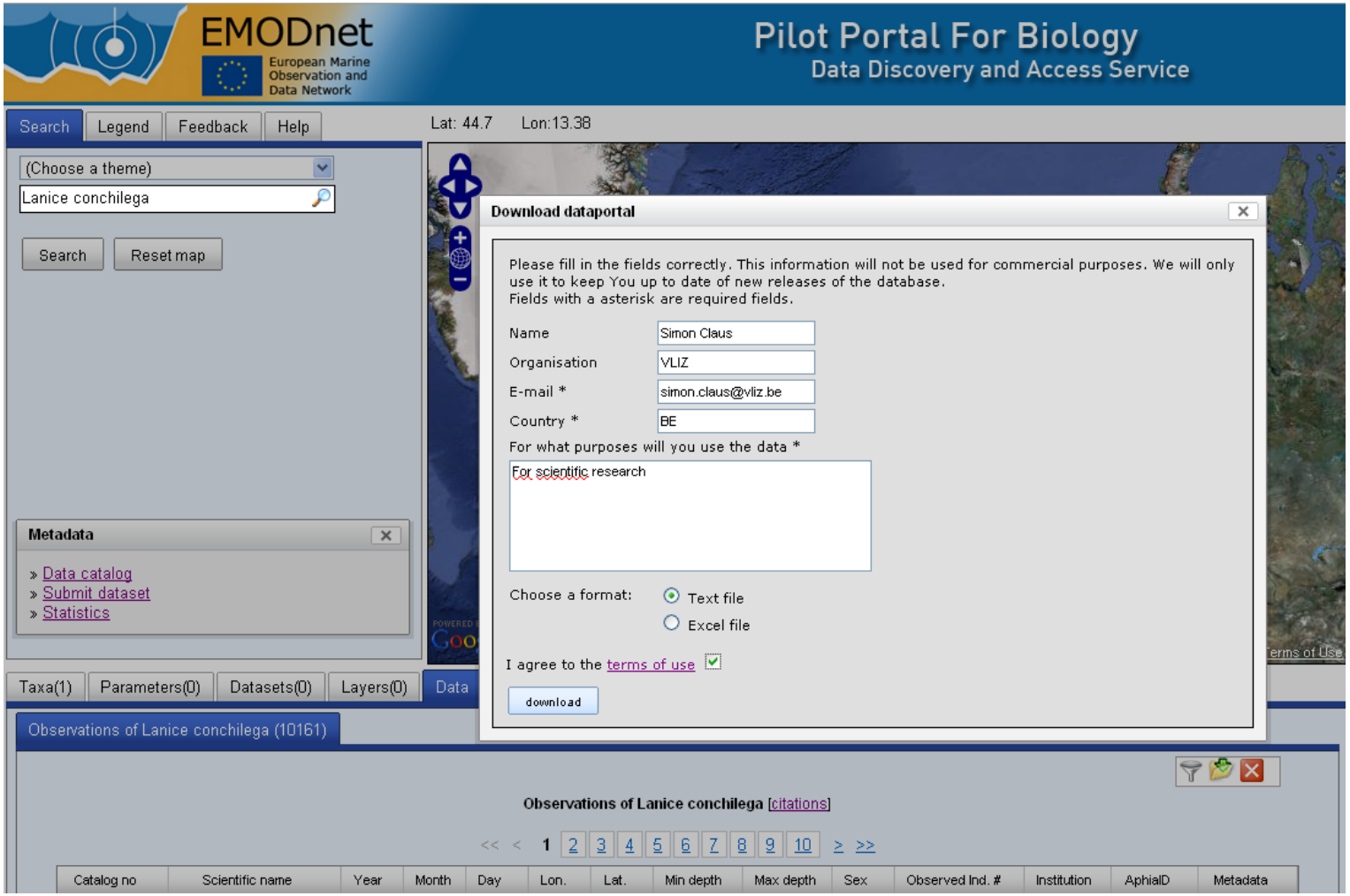


Taxa(1) | Parameters(0) | Datasets(0) | Layers(0)

ScientificName	Authority	Common name	AphiaID	RecordCount	Disp
Lanice conchilega	Pallas, 1766	sand mason;	131495	10,161	

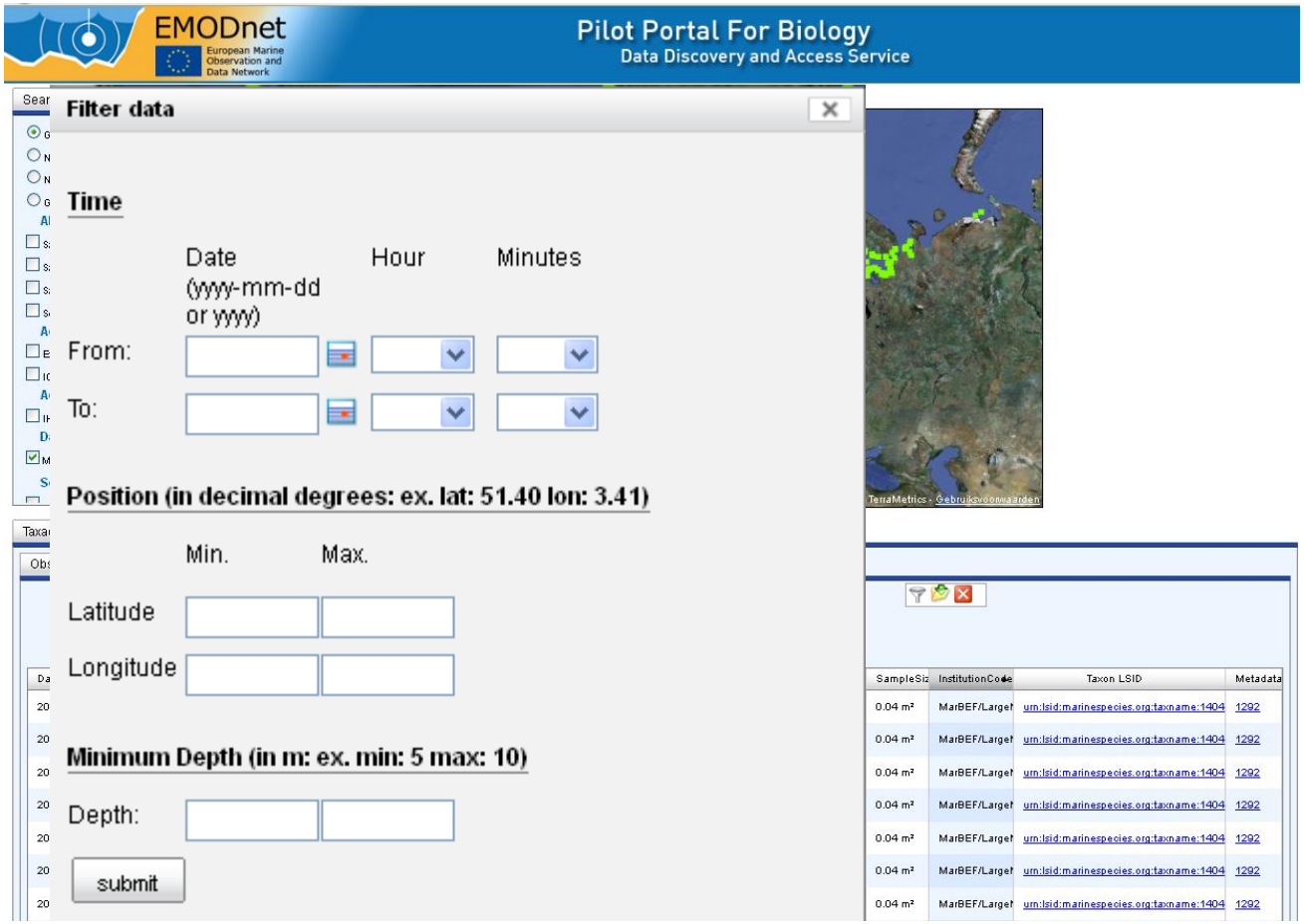
...to find, access, assemble data efficiently and rapidly

→ Data downloading



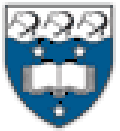
The portal functionalities

→ Filter Data



EMODnet

- EMODnet Biology 2 (2013-2016)
  - Build further upon Biology I - 23 partners



Specific Biology Objectives

- The biological portal should provide data and metadata on surveys in the water column and on the sea-bed from each of the following groups of marine species, hereafter called categories: (1) phytoplankton/(2) zooplankton/(3) angiosperms/(4) macro-algae/(5) invertebrate bottom fauna/(6) birds (surface observation at sea and coastal nesting)/(7) mammals/(8) reptiles/(9) fish (other than the data on fish species collected through the Common Fisheries Policy Data Collection Framework=>WP3,4

- The portal should provide free access to all the data and metadata obtained within the EurOBIS database and at least three other separately managed databases.=>WP3,4

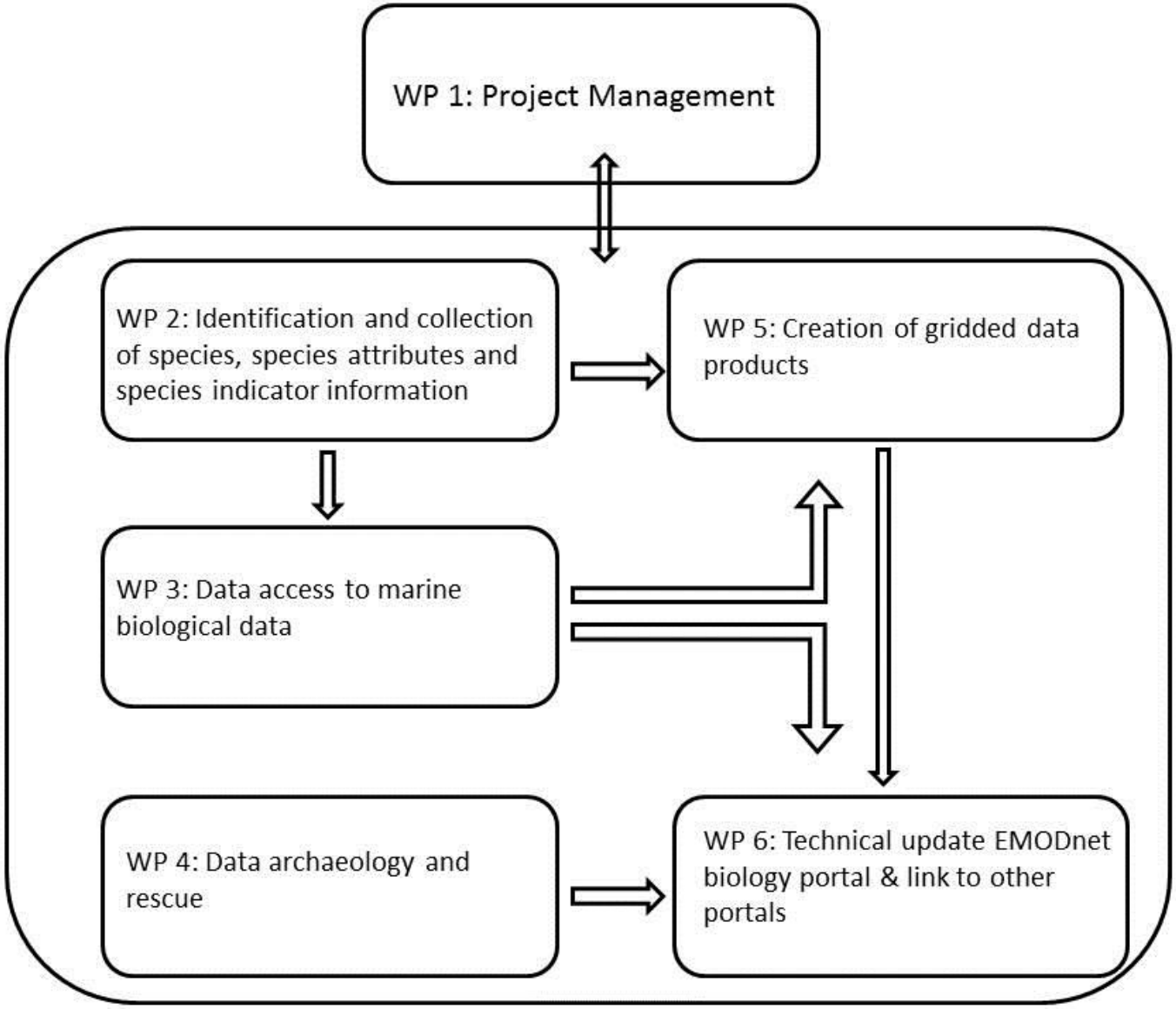
- This list does not include commercial fish species which are dealt with separately under the Data Collection Framework and do not need to be considered here although the portal should be able to accept data stream from the data Collection framework should that be made available. The portal should be pre-disposed to provide access to data from fisheries surveys should the data become available=>WP6

Specific Biology Objectives

- Special attention should be given to those species and communities (habitats) which are protected by EU Directives and international conventions, and those to be used as indicators for Marine Strategy Framework Directive (when known from reporting in October 2012).The level of protection (if appropriate) of a given species should be included =>WP 2

- For at least three species of each of these species groups, a gridded set of map layers should be produced showing the average abundance of the species in a set of time window (seasonal or annual as appropriate). The user should then be able to understand the precision of the result. =>WP5

- The portal should also calculate spatially distributed data products specifically relevant for Marine Strategy Framework Directive Descriptor 2 (non-indigenous species) based on guidance provided by the MSFD Common Implementation Strategy.=>WP2, WP5


WP 1: Project Management
WP 2: Identification and collection of species, species attributes and species indicator information
WP 5: Creation of gridded data products
WP 3: Data access to marine biological data
WP 4: Data archaeology and rescue
WP 6: Technical update EMODnet biology portal & link to other portals

Kick off meeting last week

Thank you!