MARITIME AFFAIRS

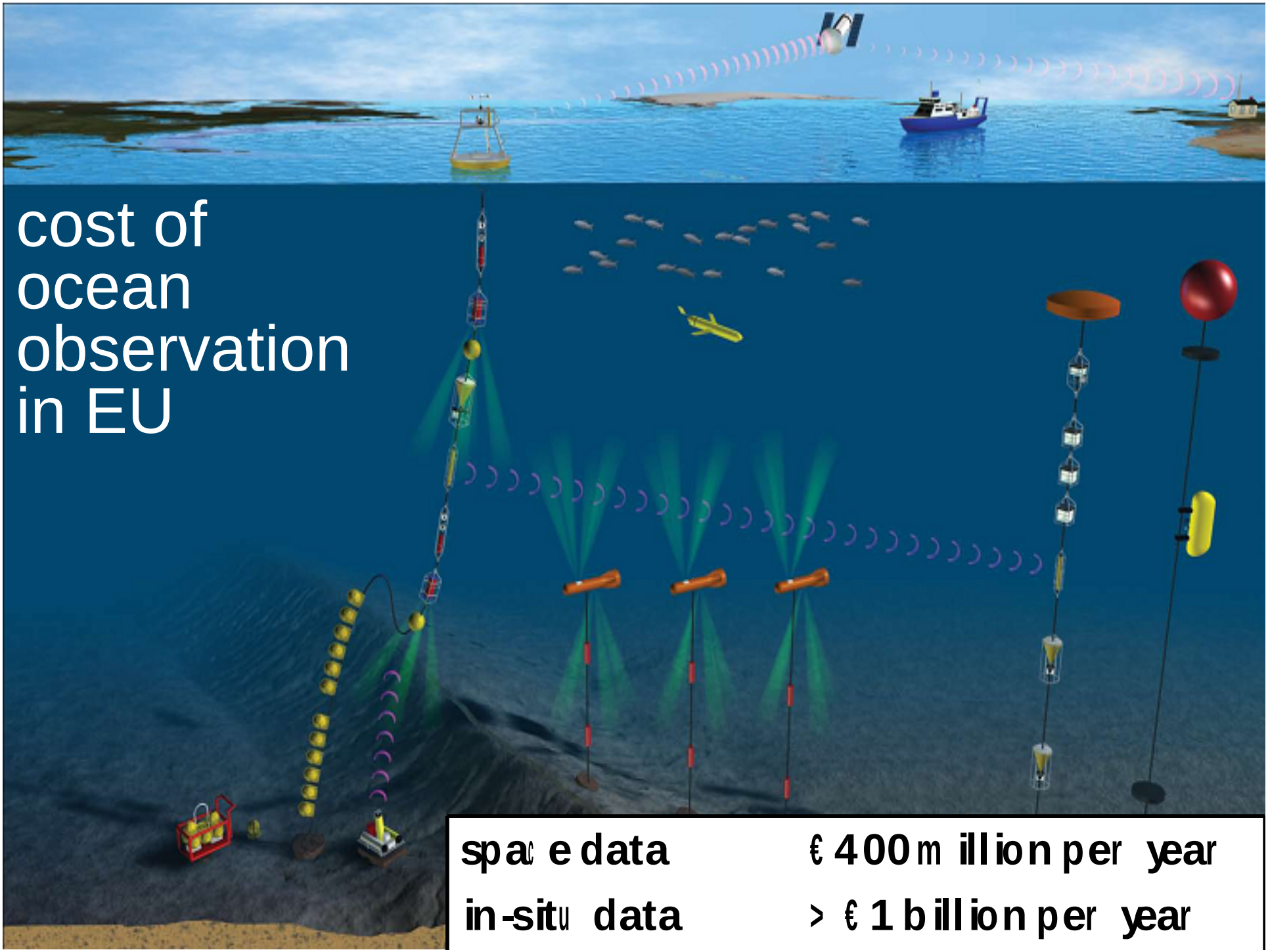
marine knowledge 2020

Visualisation needs

DG MARE Iain Shepherd Singapore, February 2012

European Commission
Maritime Affairs and Fisheries

growth in the marine economy is accelerating


cost of ocean observation in EU
space data
€ 400 million per year
in-situ data
> € 1 billion per year

Maria Damanaki, Commissioner for Maritime Affairs and Fisheries

(..)the data collected through these observations can only generate knowledge and innovation if Europe's engineers and scientists are able to find, access, assemble and apply them efficiently and rapidly. At present this is often not the case.

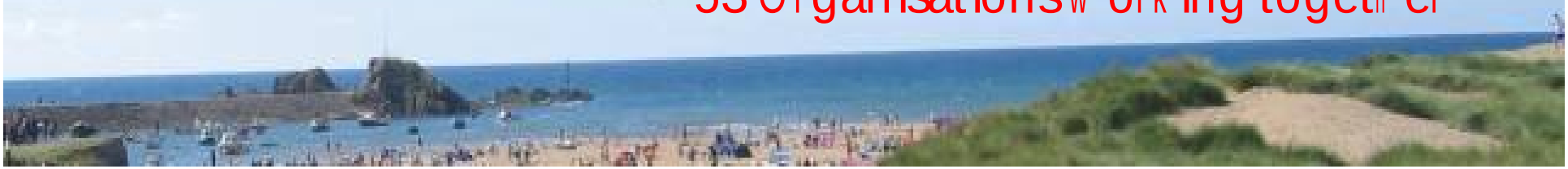
expected benefits of EMODnet in long-term according to impact assessment

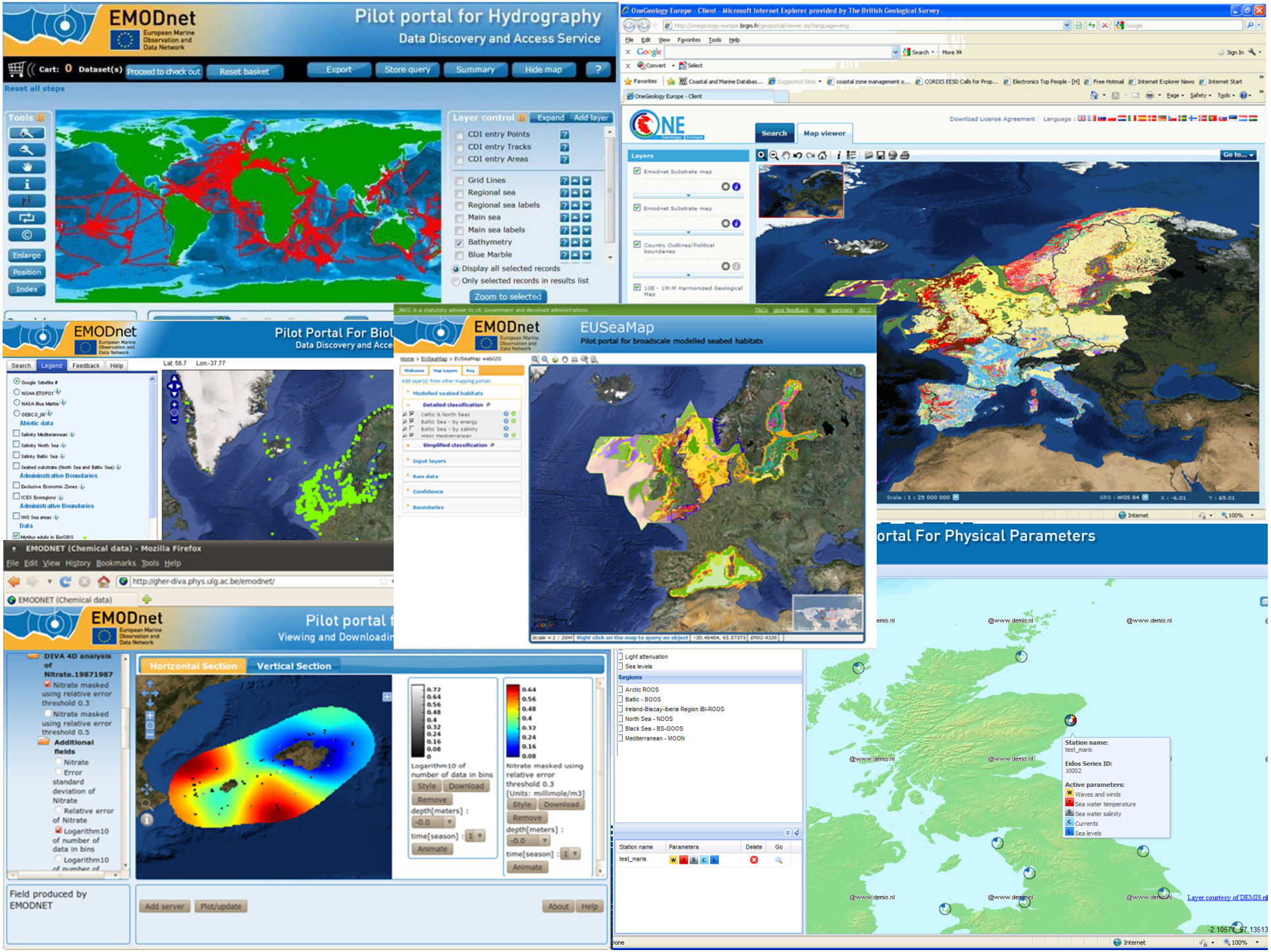
- **€ 300 million annually**
  - reducing of operating cost of which
    - € 100 million for science
    - € 56 million for public authorities
    - € 150 million for private companies
- **€ 60-€ 200 million annually**
  - increasing competition and opportunities
    - contributes to innovation and growth

with inevitable growth in marine economy, these benefits will increase

BELGIUM, Flanders Marine Institute/Vlaams Instituut voor de Zee (VLIZ), Royal Belgian Institute of Natural Sciences, University of Liege - GeoHydrodynamics and Environment Research (ULG); Belgium; **BULGARIA**, Institute of Oceanology Bulgarian Academy of Science (IO-BAS), **CYPRUS**, University of Cyprus-Oceanography Centre (OC), **DENMARK**, Danish Environmental and Planning Agency (BLST), Danish Hydraulic Institute (DHI), Geological Survey of Denmark and Greenland, National Environmental Research Institute (NERI-HMAR), **ESTONIA**, Geological Survey of Estonia, **FINLAND**, Geological Survey of Finland, **FRANCE**, Bureau de recherches géologiques et minières, Collecte Localisation Satellites (CLS), Institut Français de Recherche pour l'Exploitation de la Mer (Ifremer), Service Hydrographique et Oceanographique de la Marine (SHOM), **GEORGIA**, Iv. Javakhishvili Tbilisi State University (TSU-DNA), **GERMANY**, Alfred Wegener Institute for Polar and Marine Research (AWI), Bundesamt für Seeschiffahrt und Hydrographie (BSH-DOD),, Federal Institute for Geosciences and Natural Resources, University of Bremen (UniHB), **GREECE**, Hellenic Centre for Marine Research (HCMR), **INTERNATIONAL**, International Council for the Exploration of the Sea (ICES), The Global Biodiversity Information Facility (GBIF), UNEP/GRID-Arendal, **IRELAND**, Geological Survey of Ireland, Marine Institute (MI), **ITALY**, ETT s.r.l., Istituto Nazionale di Oceanografia e di Geofísica Sperimentale (OGS), Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), **LATVIA**, Latvian Environment, Geology and Meteorology Agency, **LITHUANIA**, Lithuania institute of Geology and Geography, **NETHERLANDS**, ATLAS, Deltares, Mariene Informatie Service MARIS 'BV, NIOZ Royal Netherlands Institute for Sea Research (NIOZ), Royal Netherlands Academy of Arts and Sciences/Koninklijke Nederlandse Akademie van Wetenschappen (KNAW); Netherlands Institute of Ecology, Centre for Estuarine and Marine Ecology (NIOO-CEME), **NORWAY**, Geological Survey of Norway, Norwegian Marine Data Centre - Institute of Marine Research (IMR), **POLAND**, Polish Geological Institute, **ROMANIA**, National Institute for Marine Research and Development "Grigore Antipa" (NIMRD), **RUSSIA NFEDERATION**, All Russian Research Institute of Hydro-meteorological Information - WDCB (RHMI-WDC), P.P. Shirshov Institute of Oceanology Russian Academy of Science (SIO-RAS), **SPAIN**, Instituto Español de Oceanografía (IEO), **SWEDEN**, Geological Survey of Sweden, Sveriges Meteorologiska Och Hydrologiska Institut (SMHI), Swedish Environmental Protection Agency, **UKRAINE**, Institute of Biology of the Southern Seas, National Academy of Sciences of Ukraine (IBSS NASU, Marine Hydro-physical Institute (MHI), **UNITED KINGDOM**, Joint Nature Conservation Committee Support Co, NERC British Océanographie Data Centre, Liverpool (BODC), NERC, British Geological Survey, Edinburgh (BGS), NERC, National Oceanography Centre Southampton (NOC), **UNITED STATES**, Rutgers University, Institute for Marine and Coastal Sciences (IMCS),

53 Organisations working together

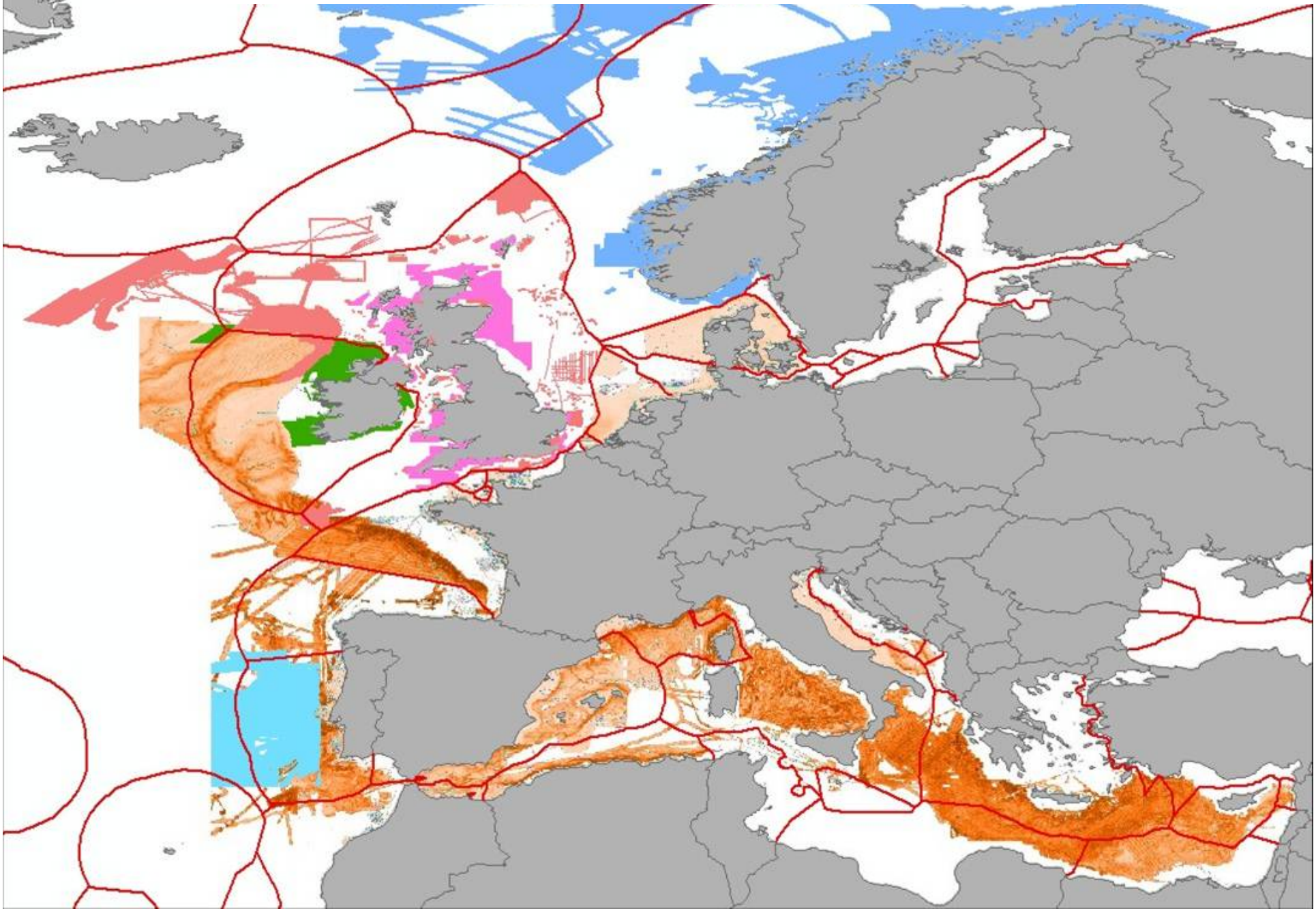



EMODnet
European Marine Observation and Data Network
Pilot portal for Hydrography
Data Discovery and Access Service
Cart: 0 Dataset(s)
Proceed to check out
Reset basket
Export
Store query
Summary
Hide map
Reset all steps
Tools
Enlarge
Position
Index
Layer control
Expand
Add layer
CDI entry Points
CDI entry Tracks
CDI entry Areas
Grid Lines
Regional sea
Regional sea labels
Main sea
Main sea labels
Bathymetry
Blue Marble
Display all selected records
Only selected records in results list
Zoom to selected
OneGeology Europe - Client - Microsoft Internet Explorer provided by The British Geological Survey
Search
Map viewer
Layers
Emodnet Substrate map
Country Outlines/Political boundaries
Pilot Portal For Biol
Data Discovery and Acce
Search
Legend
Feedback
Help
Abiotic data
Administrative Boundaries
Data
EUSeaMap
Pilot portal for broadscale modelled seabed habitats
Modelled seabed habitats
Detailed classification
Simplified classification
Input layers
Raw data
Confidence
Boundaries
EMODNET (Chemical data) - Mozilla Firefox
http://gher-diva.phys.ulg.ac.be/emodnet/
Pilot portal f
Viewing and Downloadi
ortal For Physical Parameters
DIVA 4D analysis of Nitrate.19871987
Nitrate masked using relative error threshold 0.3
Nitrate masked using relative error threshold 0.5
Additional fields
Nitrate
Error standard deviation of Nitrate
Relative error of Nitrate
Logarithm10 of number of data in bins
Horizontal Section
Vertical Section
Logarithm10 of number of data in bins
Style
Download
Remove
depth[meters] :
time[season] :
Animate
Nitrate masked using relative error threshold 0.3 [Units: millimole/m3]
Field produced by EMODNET
Add server
Plot/update
About
Help
Light attenuation
Sea levels
Regions
Arctic ROOS
Baltic - BOOS
Ireland-Biscay-Iberia Region IBI-ROOS
North Sea - NOOS
Black Sea - BS-GOOS
Mediterranean - MOON
Station name
Parameters
Delete
Go
test_maris
Station name:
test_maris
Eidos Series ID:
10002
Active parameters:
Waves and winds
Sea water temperature
Sea water salinity
Currents
Sea levels
Layer courtesy of DEMIS.nl

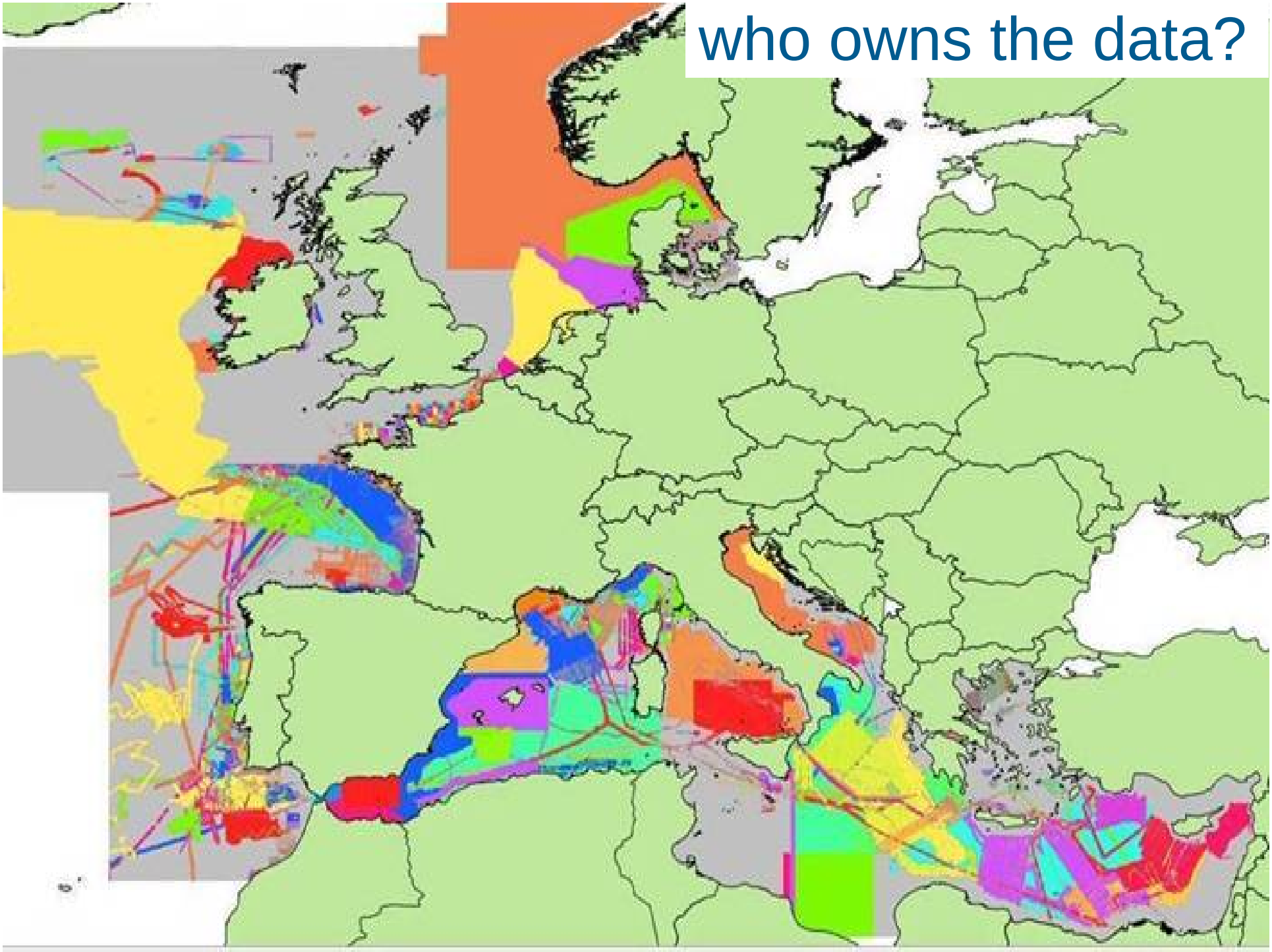
visualisation challenges

- who owns the data?
- where are there gaps in the data?
- what is precision in data?
- how can we see abundance of species?
- how can we see distribution of pollution in time and space?
-

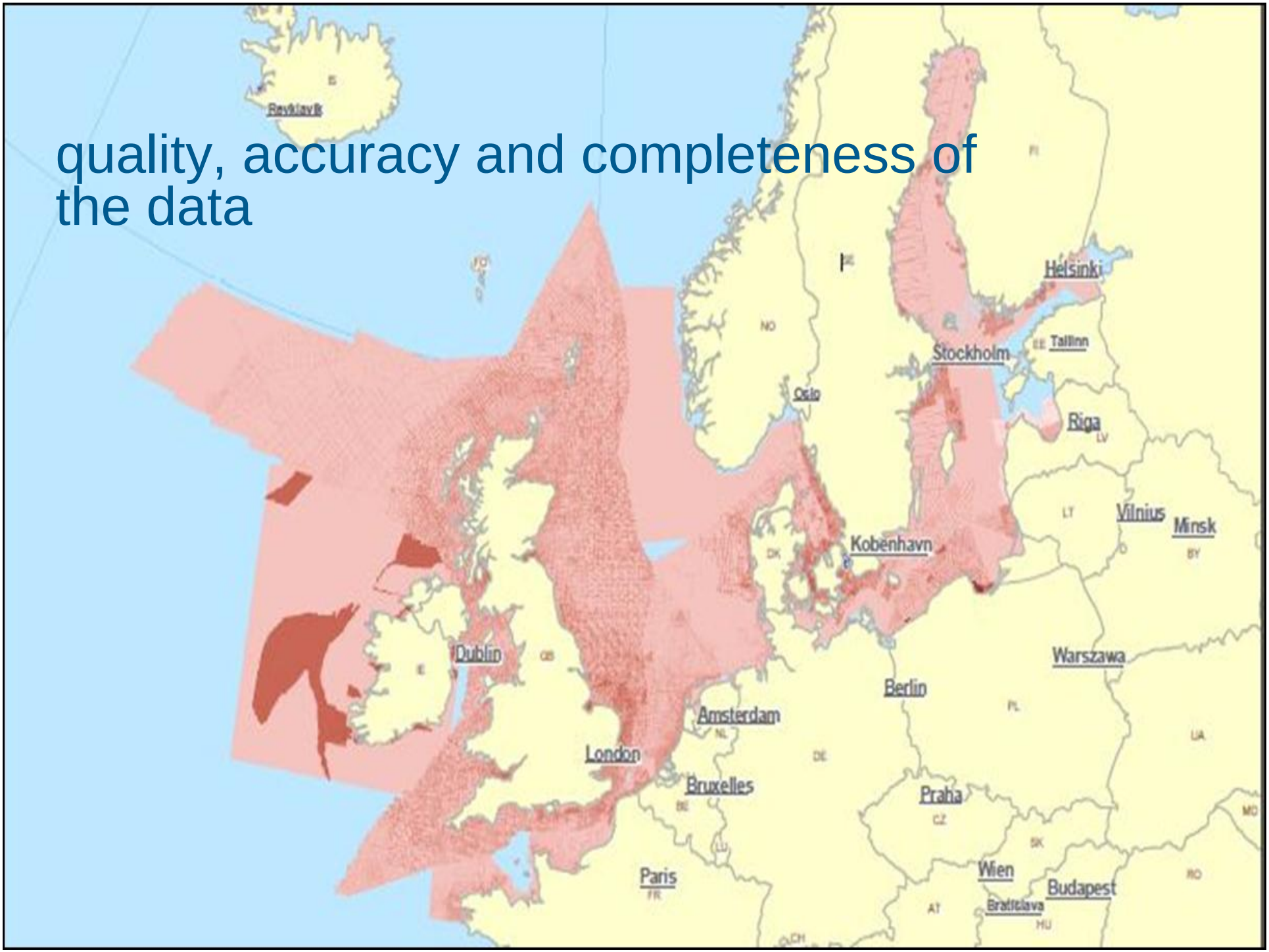
where do we have survey data?



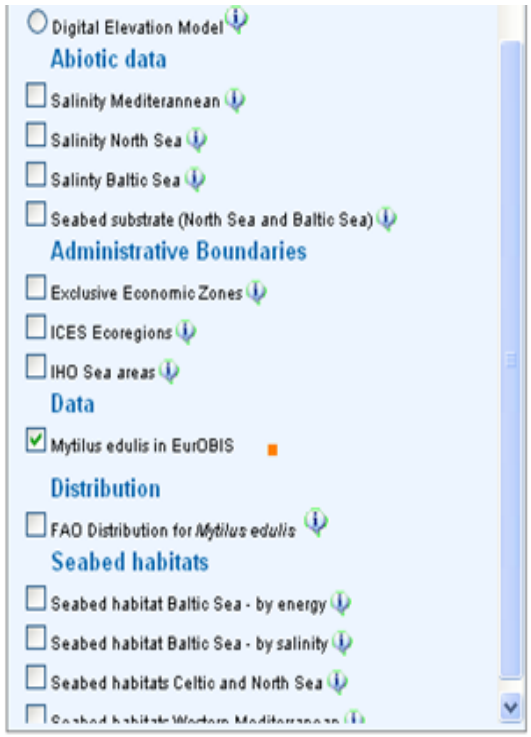
who owns the data?

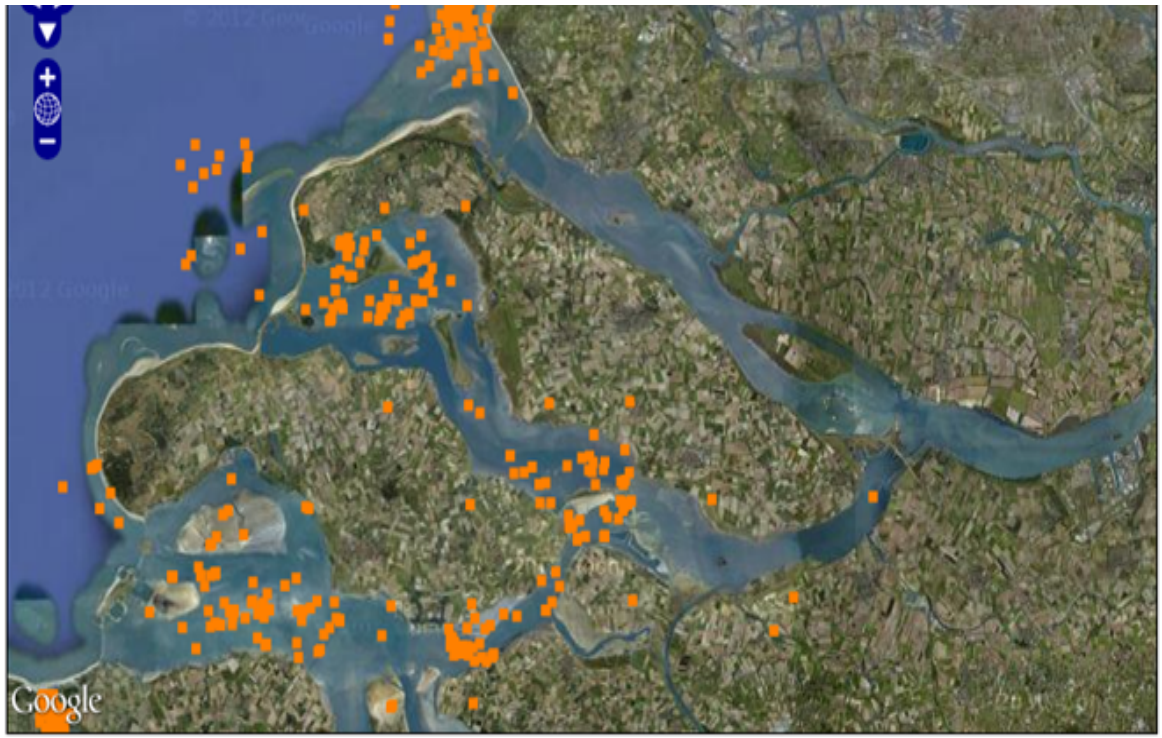


quality, accuracy and completeness of the data



processing observations to provide abundance information





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

Position: 51.67 , 3.87

EUROBIS_POINTS

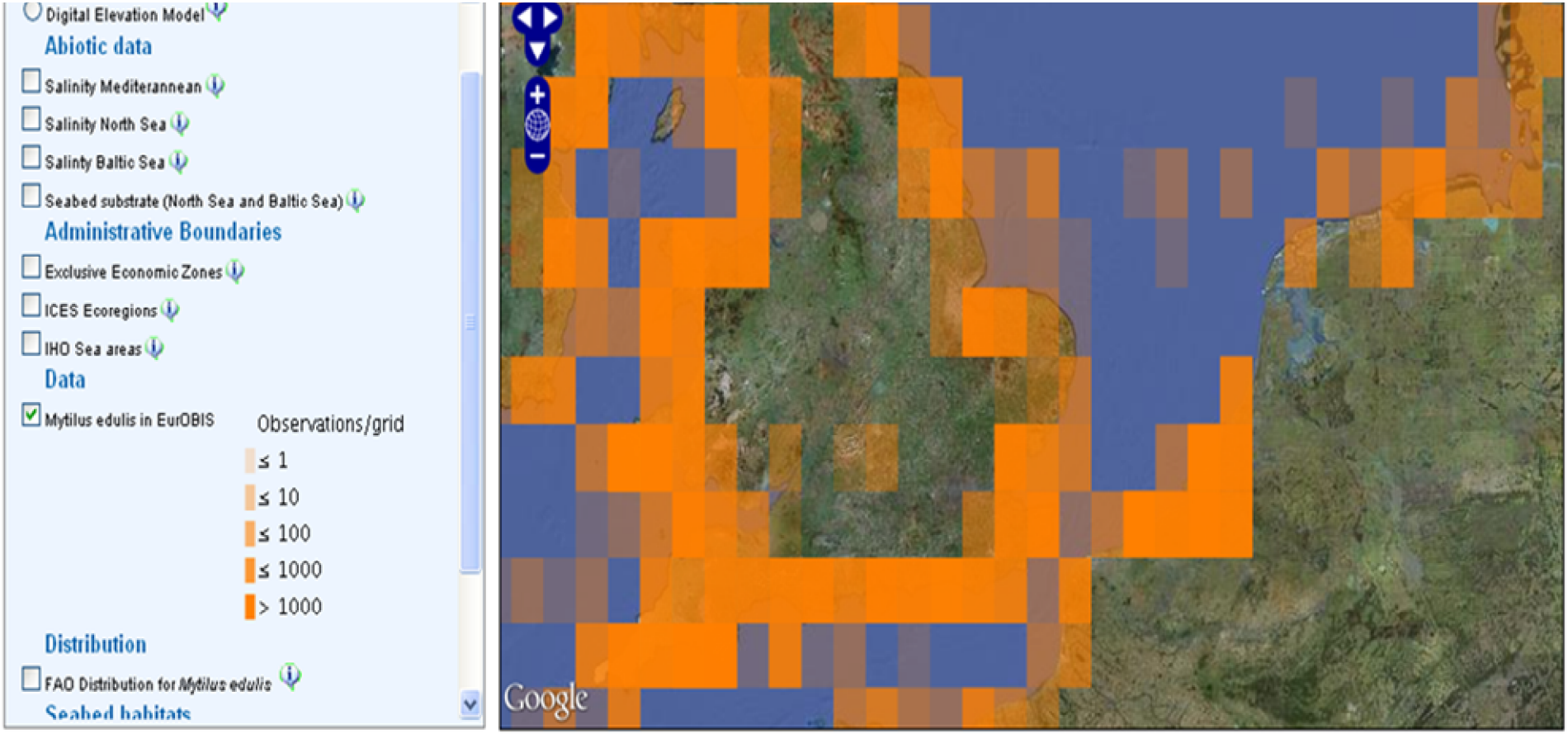
DateLastModified	CatalogNumber	ScientificName	Year	Month	Day	Locality	Longitude	Latitude	Precision (m)	MinDepth (m)	MaxDepth (m)	Sex	IndCount	SampleSize	InstitutionCode	Taxon LSID
2008-08-27	12143605	Mytilus edulis	1990	9	15		3.87	51.67	NULL	0	0				ICES	urn:lsid:marinespecies.org:taxname:140480
2008-08-27	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

what is density of observation?



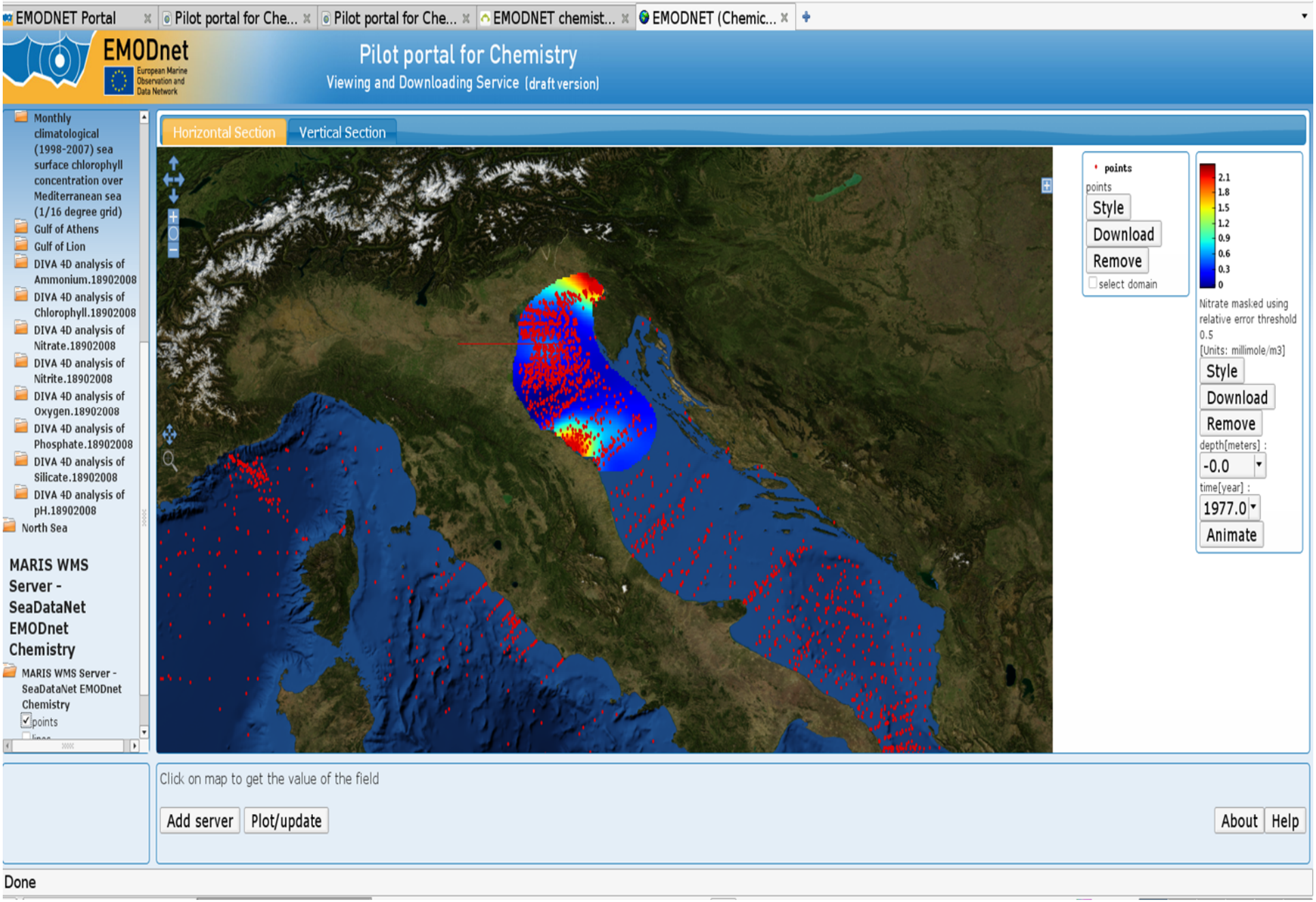
Taxa(1) | Parameters(0) | Datasets(0) | Layers(1) | Map features

Position: 51.82 , 3.67

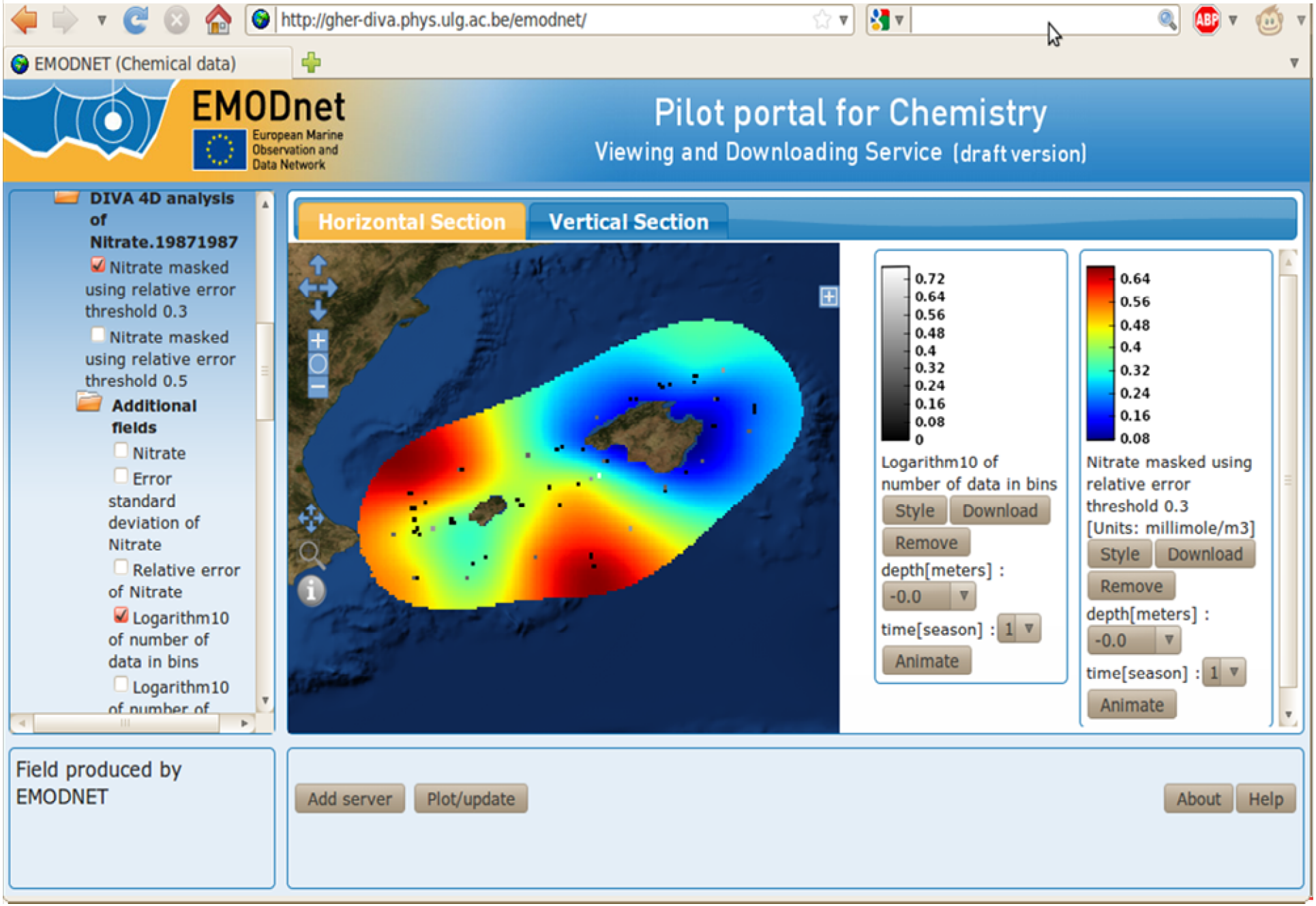
MYTILUS EDULIS IN EUROBIS

Taxon LSID	Metadata	Total ObservedIndividualCount
urn:lsid:marinespecies.org:taxname:140480	496	163.0
urn:lsid:marinespecies.org:taxname:140480	599	432.0
urn:lsid:marinespecies.org:taxname:140480	1037	1.0
urn:lsid:marinespecies.org:taxname:140480	2159	17.0

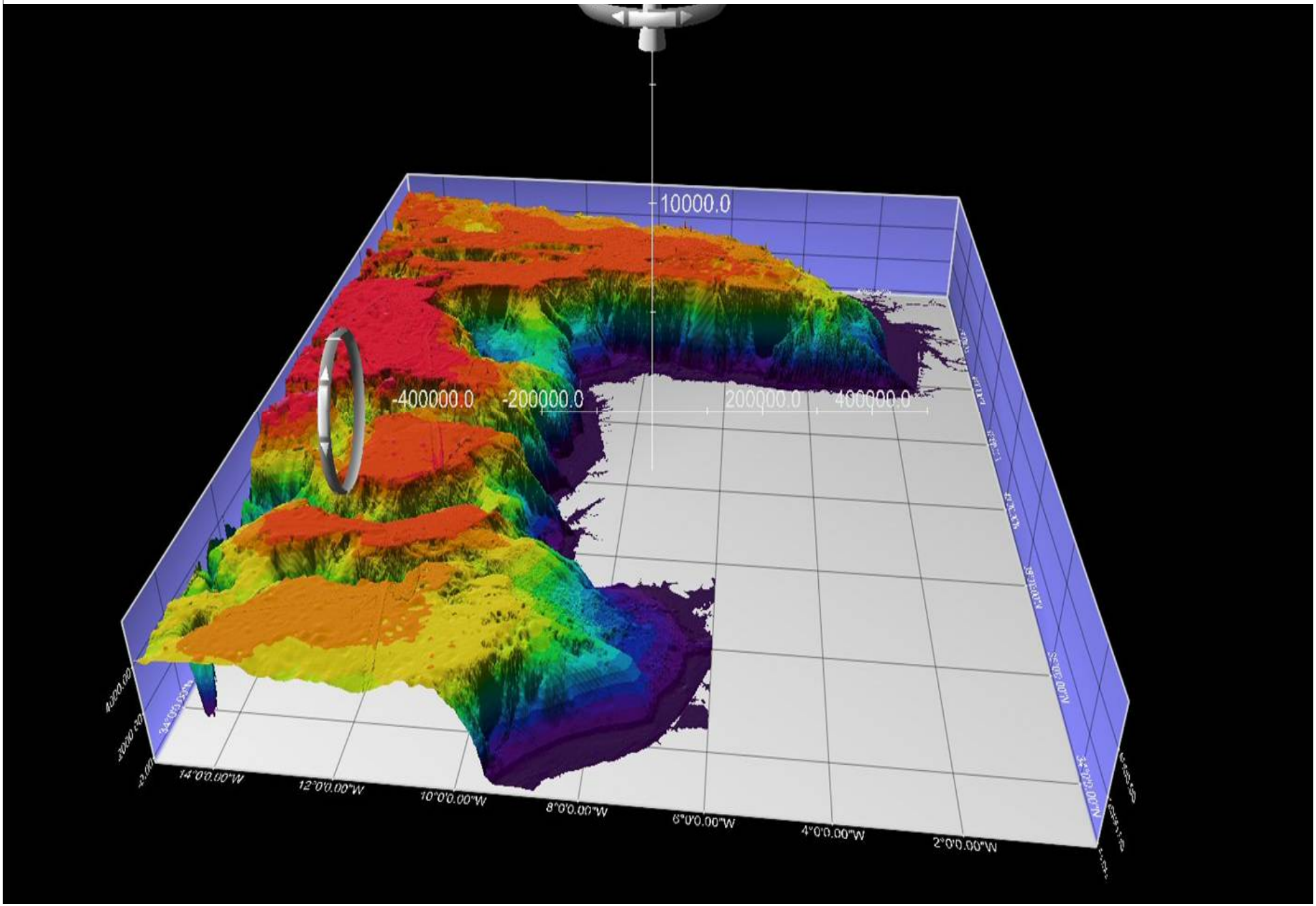
point measurements vary in time and space



each map needs some human intervention



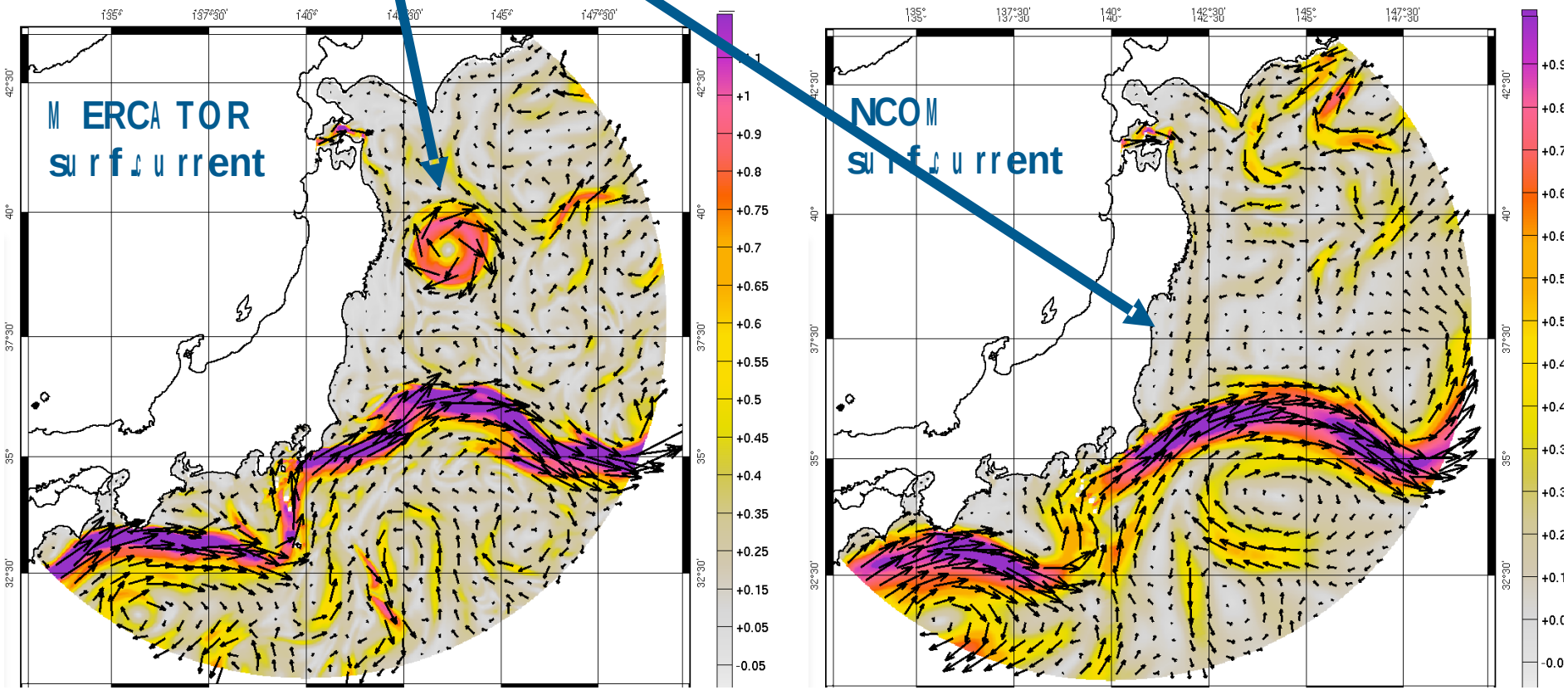
can we overlay terrain maps with sediment or habitat data?



How do we show risk from Fukushima?

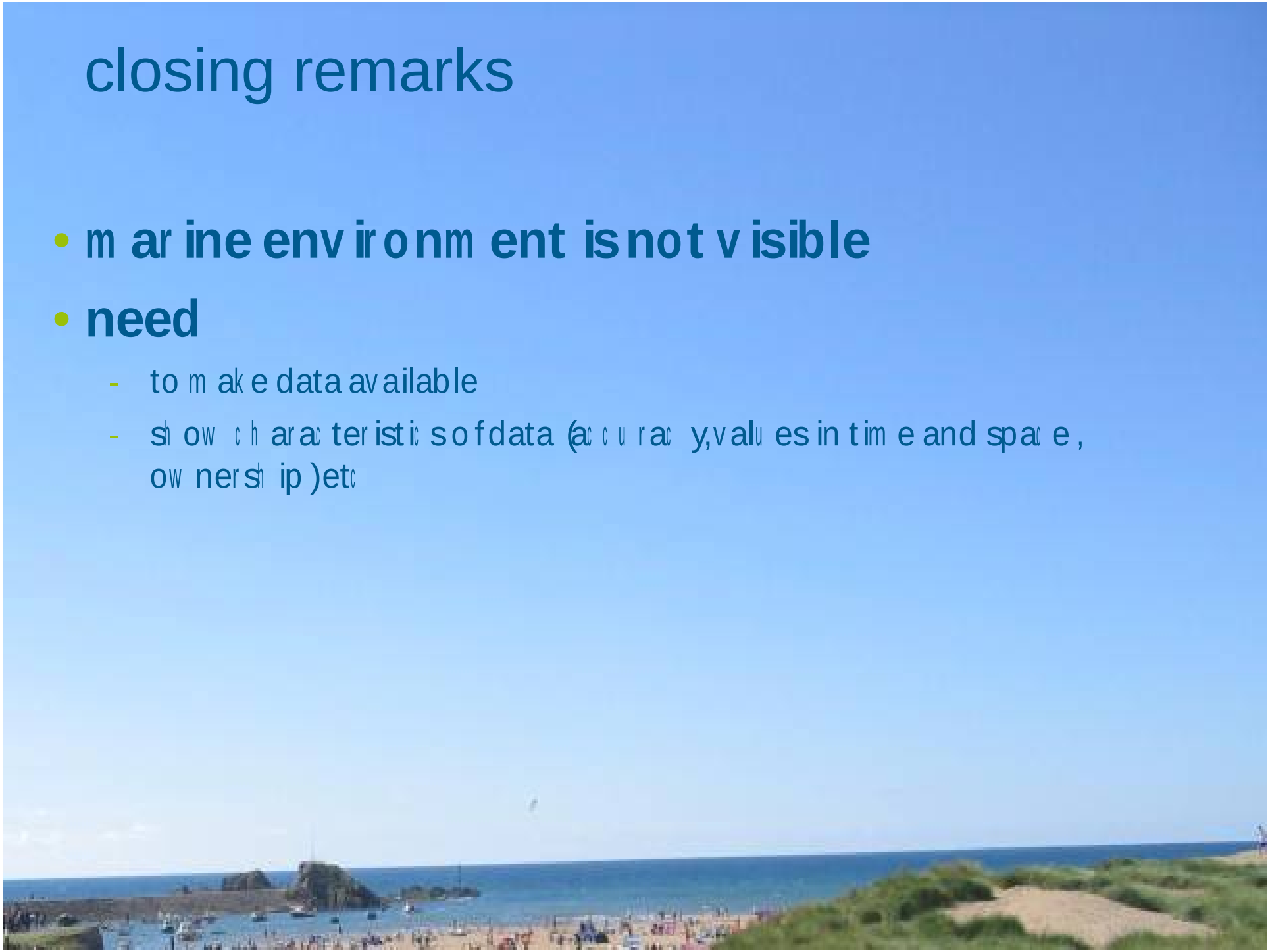
- MERCATOR (French operational model) used for the Sirocco bulletin
- NCOM (US Navy operational model) now being tested

A higher resolution in MERCATOR
Similitudes: the Kuroshyo current
Differences: Eddies, alongshore circulation



closing remarks

- **marine environment is not visible**
- **need**
  - to make data available
  - show characteristics of data (accuracy, values in time and space, ownership) etc



more information

- http://ec.europa.eu/maritimeaffairs/index_en.html
- https://webgate.ec.europa.eu/maritimeforum/node/1305