Interreg
ADRION
ADRIATIC-IONIAN
EUROPEAN UNION
European Regional Development Fund - Instrument for Pre-Accession II Fund

HarmoNIA

Harmonization and **N**etworking for contaminant assessment in the **I**onian and **A**driatic Seas

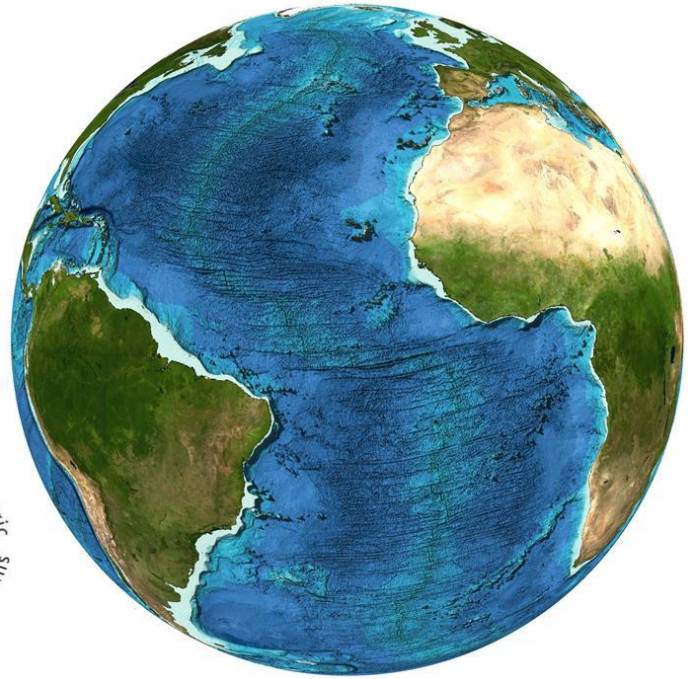
Where to find data?

Sissy Iona
Marina Lipizer
Eugenia Molina
Alessandra Giorgetti
Dick Schaap

Stakeholder Workshop, Split, 7th February, 2019

Oceans and seas are important

- Climate, Energy, Food, Tourism, Shipping, Health, Economy, ...
- Major components of the Earth System
- Paradoxically, marine ecosystems are less well known than terrestrial ones
  - ✓Sampling the marine environment is both **difficult** and **expensive**



Marine data are needed for many uses:

- Scientific research (data – information - knowledge)
- Monitoring and assessment: Ecosystems health (water quality, climate status, stock assessment)
- Human activities: Coastal Zone Management
- Modeling (including hindcast, now-cast, forecast)
- Dimensioning and supporting operations and activities at sea (shipping, offshore industry, dredging industry, ..)
- Implementation and execution of marine conventions for protection of the seas
- Implementation of European Directives, such as in Europe directives for water (WFD), marine strategy (MSFD), marine spatial planning (MSP), coastal zone management (CZM)

Users from diverse background (nationally and internationally): government, science sector, and industry

Acquisition of ocean and marine data

Some numbers about data acquisition:

- Data are collected by governments, research institutes, and private industry (in Europe already more than **1.000 organisations**)
- Data for physics, geophysics, meteorology, chemistry, biology, geology, bathymetry
- The costs of marine data collection by European organisations is circa 1.4 billion Euro per year: **~ 1.0** billion for in-situ; **~ 0.4** billion for remote sensing.

Professional data management is required with agreements on standardization, quality control protocols, long term archiving, catalogues, and access

Collect once and **use many times** philosophy would save at least €1 billion per year

European consolidated initiatives on marine data

to assemble, harmonize, standardize and facilitate **use** and **re-use** of marine data for **research** AND **environmental management:**

SeaDataNet

https://www.seadatanet.org

- **SeaDataNet (now SeaDataCloud):** A Pan-European data management infrastructure

EMODnet
European Marine Observation and Data Network

http://www.emodnet.eu/

- **EMODnet:** A network of thematic portals for data, data products and services

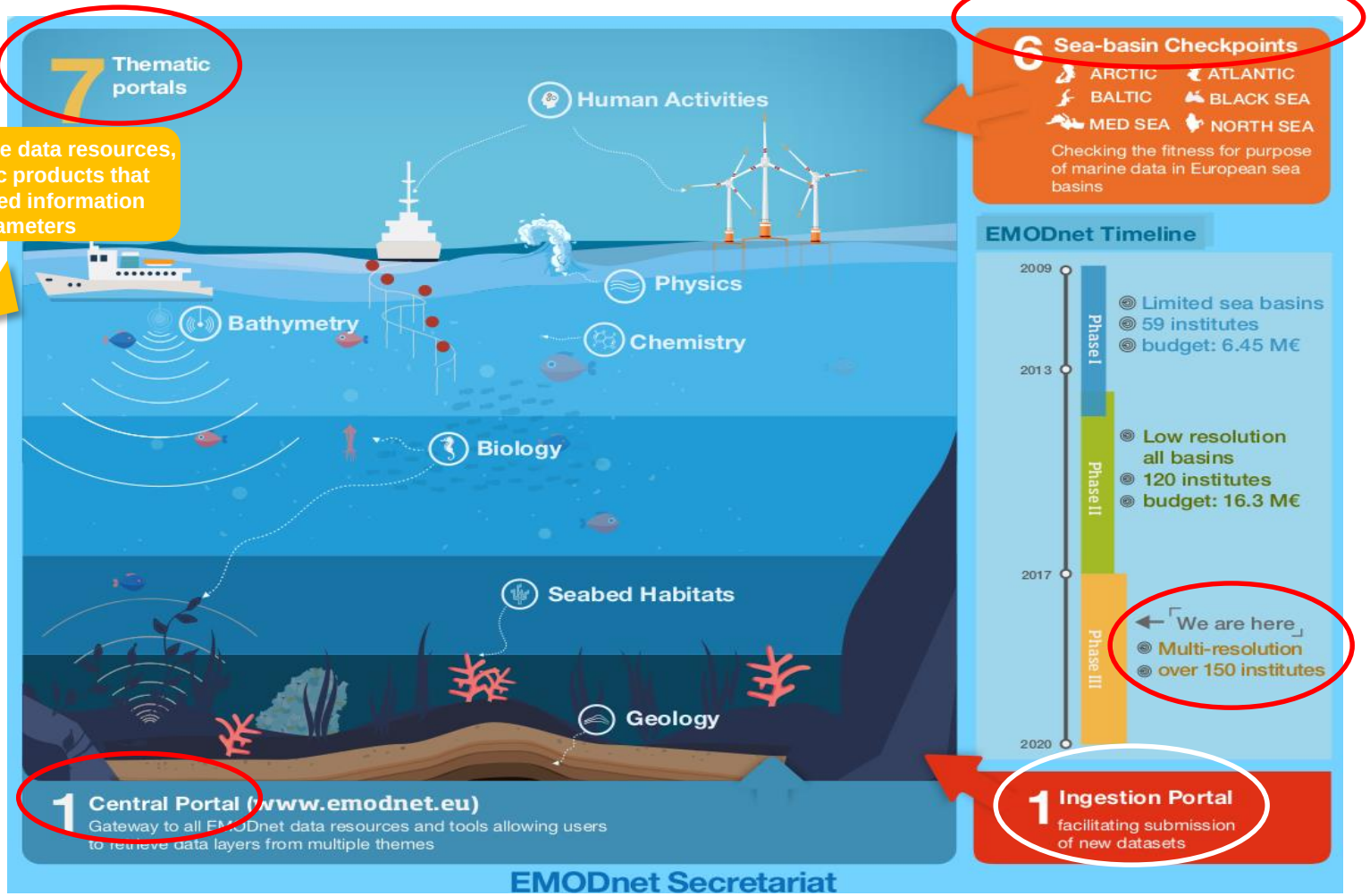
At macroregional level for the **Adriatic-Ionian Macroregion:**

https://harmonia.adrioninterreg.eu/

HarmoNIA GeoPortal (under development)

- To strengthen the network of data infrastructures aiming to **facilitate access** and **re-use** of marine data among countries bordering the Adriatic – Ionian Seas
- Focusing on **information** and harmonized products on **marine contaminants**
- Harmonia works in synergy with SeaDataNet and EMODnet Chemistry

What is **EMODnet** ?



Long-term data initiative as part of Blue Growth strategy, Marine Knowledge 2020

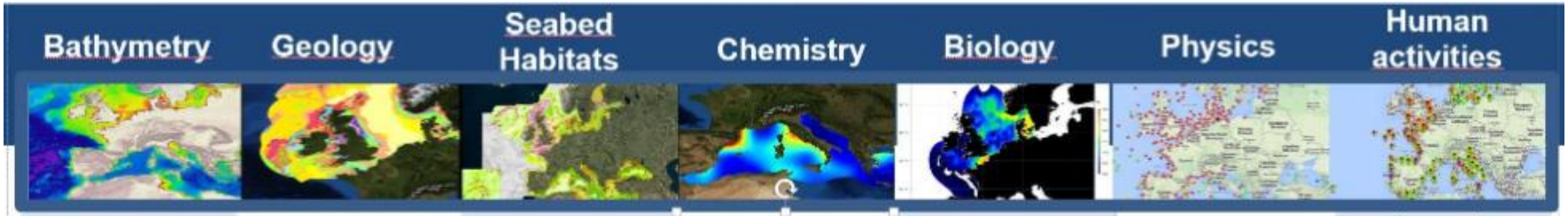
What is **EMODnet** and its **aim?**

Network of +150 organizations assembling marine data, metadata & data products from different sources within Europe in a uniform way **aiming to**:

- **unlock** fragmented & hidden **marine data** by making data more easily accessible, re-usable and interoperable
- produce data **products** of common interest

EMODnet helps to discover gaps in data availability.

EMODnet thematic portals/Gateways to marine data



Bathymetry	Geology	Seabed Habitats	Chemistry	Biology	Physics	Human activities
Minimum cell water depth	Seabed substrate	Data on modelled seabed habitats (depth, seabed substrate, broad scale biological zone, T, S, light, oxygen, energy due to waves & current)	Pesticides & Biocides	Biomass	Waves	Aggregate Extraction Dredging
Maximum cell water depth	Sediment accumulation rate	Broad-scale physical habitat map	Antifoulants	Abundance	Water temperature	Fisheries
Average cell water depth	Sea-floor geology	Detailed habitat maps from surveys	Phamaceuticals	Gridded Abundance maps	Water salinity/conductivity/density	Hydrocarbon Extraction Main Ports
Standard deviation of cell water depth	Seabed lithology	Individual habitat modelling outputs	Heavy Metals	*species groups:*	Currents	Mariculture
Number of values used for interpolation of cell water depth	Stratigraphy	Habitat point data	Hydrocarbons	• phytoplankton	Light attenuation/ fluorescence	Ocean Energy Facilities
Horizontal coordinate reference system	Coastline migration		Radionuclides	• zooplankton	Sea level	Pipelines and Cables
Depth reference system	Aggregate resources		Fertilizers	• angiosperms	Atmospheric parameters	Protected Areas
Lowest Astronomical Tide	Geological events		Acidity	• macro-algae	Wind	Waste Disposal
			Dissolved Gasses	• invertebrate bottom fauna	Underwater noise	Wind Farms
			Plastics	• birds	Rivers	Other Forms of Area Management / Designation
			Marine Litter Beach litter Seafloor litter Micro litter	• mammals	Ice	
			Chlorophyll Silicates Organic Matter	• reptiles		
				• Fish		

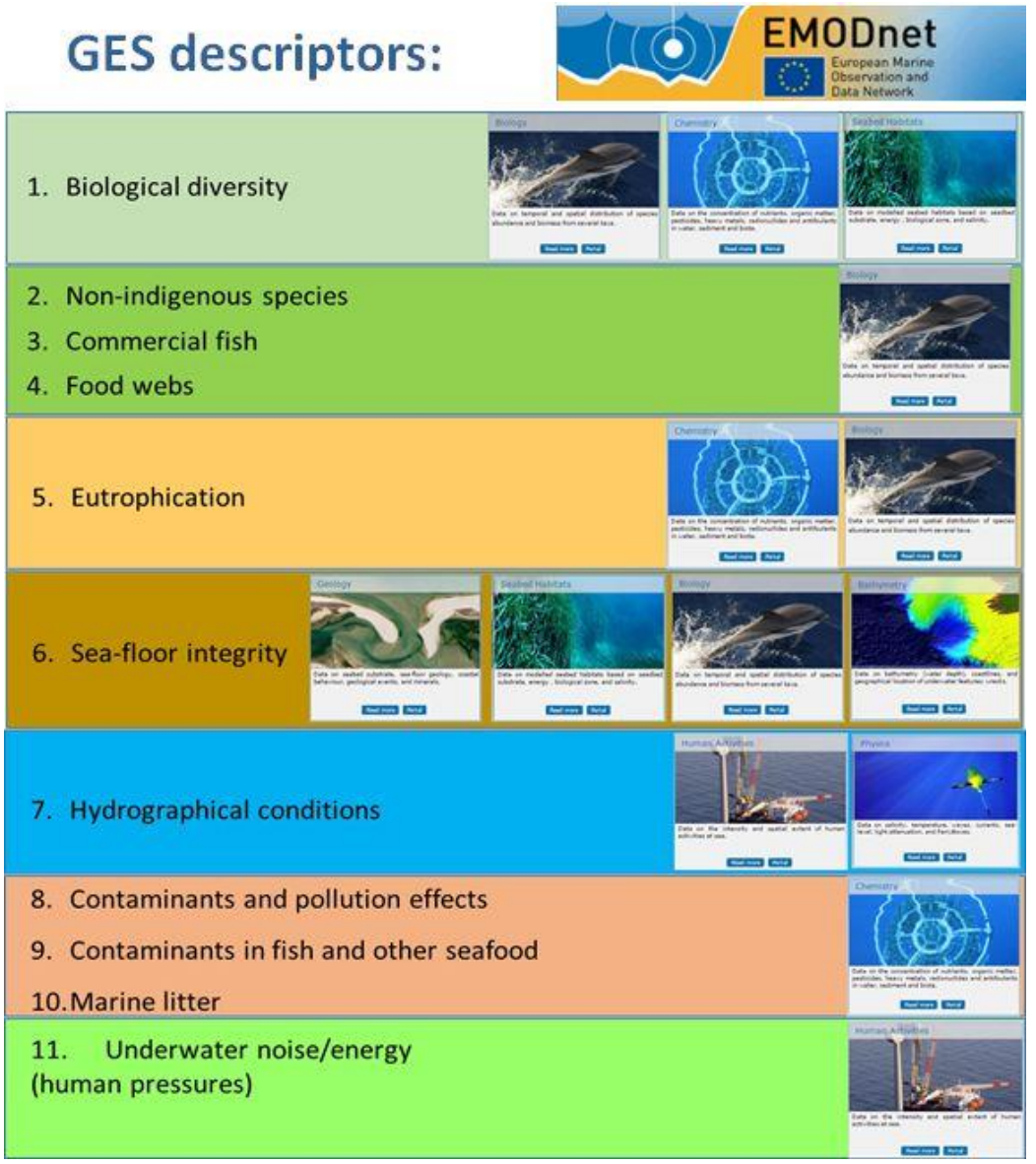
EMODnet thematic portals/Gateways to marine data

Bathymetry	Geology	Seabed Habitats	Chemistry	Biology	Physics	Human activities
Minimum cell water depth	Seabed substrate	Data on modelled seabed habitats (depth, seabed substrate, broad scale biological zone, T, S, light, oxygen, energy due to waves & current)	Pesticides & Biocides	Biomass	Waves	Aggregate Extraction Dredging
Maximum cell water depth	Sediment accumulation rate	Broad-scale physical habitat map	Antifoulants	Abundance	Water temperature	Fisheries
Average cell water depth	Sea-floor geology	Detailed habitat maps from surveys	Phamaceuticals	Gridded Abundance maps	Water salinity/conductivity/density	Hydrocarbon Extraction Main Ports
Standard deviation of cell water depth	Seabed lithology	Individual habitat modelling outputs	Heavy Metals	*species groups:*	Currents	Mariculture
Number of values used for interpolation of cell water depth	Stratigraphy	Habitat point data	Hydrocarbons	• phytoplankton	Light attenuation/ fluorescence	Ocean Energy Facilities
Horizontal coordinate reference system	Coastline migration		Radionuclides	• zooplankton	Sea level	Pipelines and Cables
Depth reference system	Aggregate resources		Fertilizers	• angiosperms	Atmospheric parameters	Protected Areas
Lowest Astronomical Tide	Geological events		Acidity	• macro-algae	Wind	Waste Disposal
			Dissolved Gasses	• invertebrate bottom fauna	Underwater noise	Wind Farms
			Plastics	• birds	Rivers	Other Forms of Area Management / Designation
			Marine Litter Beach litter Seafloor litter Micro litter	• mammals	Ice	
			Chlorophyll Silicates Organic Matter	• reptiles		
				• Fish		

Link to EU Marine Strategy Framework Directive

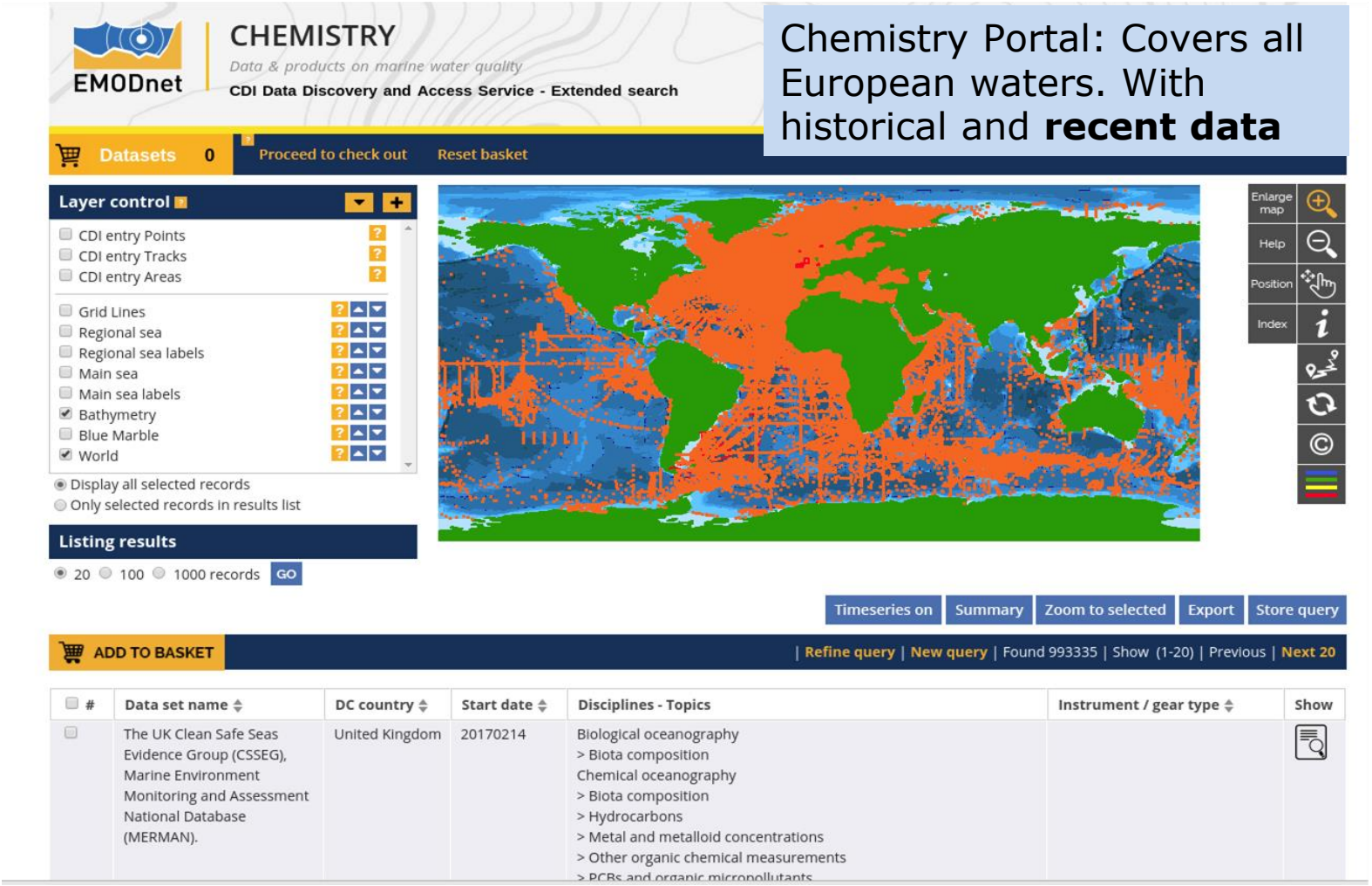
- to understand the needs of MSFD reporting and support its successful implementation

- tight connection with EEA, RSC, JRC and ICES to provide relevant information for parameters identified as indicators of **MSFD descriptors**



http://www.emodnet-chemistry.eu

Harmonia builds on EMODnet Chemistry:



Chemistry Portal: Covers all European waters. With historical and **recent data**

SeaDataNet CDI Data Discovery and Access service for EMODnet Chemistry

MSFD regions

Group of Variables	Baltic Sea	Iberian peninsula - Macaronesia - Bay of Biscay	Greater North Sea - Celtic Sea - Faroes	Arctic Ocean - Norwegian Sea - Greenland Sea - Barents Sea - Icelandic Waters	Mediterranean Sea	Black Sea - Sea of Azov - Marmara Sea
Acidity						
Antifoulants						
Chlorophyll						
Dissolved gasses						
Fertilisers						
Hydrocarbons						
Heavy metals						
Marine litter						
Organic matter						
Polychlorinated biphenyls						
Pesticides and biocides						
Radionuclides						
Silicates						

5169 Results

1-50 | 251-1000 | 2501-5000 | 10001-25000
51-250 | 1001-2500 | 5001-10000 | >25000

Legend - number of measurement data sets for each variable per marine region

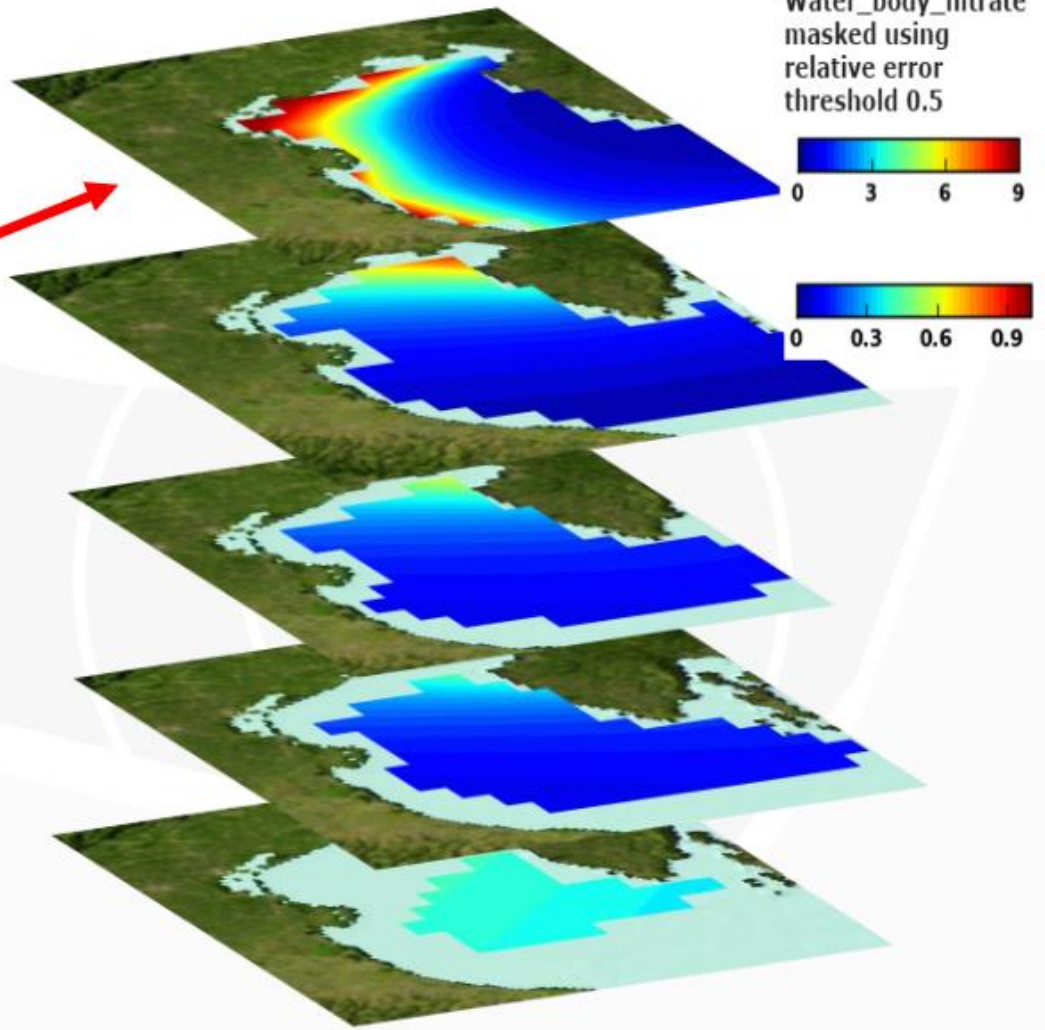
Search Chemicals by MSFD Region

Interreg ADRION ADRIATIC-IONIAN
European Regional Development Fund - Instrument for Pre-Accession II Fund
HarmoNIA

EMODnet
European Marine Observation and Data Network

Concentration maps at several depths

Products

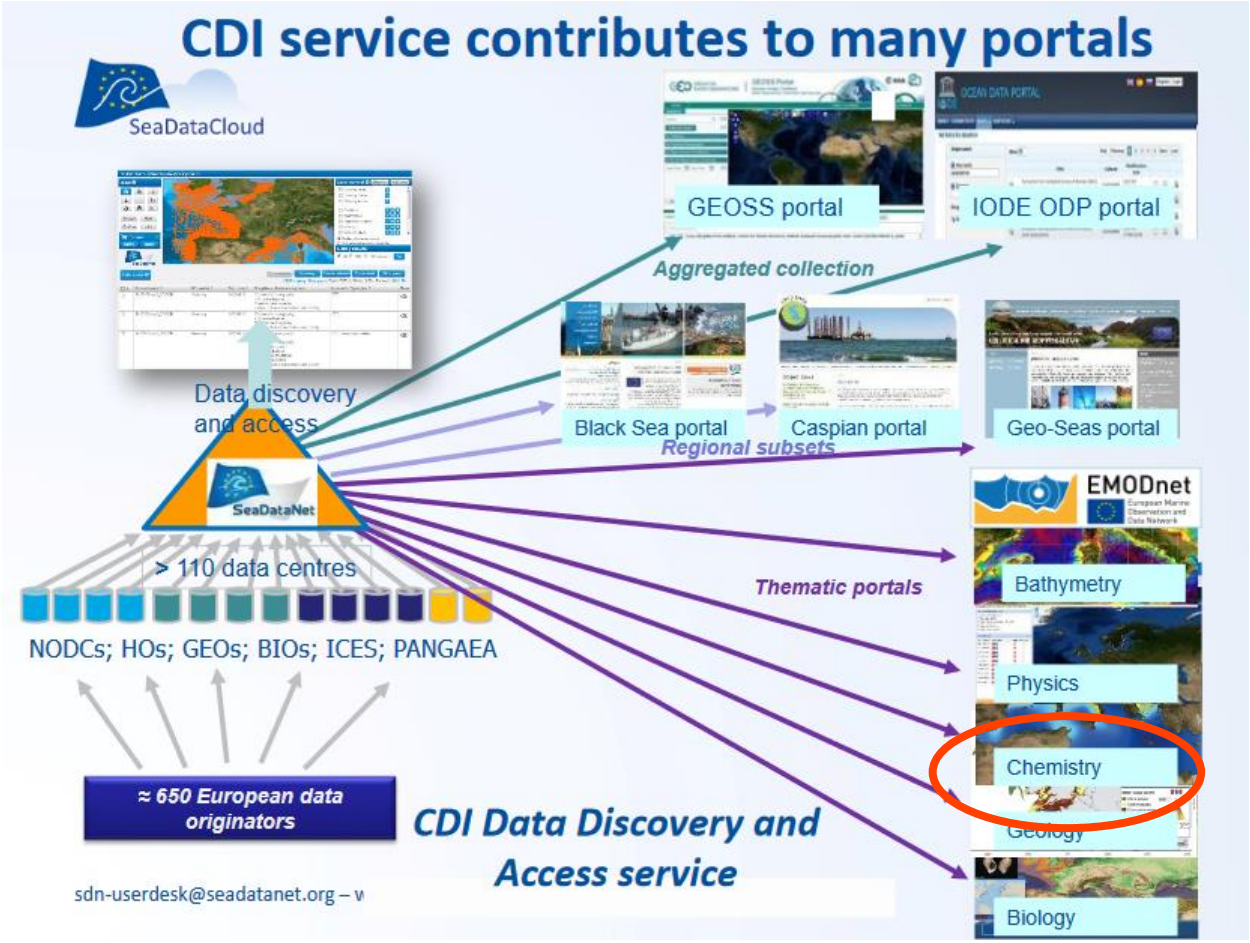


https://www.seadatanet.org

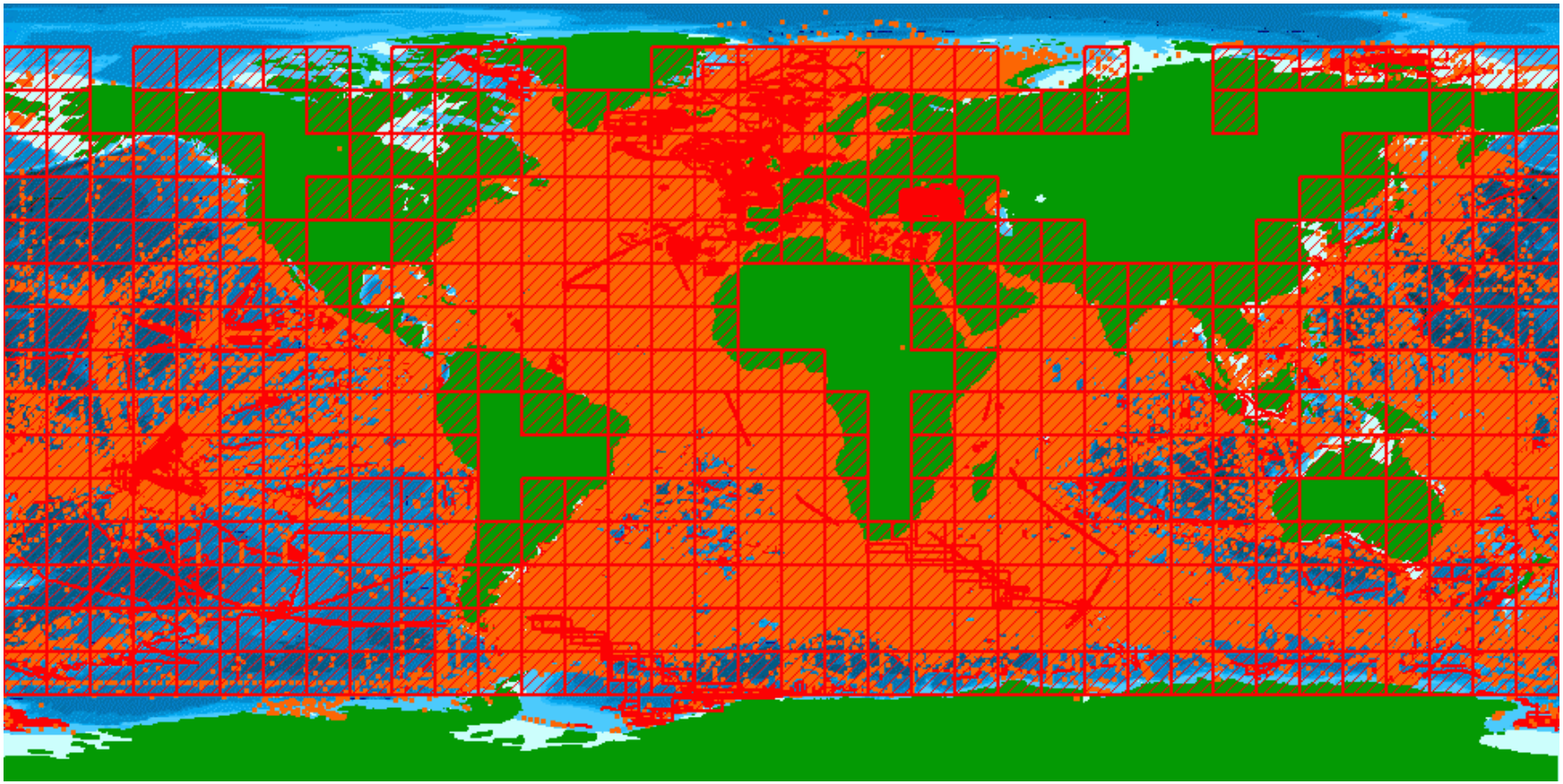
SeaDataNet as driver

SeaDataNet is an **operational pan-European infrastructure** for managing marine and ocean data.

It is maintained by a network of **connected** National Oceanographic Data Centres (**NODCs**) and data focal points from **34 countries** bordering the European seas.



Installed base of CDI nodes (>110)



2.3 million *CDI entries from* ***34*** *countries,* ***115*** *data centres and >* ***615*** *originators for physics, chemistry, geology, geophysics, bathymetry and biology; from* ***1800 to 2018****;* ***87.7%*** *unrestricted or under SDN License*

EMODnet Chemistry set up principle

Adopting and adapting SeaDataNet (1/3)

- **SeaDataNet** develops **Standards** for the marine domain, adapting ISO and OGC standards and achieving INSPIRE compliance
  - **Adoption of ISO 19115 –19139 standard for describing metadata** on data sets, research cruises, monitoring networks, and research projects => marine metadata profiles, schemas, schematron rules
  - **Controlled vocabularies** for the marine domain (>65,000 terms in 82 lists), with international governance and web service
  - **Standard data exchange formats** : ODV ASCII and NetCDF (CF) fully supported by controlled vocabularies
- Maintenance and dissemination of standard QA-QC procedures, together with IOC/IODE and ICES

Adopting and adapting SeaDataNet (2/3)

- **SeaDataNet Software**
  - **Set of tools** to be used each data centre and **freely available** from the SeaDataNet portal: metadata editor, data conversion software, data analysis software (ODV), data interpolation software (DIVA).

- **Capacity building**
  - by training workshops for uptake of standards and tools by the data centres in order to achieve standardisation

EMODnet Chemistry set up principle

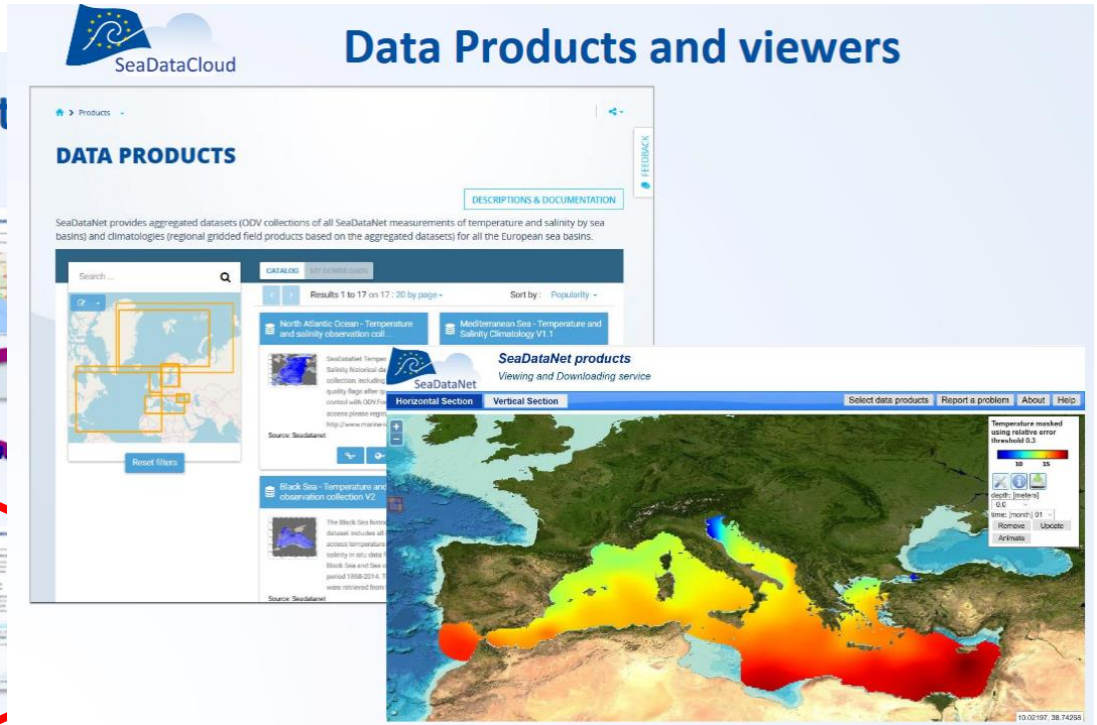
Adopting and adapting SeaDataNet (3/3)

- **SeaDataNet Services**
  - **Pan-European services** for harmonised discovery, visualisation and access of data and data products according to a **Common SeaDataNet Data Policy and License**

EMODnet Chemistry set up principle

Adopting and adapting SeaDataNet (3/3)

- **SeaDataNet Services**
  - **Pan-European services** for harmonised discovery, visualisation and access of data and data products according to a **Common SeaDataNet Data Policy and License**



Interreg
ADRION
ADRIATIC-IONIAN
EUROPEAN UNION
European Regional Development Fund - Instrument for Pre-Accession II Fund

HarmoNIA

Thank you for your attention!

Stakeholder Workshop, Split, 7th February, 2019