Data reporting as a tool for policy: European Marine Observation and Data network – EMODnet

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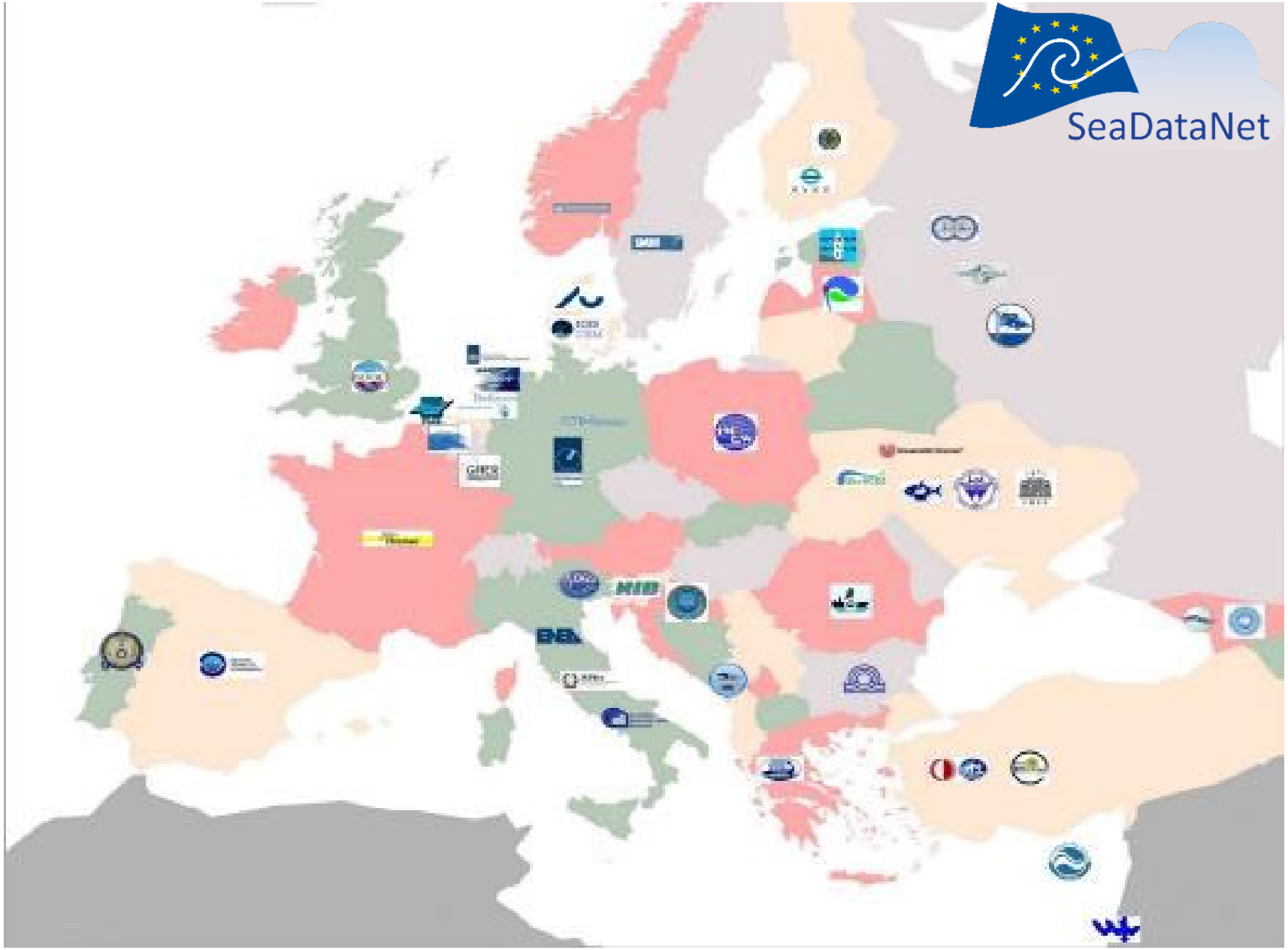
The network of marine institutes and environmental monitoring agencies



- **66** European centres
- **5** International organizations
- **500+** data providers
- **32** countries

European Environment Agency

ICES CIEM

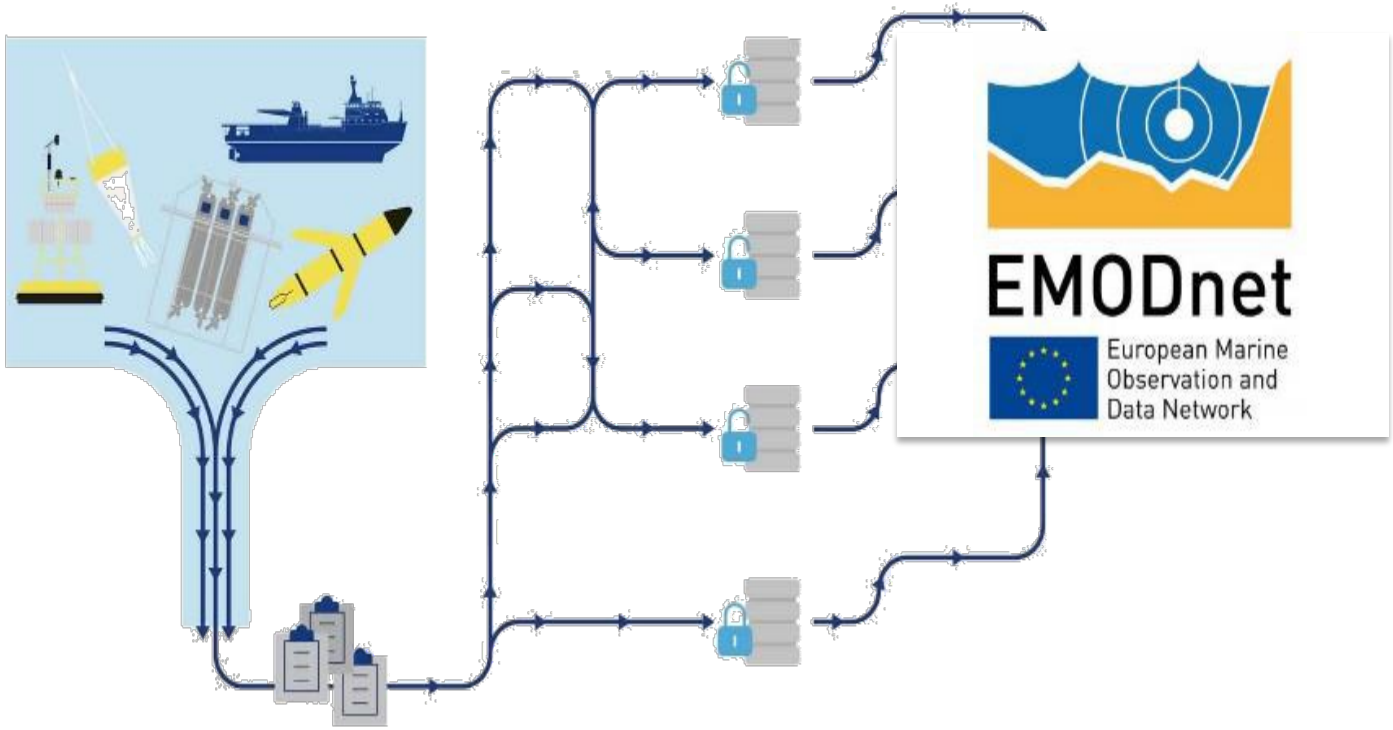
HELCOM

OSPAR COMMISSION

UNEP MAP

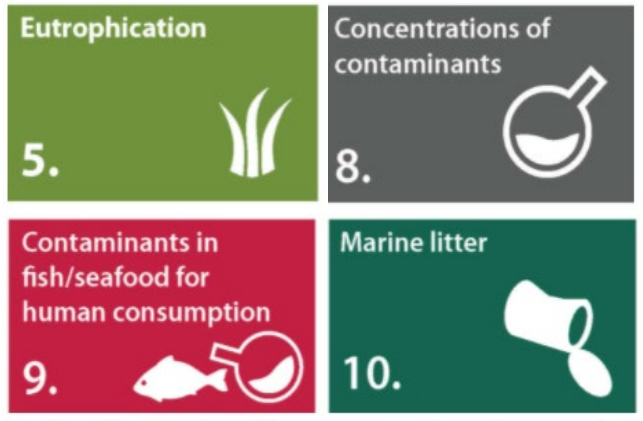
EMODnet European Marine Observation and Data Network

From a lot of different sources of chemical data… to harmonized datasets



- **EU marine water quality data**
- **C**ollection, **A**ggregation, **S**tandardization, **Q**uality **C**heck
- Relevance to the **EU and global marine and climate change policies**
- **O**pen **A**ccess to HQ data and data products

Group of Parameters		Parameters
Marine Litter	Beach macrolitter, Seafloor macrolitter, Floating microlitter	Composition, Abundance, etc.
Ocean acidification	Acidity	pH, PCO_2, etc.
Contaminants	Antifoulants, Hydrocarbons, Heavy metals, Pesticides, Polychlorobiphenyls (PCBs), Radionuclides	Anthracene, Fluoranthene, Me, Cd, Pb, TBT, DDTs, etc.
Eutrophication	Nutrients, dissolved gases, etc.	N, P, Si, Chl-a, O_2, C, etc.



Challenging data heterogeneity and complexity

- **14 groups of variables** with multiple parameters
- **3 matrices**: water, sediment and biota
- **Multiple**

  => sampling and laboratory methods, instruments etc.

  => temporal and spatial distributions

  => data providers

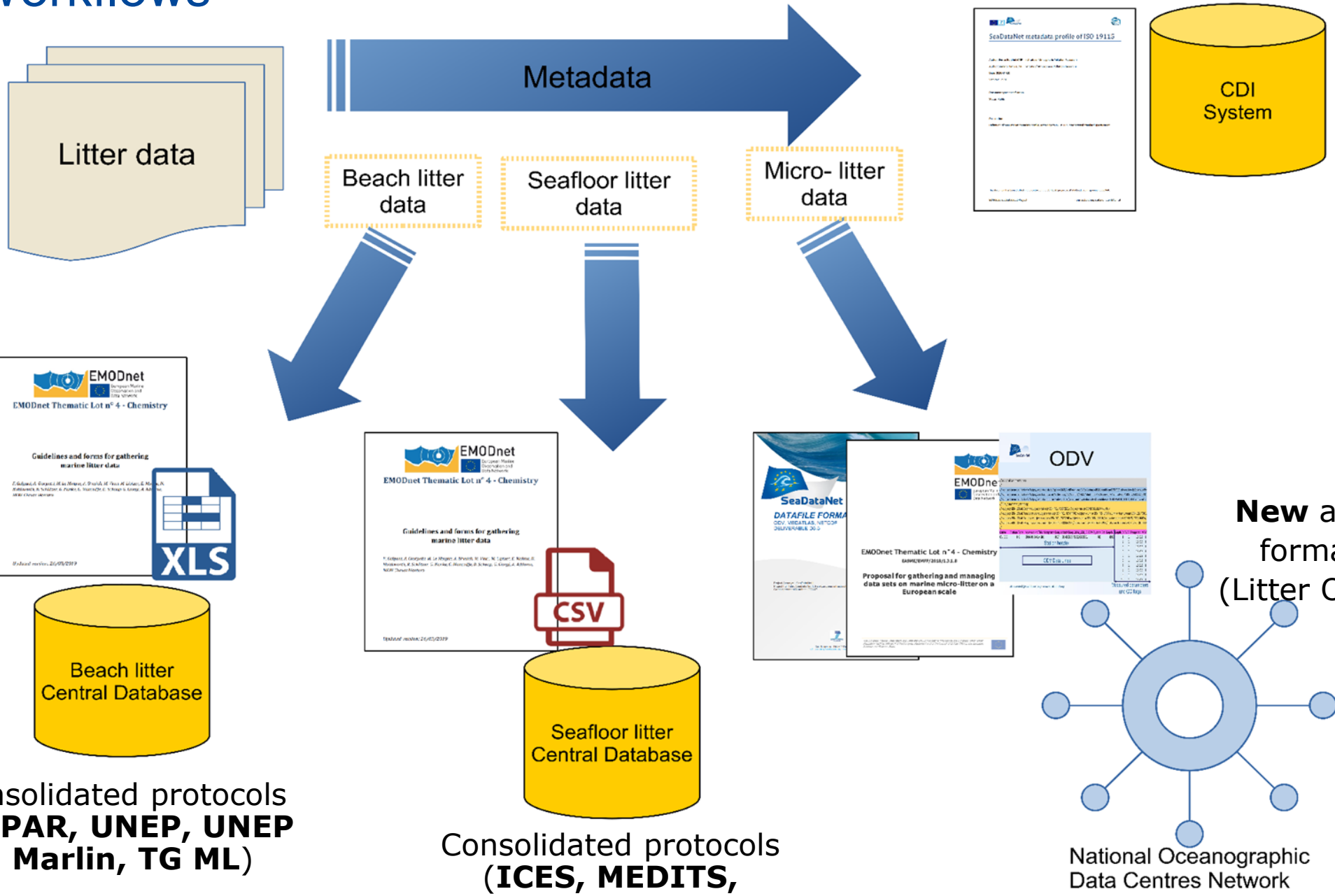
  => purposes (e.g. for EU Directives)

  => data access policies.

- **Coverage of all European sea regions**
- **Converted to a unique format**, using common vocabularies and standards.

EMODnet Chemistry geographical coverage

Data Workflows

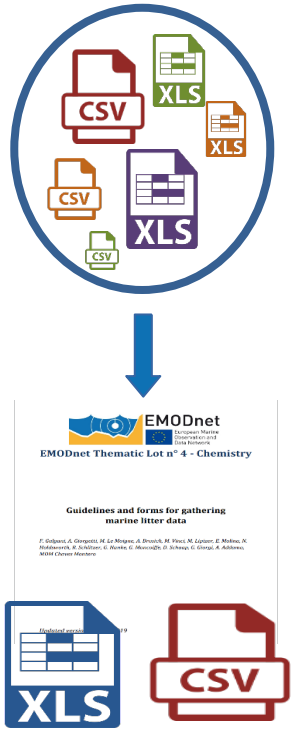


Consolidated protocols (**OSPAR, UNEP, UNEP – Marlin, TG ML**)

Consolidated protocols (**ICES, MEDITS, DeFishGear**)

New ascii format (Litter ODV)

Beach and Seafloor Litter data quality control workflow



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Format

Contact with data centres for feedback/corrections QC loop

Data Originators/ NODC ⇄ OGS - NODC

Pre-ingestion Online Validation

- RESTful webservice
- Sintactic & semantic controls

Marine Litter Database

- PostgreSQL
- PostGIS

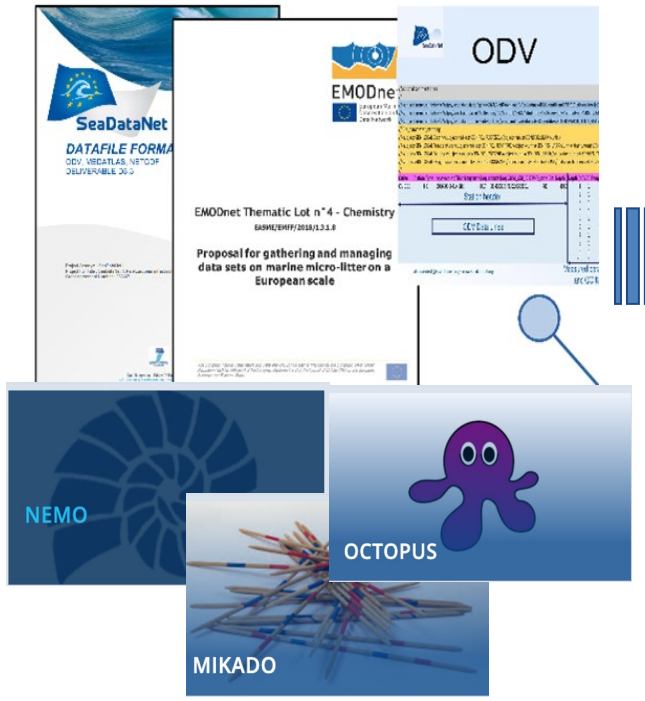
Post-ingestion additional controls

- SQL queries
- GIS geoprocessing
- Products generation

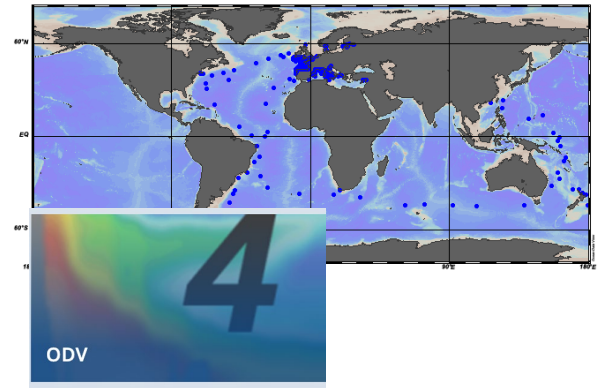
Outputs

Microlitter data quality workflow

Contact with data centres for
feedback/corrections QC loop



NODCs



Test aggregated collection:

- Check data/data format
- Data harmonization

Litter data in EMODnet Chemistry

Beach	OSPAR-MCS **MSFD TG ML collection from Member States** EMODnet partners and associates, EEA MLW	**40** countries **1467** beaches **12533** surveys
Seafloor	ICES-DATRAS, DeFishGear, Medits (a few countries), EMODnet partners	**25** countries **7798** surveys
Floating microlitter	**MSFD TG ML collection from Member States** EMODnet partners, Volvo Ocean Race, NGOs (OceanEye)	**11** countries **1704** CDI
Microlitter in sediment	EMODnet partners, **MSFD TG ML collection from Member States**	**3** countries **61** CDI
Counts updated at 08/09/2023		

European beach litter standardized, harmonized and validated datasets 2001/2022 v2023.
https://doi.org/10.13120/7f2da2d4-3e14-4925-804e-d6b12e240f3a
European floating micro-litter standardized, harmonized and validated datasets 2011/2020 v2023.
https://doi.org/10.13120/6621ec8c-a825-47cd-8cd8-4f7b990241be
European seafloor litter standardized, harmonized and validated datasets 2006/2022 v2023.
https://doi.org/10.13120/d98b57be-e6b5-4081-9464-da773d3209b9

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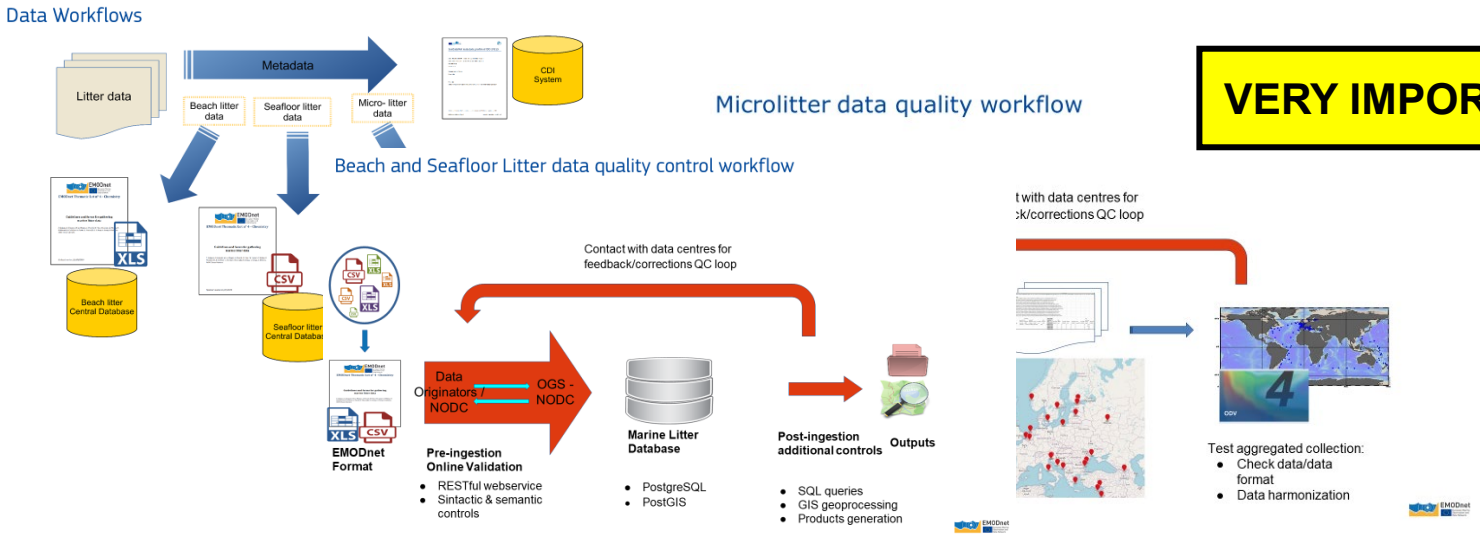
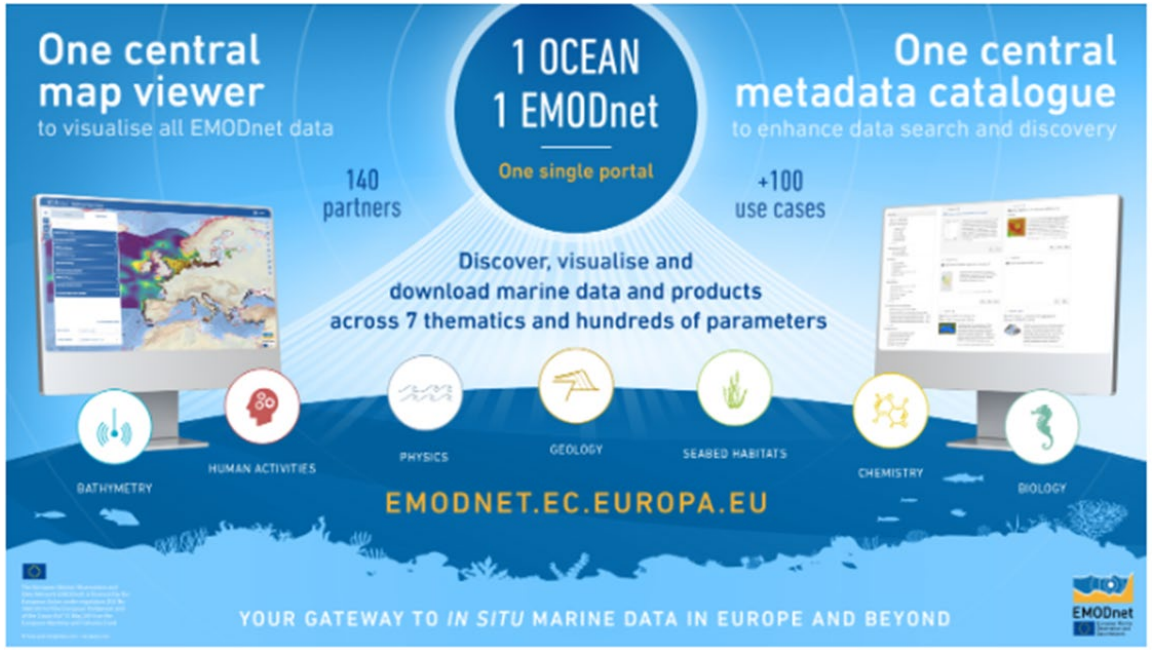
From good data to good results (obtained on reliable data)

- Data curation



- Harmonized and validated datasets

- Data products at global scale



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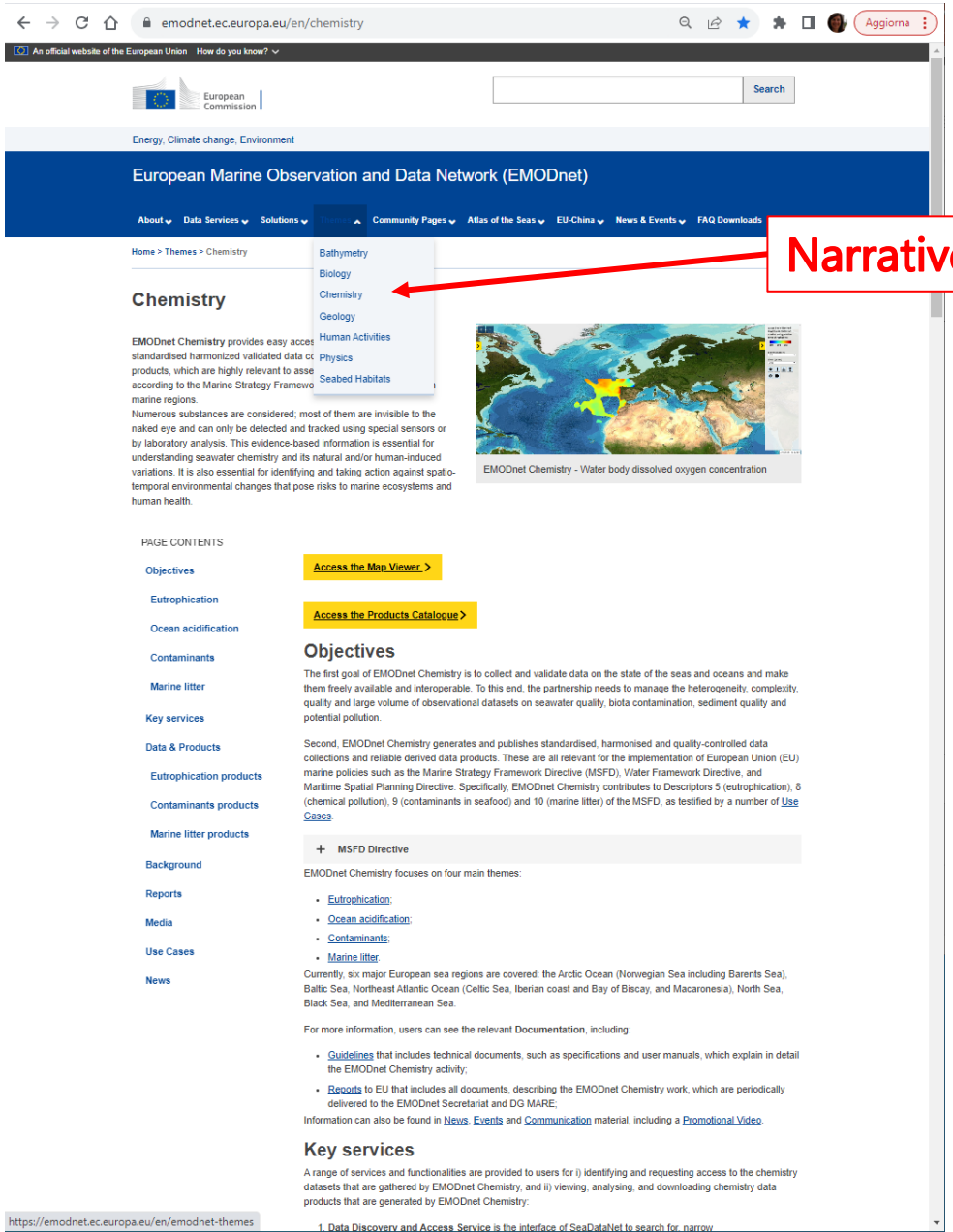
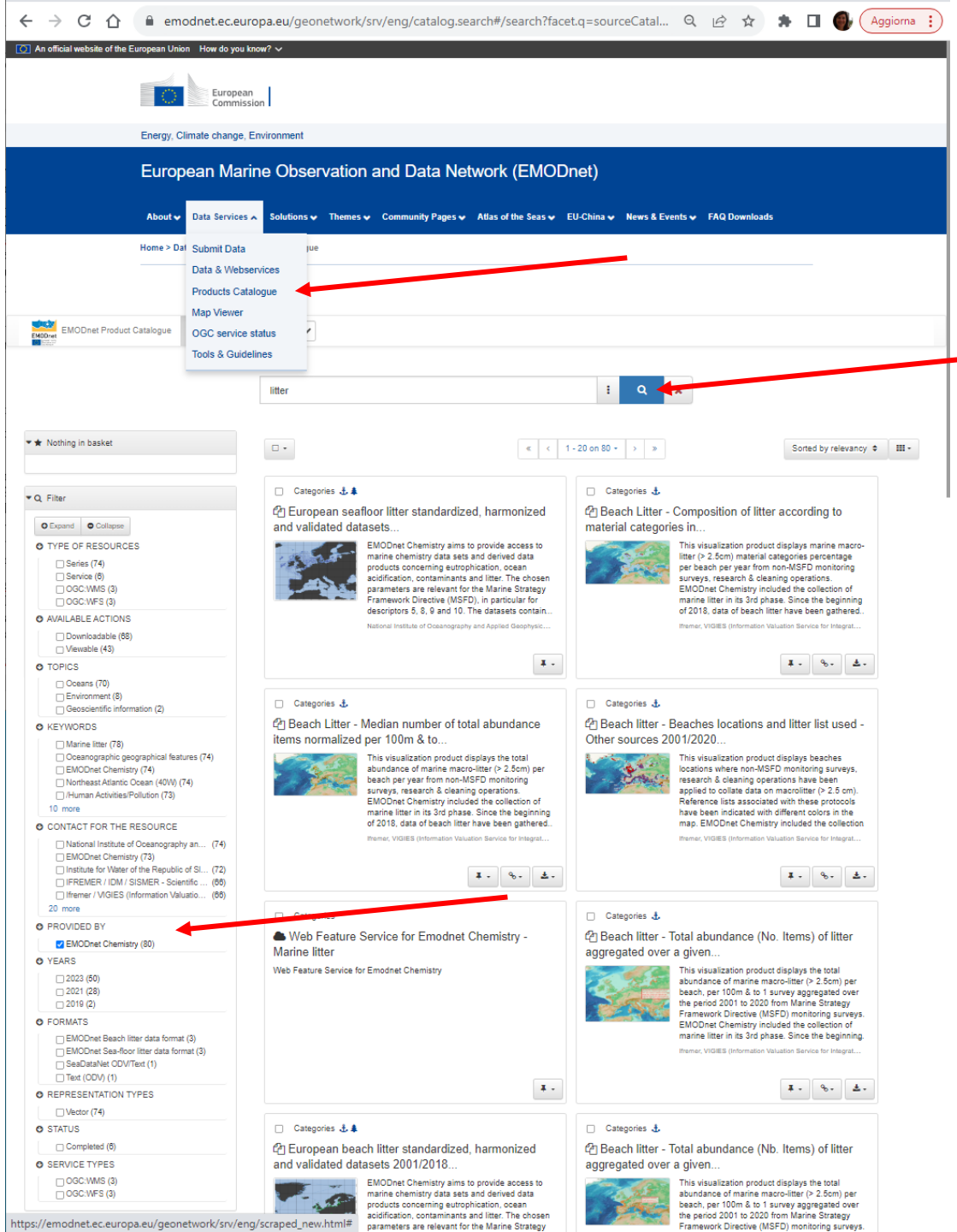
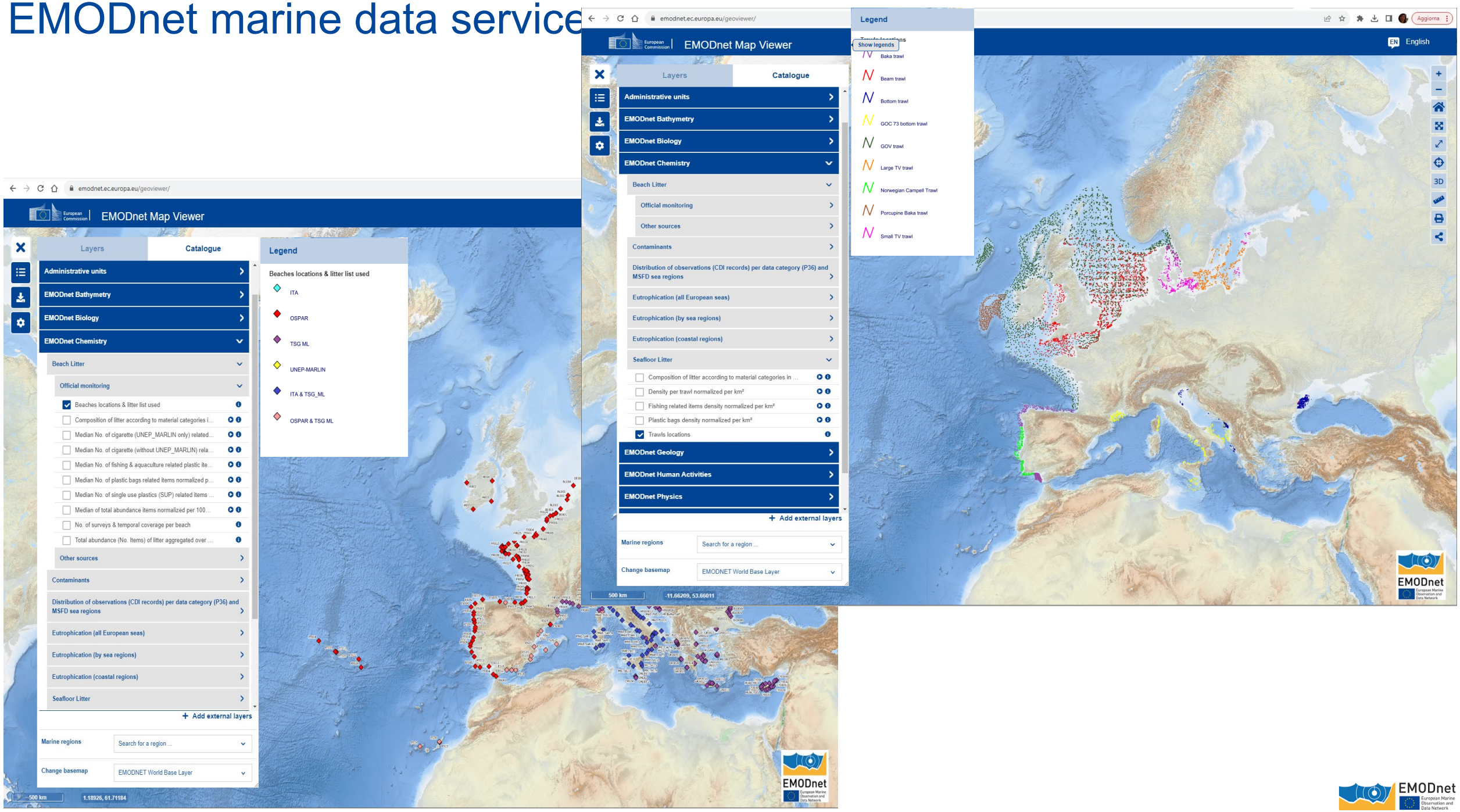
EMODnet marine data service

Narrative





EMODnet marine data service



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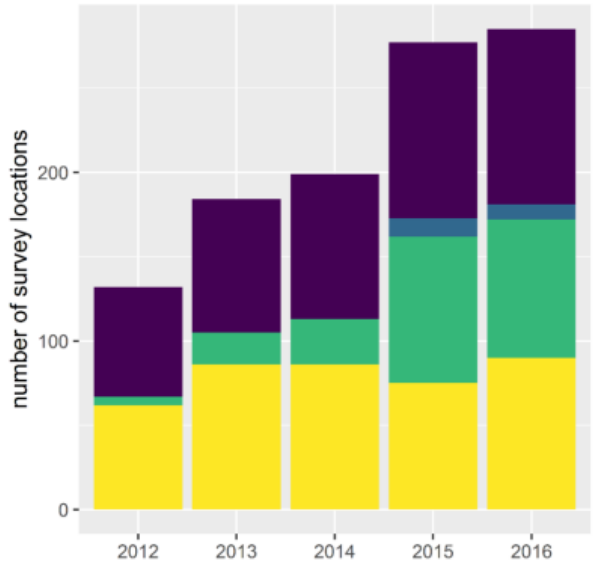

Figure 5: Number of surveys in different years per region

Regular updates thanks to a consolidated workflow

EMODnet Chemistry provided harmonized datasets

For the assessment of beach litter abundance, trends and distribution.

Figure 18: Map of mean beach litter abundances across the EU

Support for the MSFD process

Seafloor litter from trawling:

Release of the dataset for analysis and discussion of the methodology for the calculation of the baseline and thresholds

Floating micro-litter:

Release of the first dataset for preliminary analysis and discussion of strengths and weaknesses

Next steps:

Seafloor litter from images:

Discussion on data format and relevant information. Need for technical requirements for the development of the database

Floating macro-litter:

Few examples. Heterogeneity in data reporting. New data expected from the Floating Litter Monitoring App developed by JRC

From EU to global perspective

- **Activities at EU level :**

  NODCs => collection, standardization, analysis, quality control and sharing

  MSFD TG ML => tracking the policy level, providing an EU picture and highlighting data gaps and needs

  EUROqCHARM project => harmonization of monitoring methods

- **Link to global initiatives :**

  UNEP Global Partnership on Marine Litter => interaction on data and products exchange, on alignment of glossary and ontologies

  G20 Microlitter MOEJ prototype => dialogue for data and metadata harmonization

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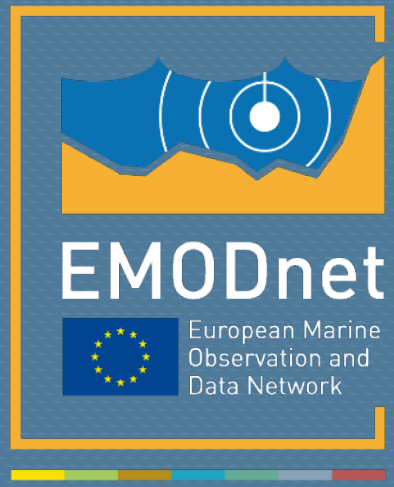

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