

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

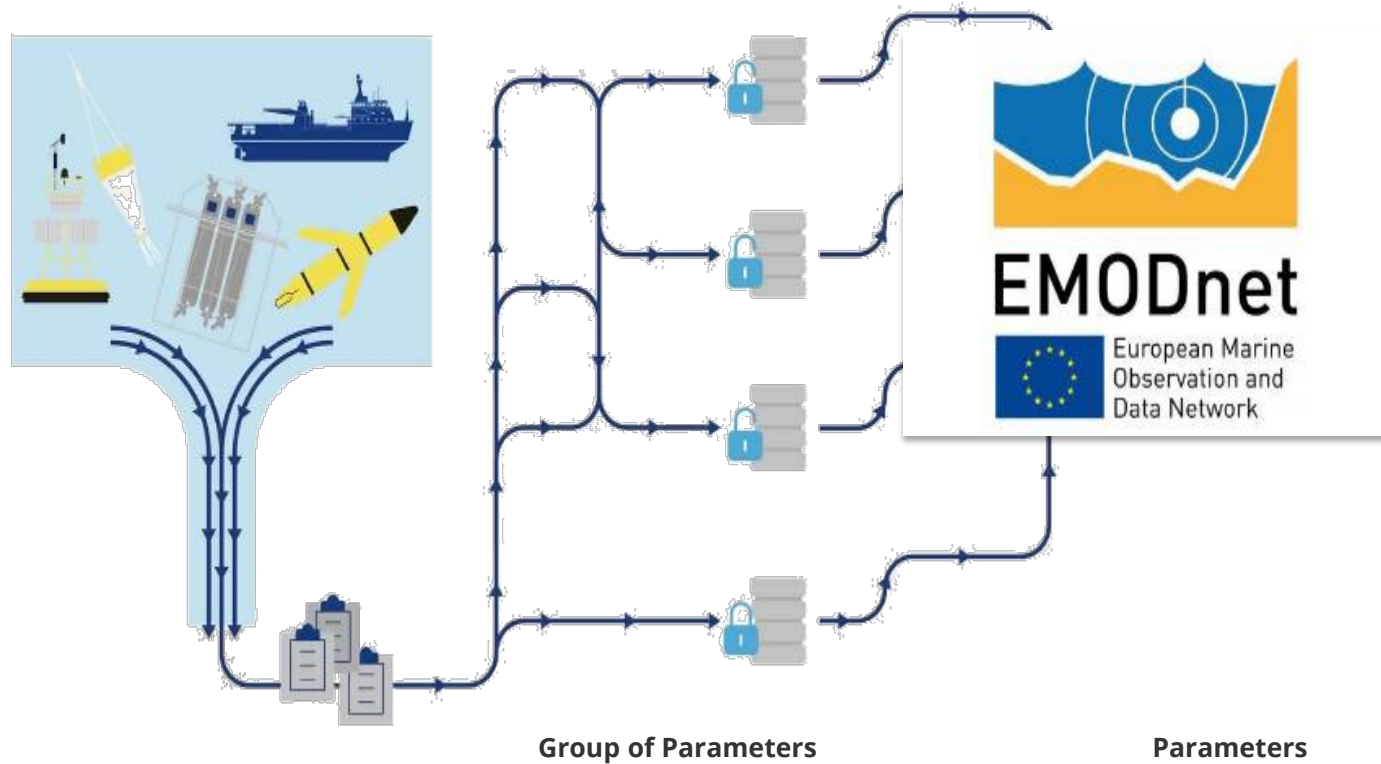


- **66** European centres
- **5** International organizations
- **500+** data providers
- **32** countries

European
Environment
Agency



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



- **EU marine water quality data**
- **Collection, Aggregation, Standardization, Quality Check**
- Relevance to the **EU and global marine and climate change policies**
- **Open Access** 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.



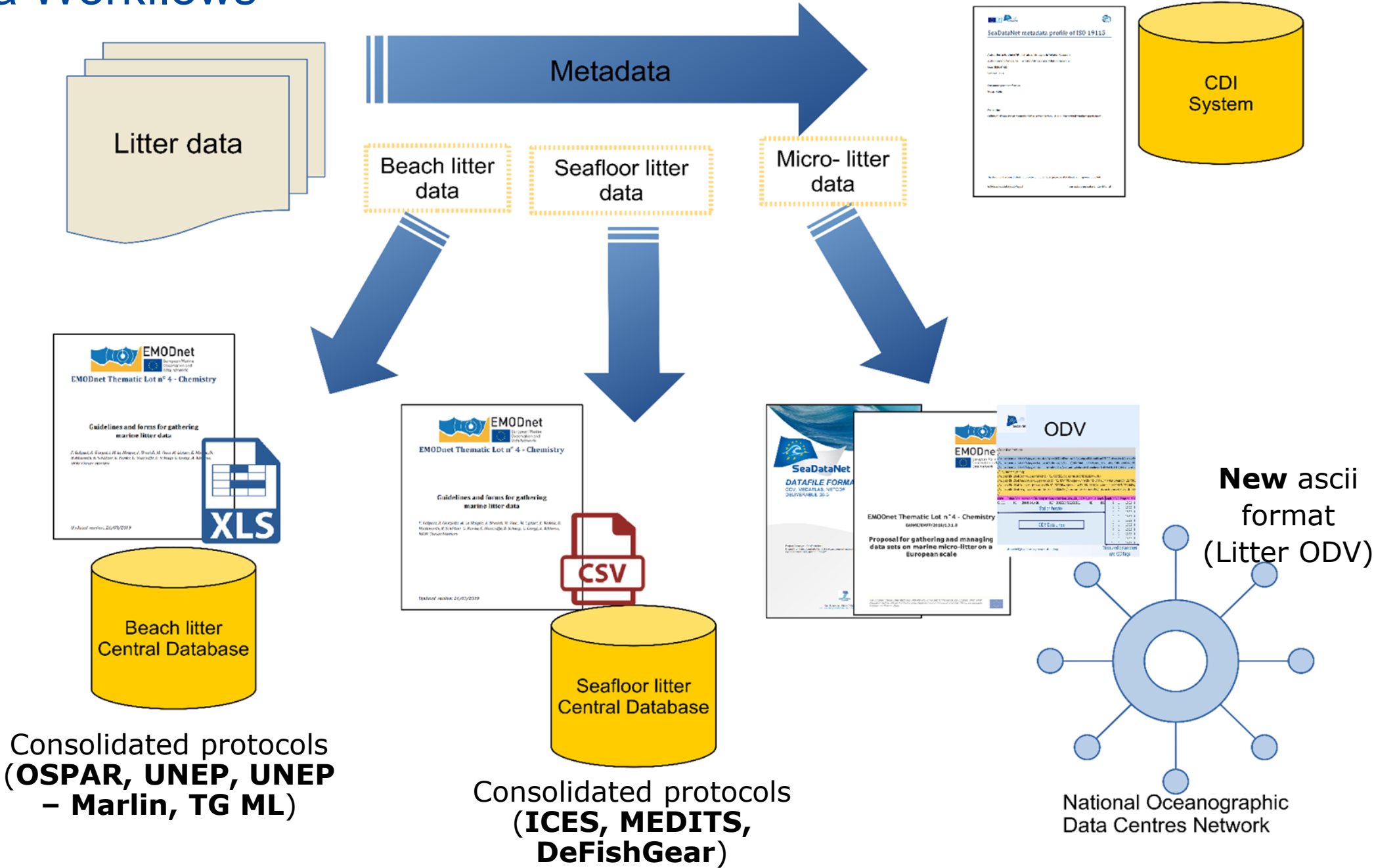
Challenging data heterogeneity and complexity

- **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.

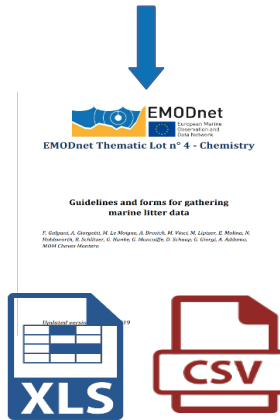


EMODnet Chemistry geographical coverage

Data Workflows

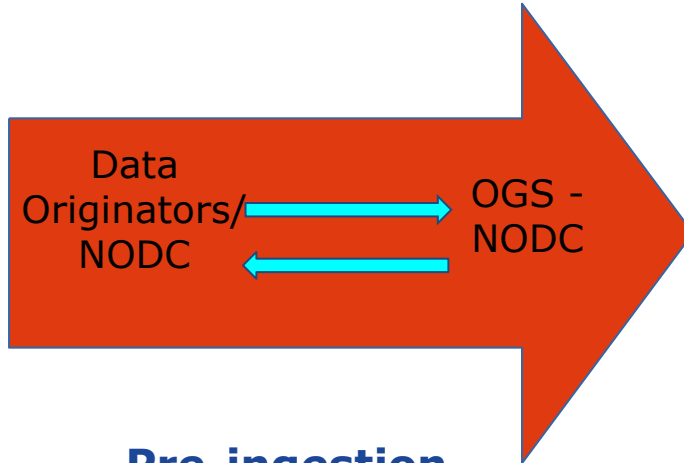


Beach and Seafloor Litter data quality control workflow



**EMODnet
Format**

Contact with data centres for
feedback/corrections QC loop



**Pre-ingestion
Online Validation**

- RESTful webservice
- Sintactic & semantic controls



**Marine Litter
Database**

- PostgreSQL
- PostGIS



**Post-ingestion
additional
controls**

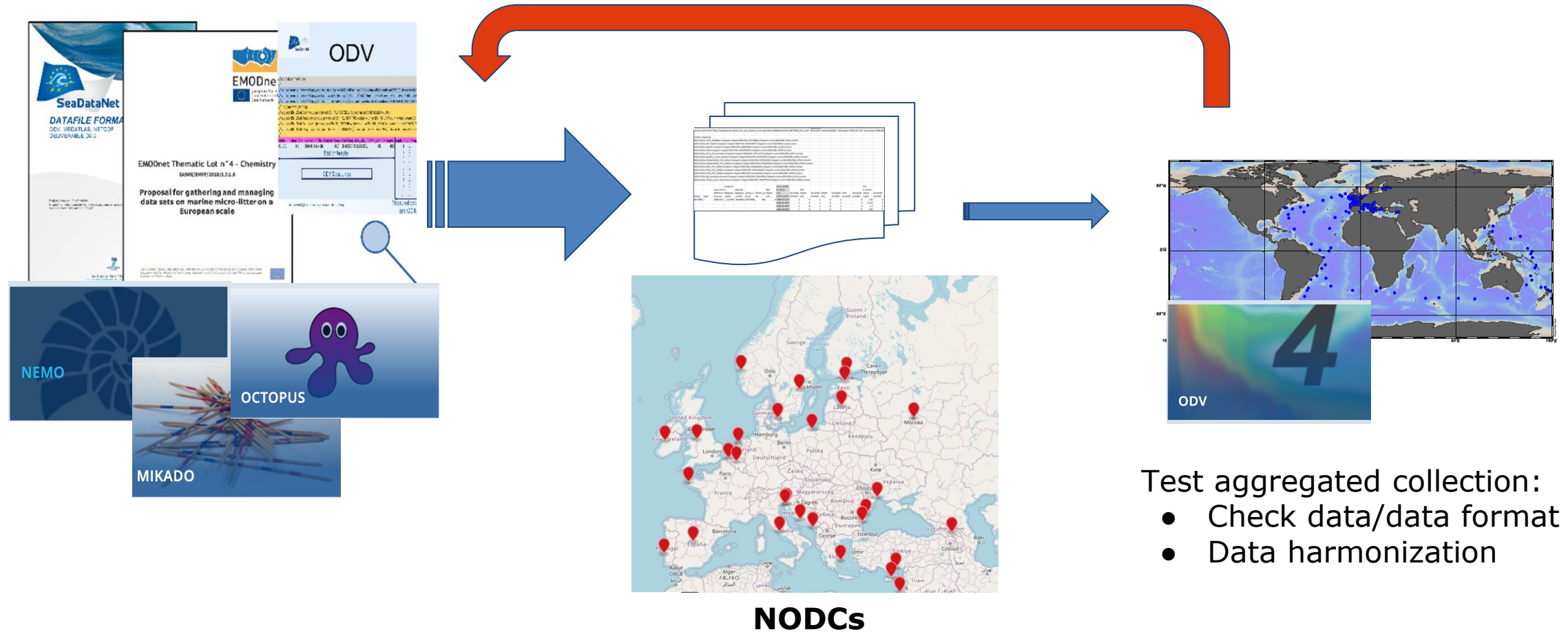
- SQL queries
- GIS geoprocessing
- Products generation



Outputs

Microlitter data quality workflow

Contact with data centres for feedback/corrections QC loop



- 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>

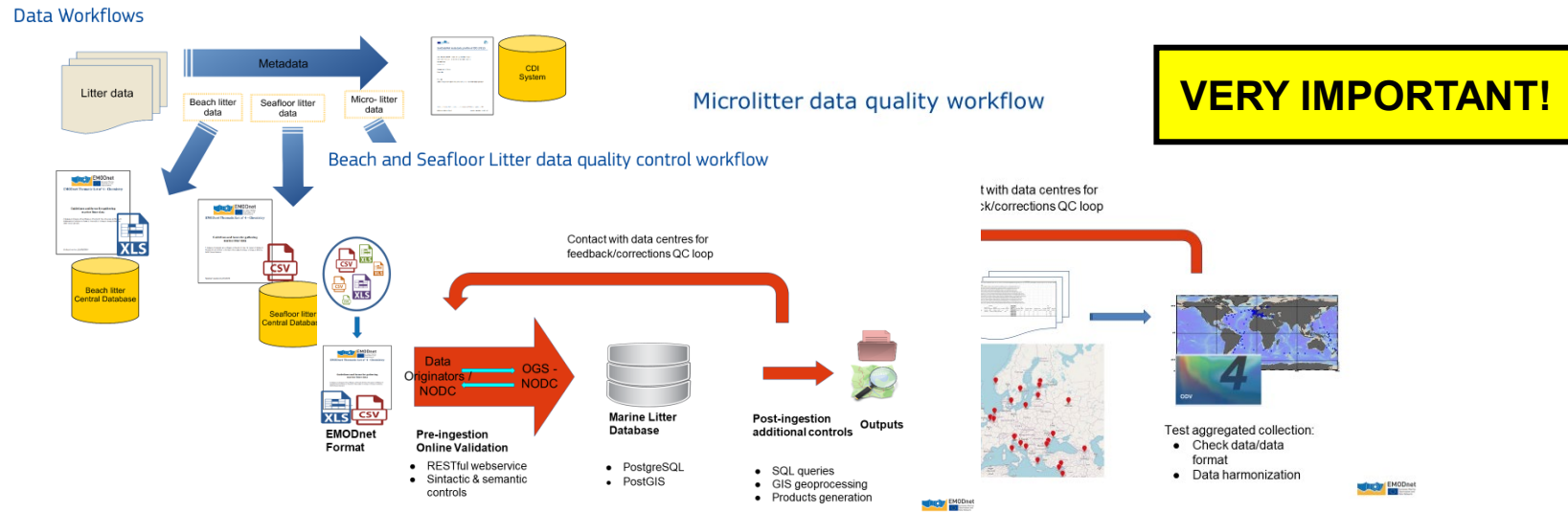
European seafloor litter standardized, harmonized and validated datasets 2006/2022 v2023.

<https://doi.org/10.13120/d98b57be-e6b5-4081-9464-da773d3209b9>

**Just
Published!!**

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

- Data curation



- Harmonized and validated datasets

- Data products at global scale

EMODnet marine data service

European Marine Observation and Data Network (EMODnet)

Home > Themes > Chemistry

Chemistry

EMODnet Chemistry provides easy access to standardised harmonized validated data or products, which are highly relevant to assess according to the Marine Strategy Framework marine regions.

Numerous substances are considered; most of them are invisible to the naked eye and can only be detected and tracked using special sensors or by laboratory analysis. This evidence-based information is essential for understanding seawater chemistry and its natural and/or human-induced variations. It is also essential for identifying and taking action against spatial-temporal environmental changes that pose risks to marine ecosystems and human health.

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Objectives

The first goal of EMODnet Chemistry is to collect and validate data on the state of the seas and oceans and make them freely available and interoperable. To this end, the partnership needs to manage the heterogeneity, complexity, quality and large volume of observational datasets on seawater quality, biota contamination, sediment quality and potential pollution.

Second, EMODnet Chemistry generates and publishes standardised, harmonised and quality-controlled data collections and reliable derived data products. These are all relevant for the implementation of European Union (EU) marine policies such as the Marine Strategy Framework Directive (MSFD), Water Framework Directive, and Maritime Spatial Planning Directive. Specifically, EMODnet Chemistry contributes to Descriptors 5 (eutrophication), 8 (chemical pollution), 9 (contaminants in seafood) and 10 (marine litter) of the MSFD, as testified by a number of [Use Cases](#).

Background

EMODnet Chemistry focuses on four main themes:

Reports

- Eutrophication
- Ocean acidification
- Contaminants
- Marine litter

Use Cases

Currently, six major European sea regions are covered: the Arctic Ocean (Norwegian Sea including Barents Sea), Baltic Sea, Northeast Atlantic Ocean (Celtic Sea, Iberian coast and Bay of Biscay, and Macaronesia), North Sea, Black Sea, and Mediterranean Sea.

For more information, users can see the relevant Documentation, including:

- Guidelines that includes technical documents, such as specifications and user manuals, which explain in detail the EMODnet Chemistry activity;
- Reports to EU that includes all documents, describing the EMODnet Chemistry work, which are periodically delivered to the EMODnet Secretariat and DG MARE.

Information can also be found in [News](#), [Events](#) and [Communication](#) material, including a [Promotional Video](#).

Key services

A range of services and functionalities are provided to users for i) identifying and requesting access to the chemistry datasets that are gathered by EMODnet Chemistry, and ii) viewing, analysing, and downloading chemistry data products that are generated by EMODnet Chemistry.

EMODnet marine data service

The screenshot shows the EMODnet Map Viewer interface. The top navigation bar includes the European Commission logo and the text "EMODnet Map Viewer". The main interface is divided into several panels:

- Layers Panel:** Contains a "Layers" tab and a "Catalogue" tab. Under "Layers", there are sections for "Beach Litter" (with "Official monitoring" and "Other sources" sub-sections), "Contaminants", "Eutrophication", and "Seafood Litter". Under "Catalogue", there are sections for "Administrative units", "EMODnet Bathymetry", "EMODnet Biology", "EMODnet Chemistry", "EMODnet Geology", "EMODnet Human Activities", and "EMODnet Physics".
- Legend Panel:** Titled "Legend", it lists various data series with corresponding symbols and colors. The "Beaches locations & litter list used" section includes: ITA (blue diamond), OSPAR (red diamond), TSG ML (purple diamond), UNEP-MARLIN (yellow diamond), ITA & TSG ML (blue diamond), and OSPAR & TSG ML (red diamond).
- Map:** A satellite-style map of the Mediterranean and Black Sea regions, overlaid with numerous colored diamond markers representing data points.
- Bottom Panel:** Includes "Marine regions" (with a search box), "Change basemap" (set to "EMODNET World Base Layer"), and a scale bar (500 km).

This screenshot shows a different view of the EMODnet Map Viewer interface, focusing on the legend and map:

- Legend Panel:** A "Show legends" dropdown menu is open, displaying a list of fishing gear types with corresponding colored lines: Baka trawl (red), Beam trawl (orange), Bottom trawl (blue), GOC 73 bottom trawl (yellow), GOV trawl (green), Large TV trawl (orange), Norwegian Campell Trawl (green), Porcupine Baka trawl (orange), and Small TV trawl (pink).
- Map:** The map shows the same geographic area as the previous screenshot, but with colored lines representing the locations of various trawls.
- Bottom Panel:** Similar to the first screenshot, it includes "Marine regions" (with a search box) and "Change basemap" (set to "EMODNET World Base Layer").

Data reporting as a tool for policy

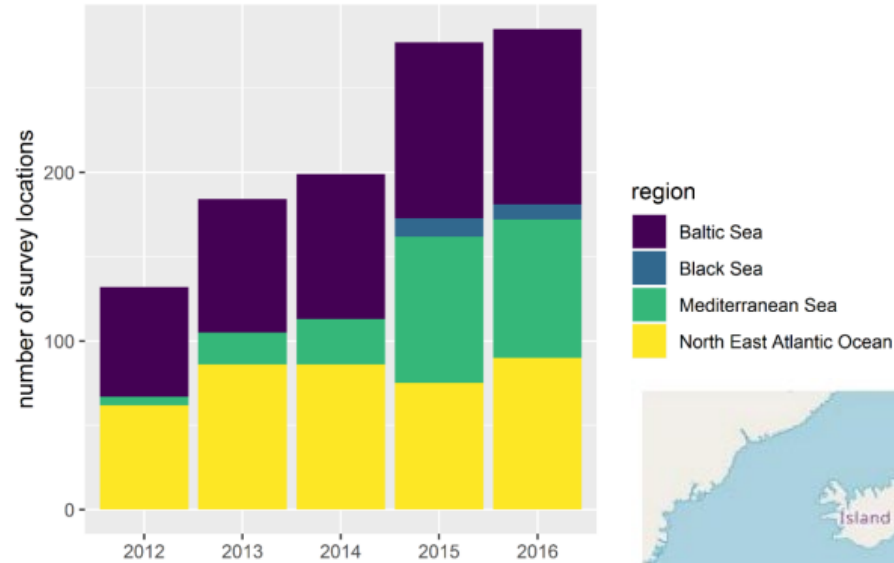
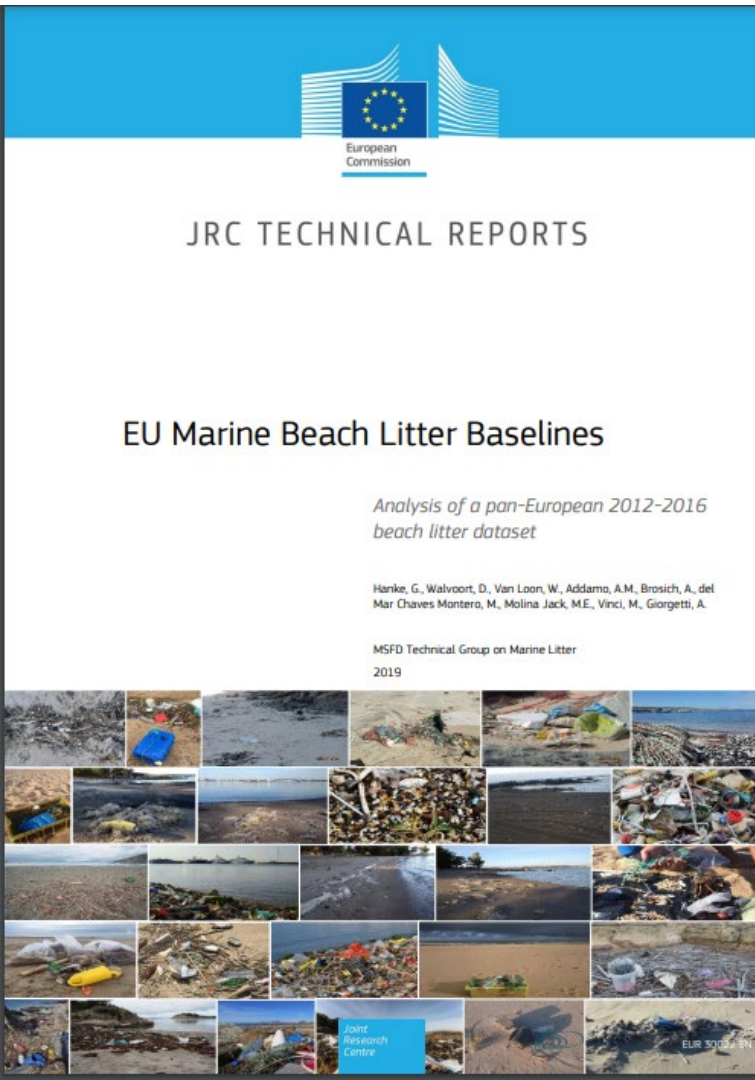


Figure 5: Number of surveys in different years per region

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

Powering the European Marine Data Ecosystem

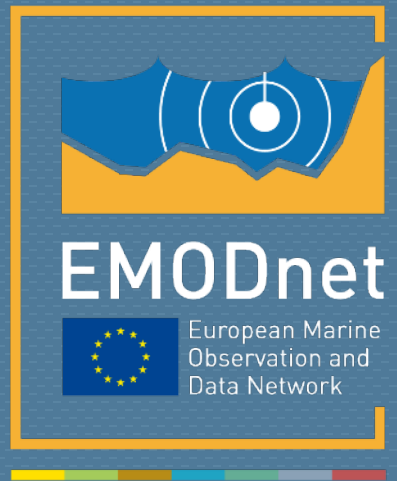
For a digital and green future



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Your gateway to marine data in Europe





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