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International conference on Marine Data and Information Systems



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Marine Litter data management in EMODnet Chemistry: how lessons learned in EU contribute to develop global-scale litter data management

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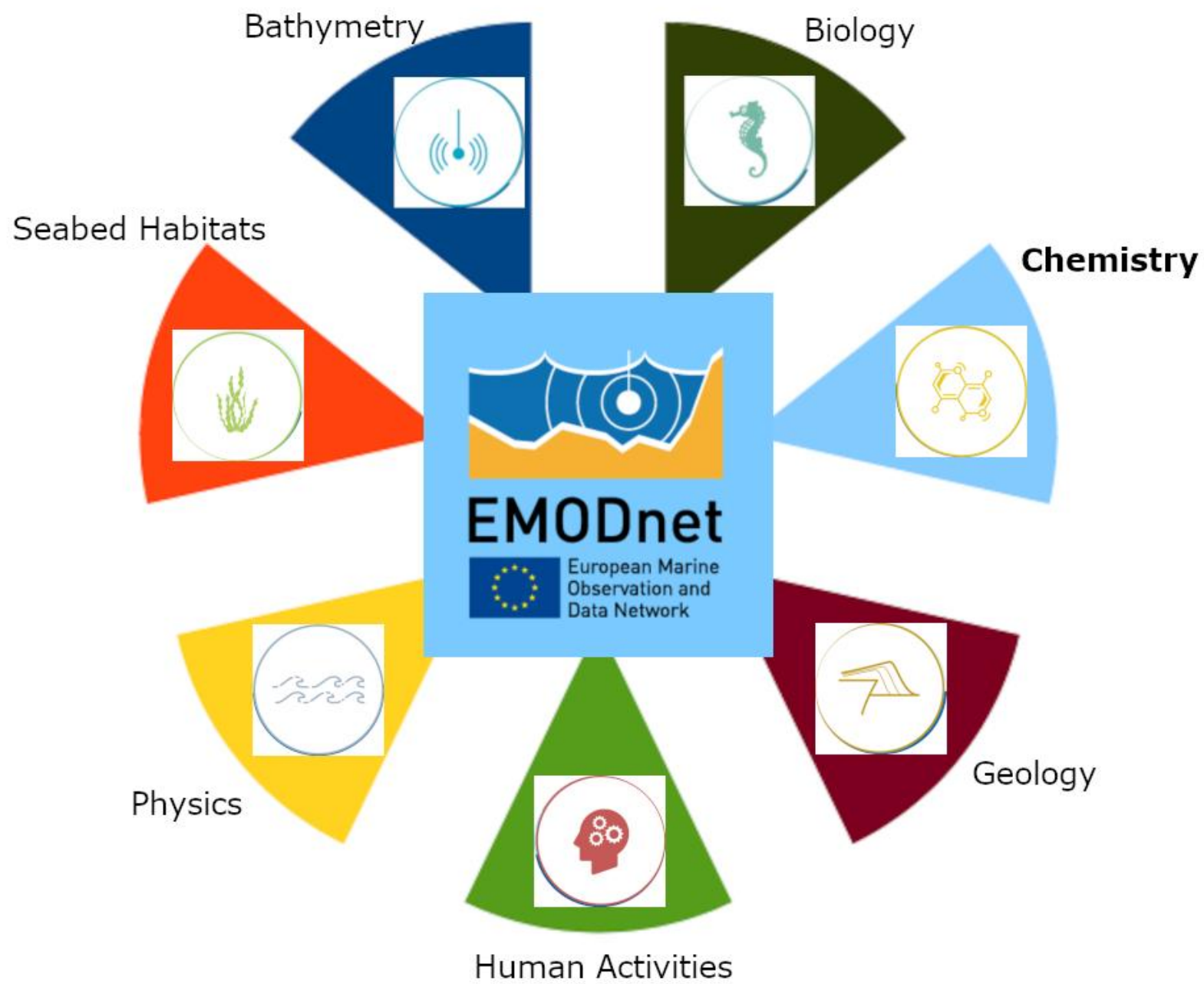
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outline

- EMODnet Chemistry intro
- Pillars and lessons learned of our DM experience:
 - recap on consolidated workflows and formats (from available best practices where possible)
 - quality controls: pre-ingestion focus
 - further quality controls: post-ingestion focus
 - aggregated collections
 - data product generation
 - interaction and outcomes with EU and global stakeholders

<https://emodnet.ec.europa.eu/en/chemistry>



	Group of Parameters	Parameters
Marine Litter	Beach macrolitter, Seafloor macrolitter, Floating and sediment microlitter	Composition, Abundance, etc.
Eutrophication	Nutrients, dissolved gases, etc.	N, P, Si, O ₂ , Chl-a, etc.
Contaminants	Hydrocarbons, Heavy metals, Pesticides, etc.	Anthracene, Fluoranthene, Me, Cd, Pb, TBT, DDTs, etc.



The Network

- 45** Scientific institutes & data management experts
- 27** Countries
- 5** International organizations (ICES + RSCs)

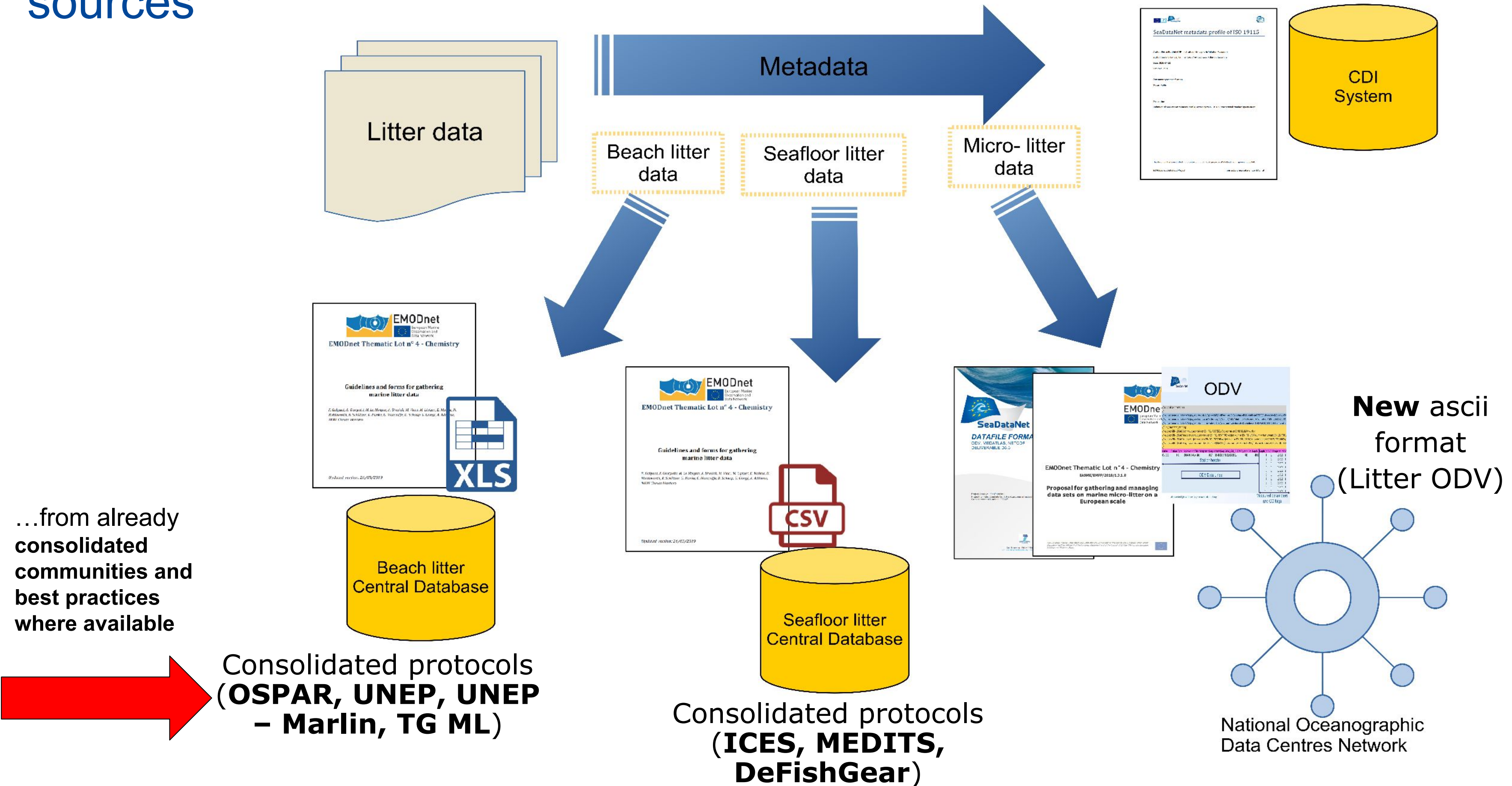
Data management at European scale

- Collection, Standardization, Quality check, and Aggregation of marine data **relevant to the EU Marine Directives** and to **global challenges**
- Provision of **open access, HQ data and data products**

Data and metadata standards

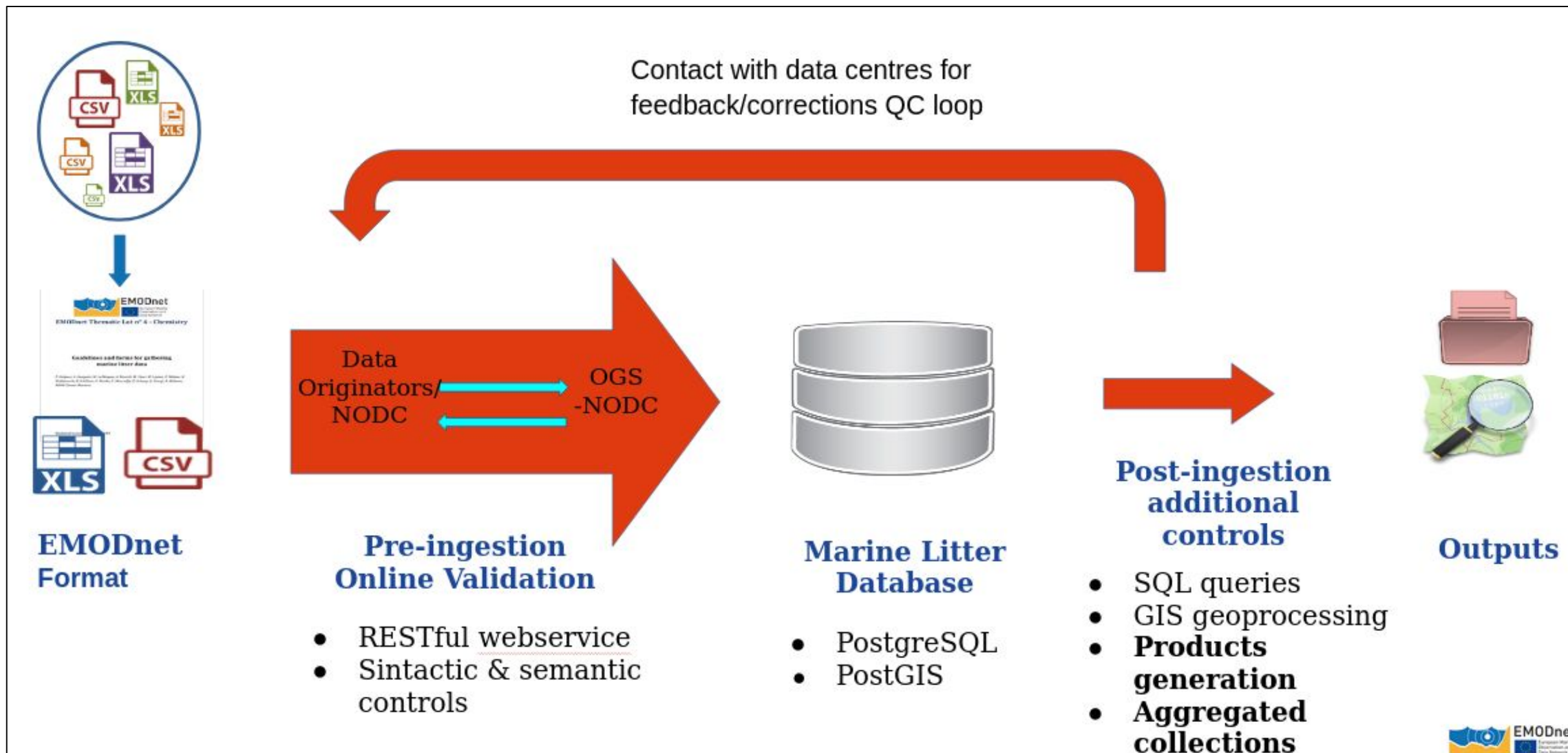


Marine litter data consolidated workflows, agreed formats and their sources



Adapted from Partescano et al., 2021. <https://doi.org/10.1016/j.marpolbul.2021.112965>

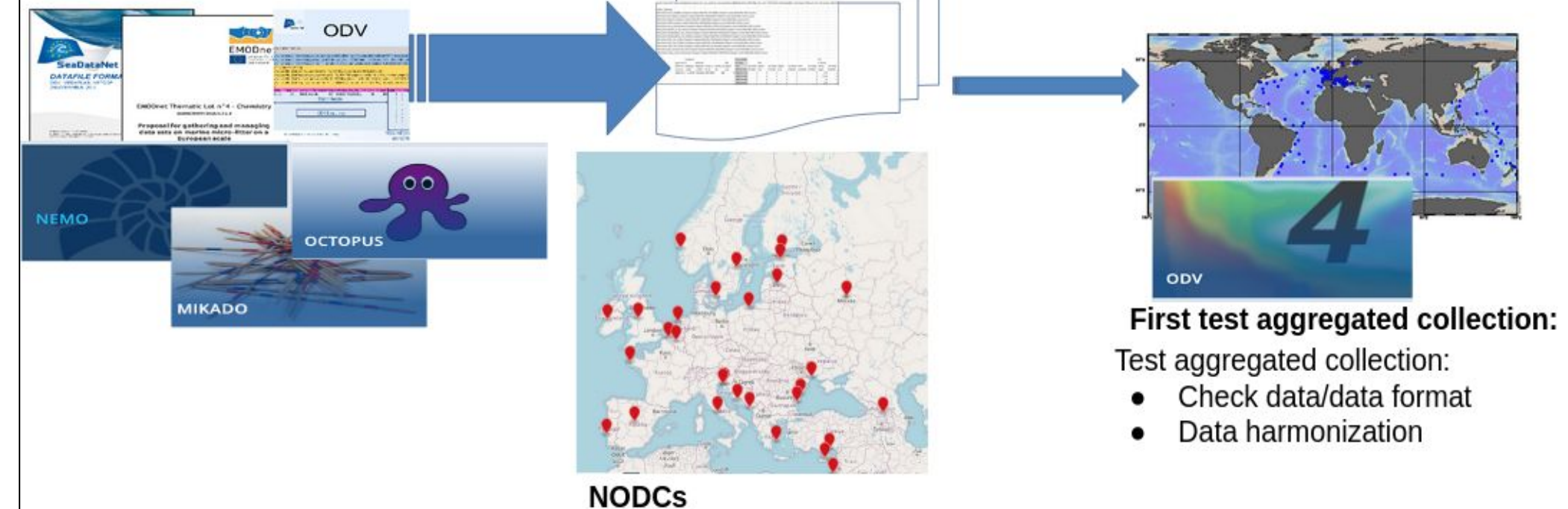
Consolidated marine litter quality workflows (pre and post ingestion)



beach and seafloor trawlings litter

microlitter (floating & sediment)

Contact with data centres for feedback/corrections QC loop



- **formatting** through **agreed guidelines and formats +tools**
- **strong focus on pre-ingestion validation** phase for workflow streamlining
- continuous **validators upgrade**
- database **ingestion**
- **post-ingestion** analysis & **additional QC**

Aggregated collections for post ingestion quality controls

Beach and seafloor litter aggregated collections:

- new **Python tool developed for data aggregation**
- **aggregation and re-validation loops:**
 - highlighting **quality gaps** and **updates needs**
 - **correction of errors, gaps or anomalies** found in **agreement with data originators** (e.g. data formatted with **MLM tool** or highlighted by **more updated and performant validator version**)

Micro litter aggregated collections:

- **ODV software for aggregation**
- **correction of errors or anomalies** found in **agreement with data originators**
- **harmonization:**
 - **unit conversion (P06)**
 - **merging of homogeneous parameters** where possible (P01)
 - **sampling effort harmonized into 2 main categories:**
 - distance (km)
 - volume (litres)

Publishing the resulting aggregated dataset and exploring more automatic ways to access and deliver this data product

Data products for post ingestion quality controls: to highlight data anomalies, gaps, needs but also relevant features

Beach litter

The screenshot shows the EMODnet Map Viewer interface. On the left, a 'Layers' panel is visible with a search bar and a list of layers. A red arrow points downwards from the top of this panel. The main map area displays 'beach surveys locations' as a collection of colored points (red, yellow, purple) across Europe. A text overlay 'beach surveys locations' is present. Below this, another map shows 'number of surveys' as green circles of varying sizes. A text overlay 'number of surveys' is present. At the bottom, a map shows 'plastic bags distribution' as yellow squares. A text overlay 'plastic bags distribution' is present. A 'Data Products Access' label is at the bottom right. The interface includes a 'Catalogue' panel on the right with various data product options.

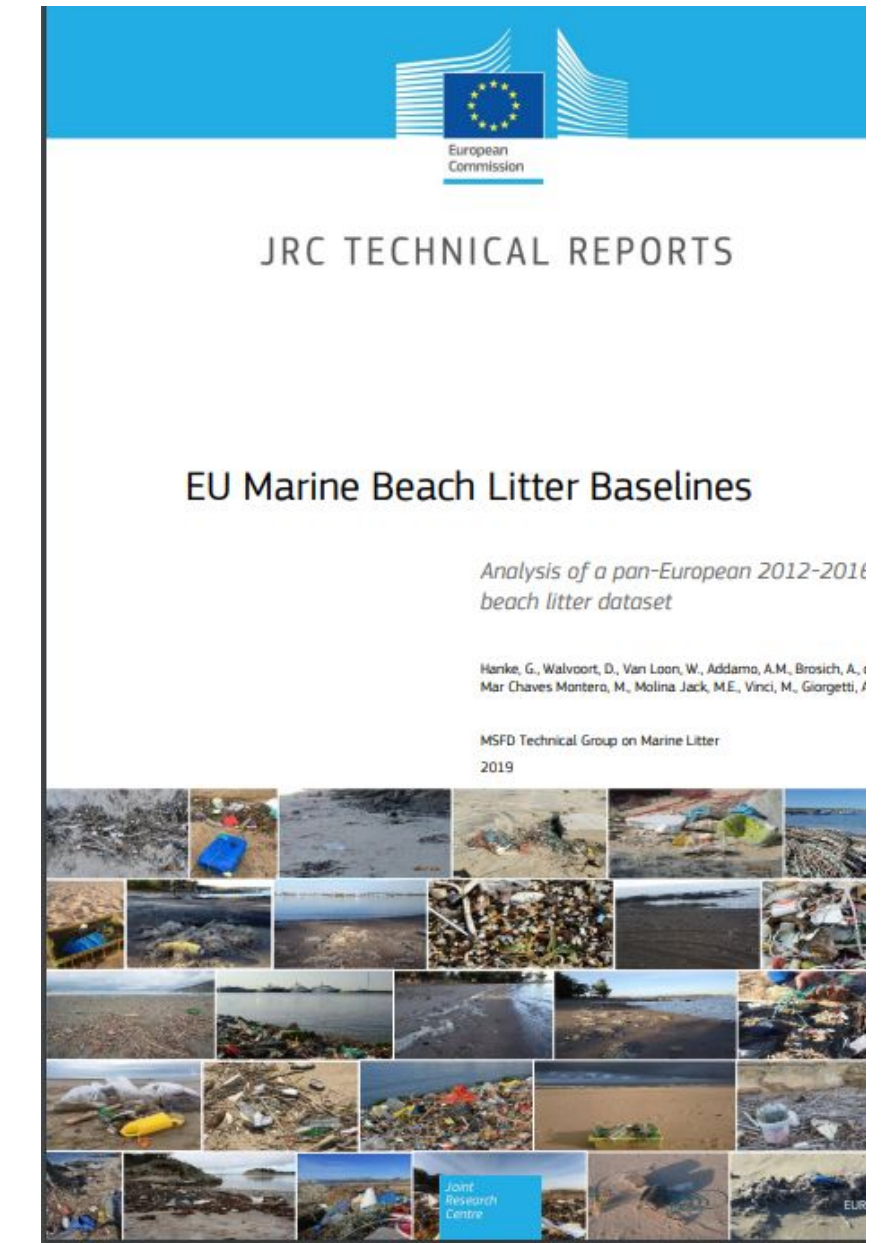
Seafloor trawlings litter

The screenshot shows the EMODnet Map Viewer interface. On the left, a 'Layers' panel is visible with a search bar and a list of layers. The main map area displays 'trawl surveys locations' as a collection of colored points (red, green, orange, purple) across Europe. A text overlay 'trawl surveys locations' is present. Below this, another map shows 'fishing items' as green circles. A text overlay 'fishing items' is present. At the bottom, a map shows 'plastic bags distribution' as cyan squares. A text overlay 'plastic bags distribution' is present. The interface includes a 'Catalogue' panel on the right with various data product options. A 'Data Products Access' label is at the bottom right.

EMODnet Chemistry interactions within expert groups and communities

EU-TGML:

- **collection, standardization, analysis, quality control and sharing through NODCs network supporting EU-MS**
- **provided harmonized datasets for the assessment litter abundance as baselines, trends and distribution:**
 - **Baselines:**
 - beach litter published in 2019
 - ongoing work for seafloor and microlitter
 - **Trends: ongoing work for beach litter**
- **International expert group for seafloor litter images data management:**
 - ongoing DM proposal upgrade for implementation
 - **TGML goal**→Integrated monitoring approach Images + trawlings



EuroQcharm:

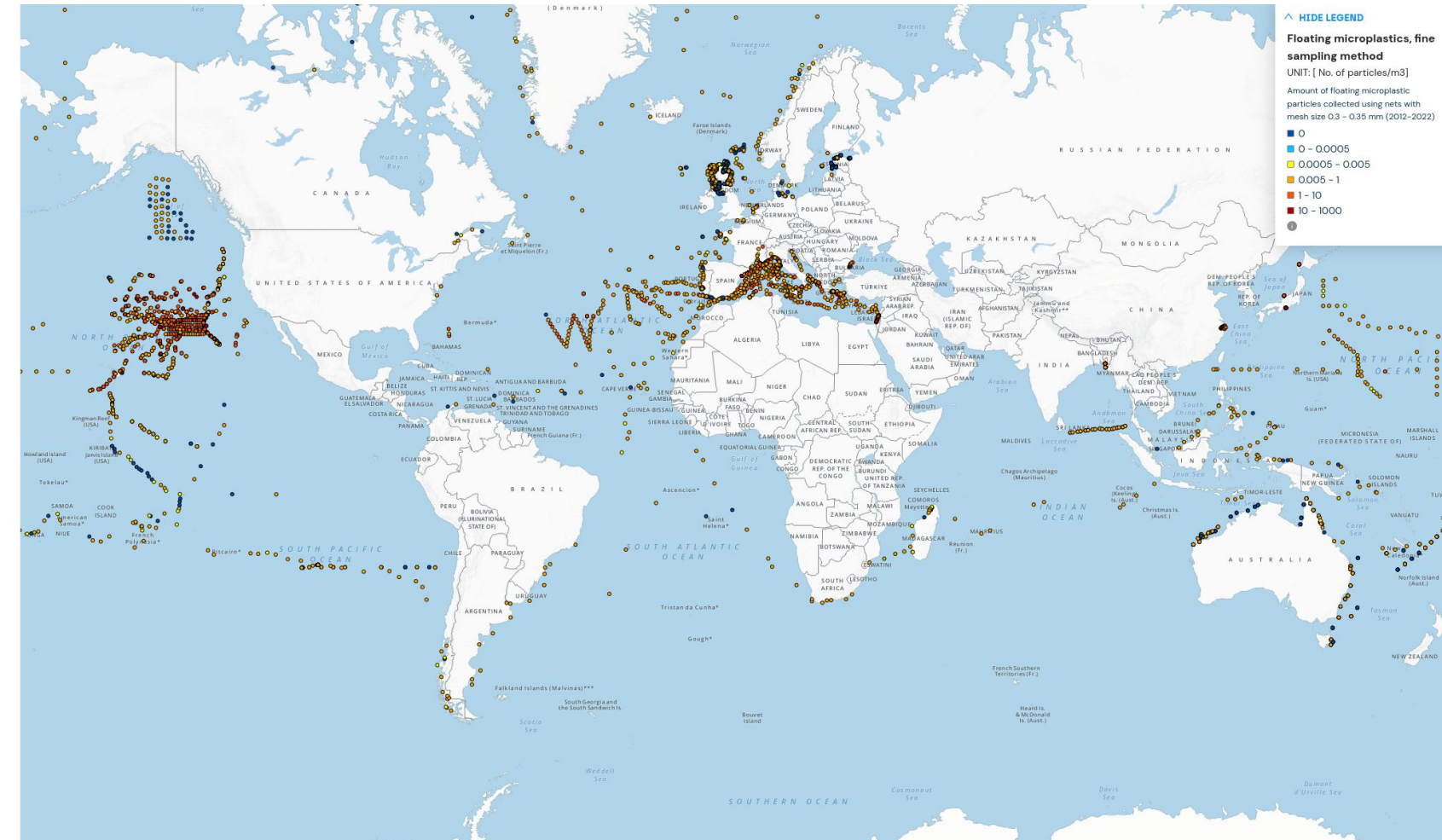
- EU-CSA (finished) for analyzing, evaluating and harmonize existing methodologies for plastic pollution assessment on a European level.
- ‘data management can provide a harmonized common framework for data reporting **but it cannot alone address the imbalance or heterogeneity due to non-comparable monitoring methods**’
- great boost on **QA/QC info management improvement for better data comparability (microlitter)**

EMODnet Chemistry interactions within expert groups and communities

Link with Global initiatives :

[UNEP-Global Partnership on plastic pollution and marine litter](#), **CoPs:**

- **data and products sharing**
- **revision/alignment of glossary and ontologies/vocabularies** for common terms usage or compatibility
- **[finalized global indicator for floating microplastic](#)** built with datasets from **EMODnet, MOEJ, and NOAA**



G20 microlitter MOEJ prototype group:

- **Chemistry consortium** invited as **marine litter expert** for their prototype development
- Ongoing support/dialogue/harmonization in different aspects like:
 - data management systems
 - **core sets of metadata and data for monitoring support**
 - **comparison leading to a microlitter data management upgrade**
 - [Harmonized monitoring and data compilation of marine plastic litter](#)
 - **[surface microplastic data mapping system “Atlas of Ocean Microplastics \(AOMI\)”](#)**



Terms of use



IMDOS:

- actively contributing and facilitating on the previous global interactions

**"Everyone wants to save the world,
but no one wants to help mom do the dishes."**

—P.J. O'Rourke



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