

Developing the first pan-European Marine Litter database within EMODnet Chemistry

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EMODnet: data management at European scale

EMODnet Chemistry supports the implementation of the Marine Strategy Framework Directive (MSFD) with a data management plan focus on disclosing the fragmented and inaccessible environmental information.

Network

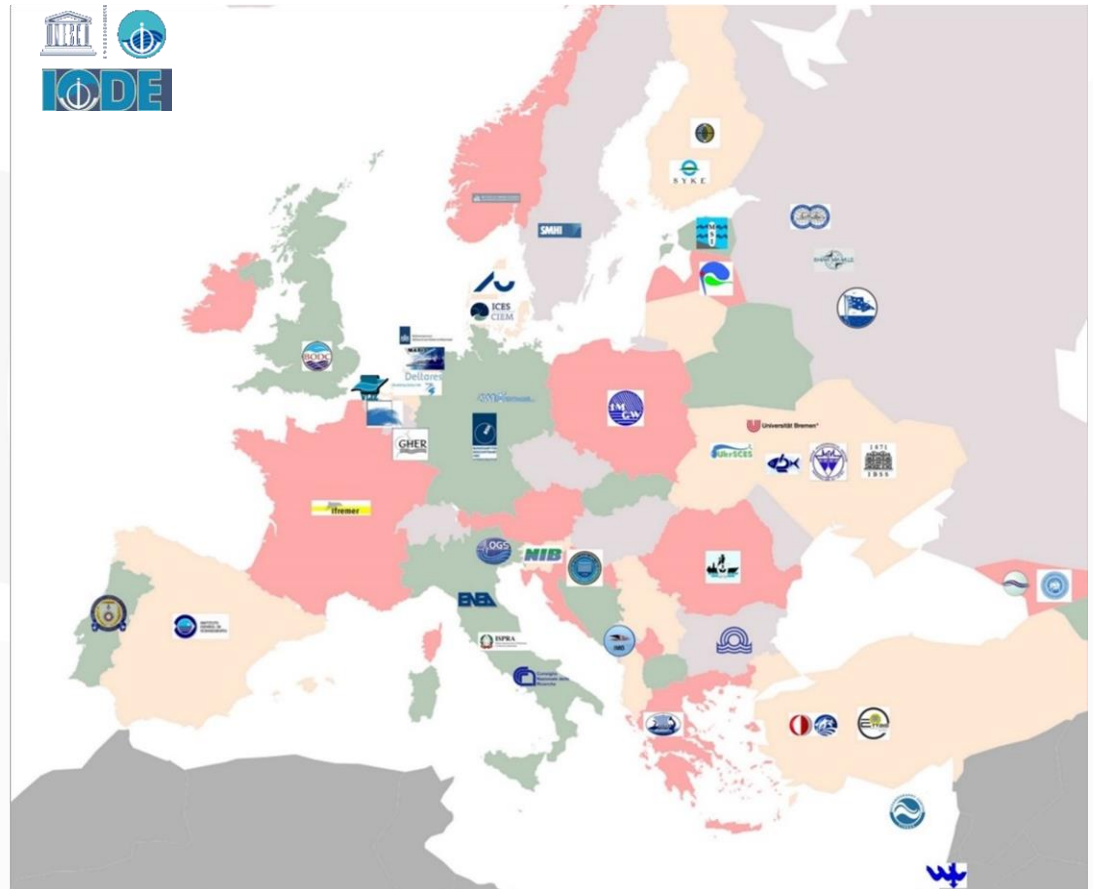
- 45 institutes
- 27 countries
- 3 international organizations (ICES, Black Sea Commission, UNEP/MAP)

Activity

- Collection
- Standardization
- Aggregation
- Sharing of data

Data (MSFD Descriptors)

- Nutrients
- Contaminants
- Marine Litter



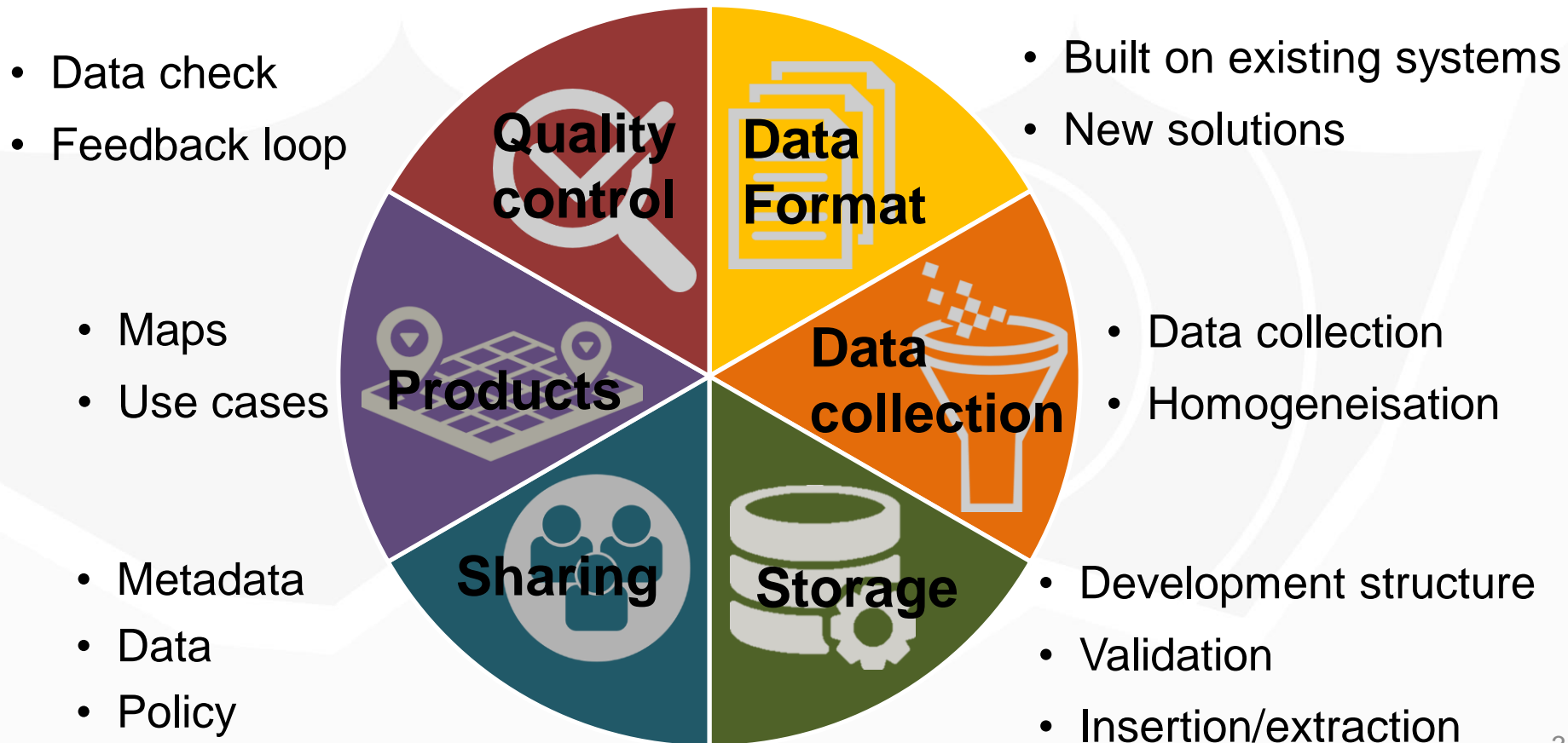


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Marine litter data management

Include all type of data, providing central submission facilities, encouraging data exchange mechanisms and producing search and display services



Marine litter data management - Format



- Include all type of data in an homogeneous form and keeping relevant information.
- Definition of new data formats/ adaptation of existing ones with the base of consolidated protocols.

BEACH

-
- Consolidated protocols (OSPAR, UNEP, TG-ML)
-
- New format based on OSPAR

SEAFLOOR

-
- Consolidated protocols (ICES, MEDits)
-
- New format based on ICES

FLOATING MICRO-LITTER

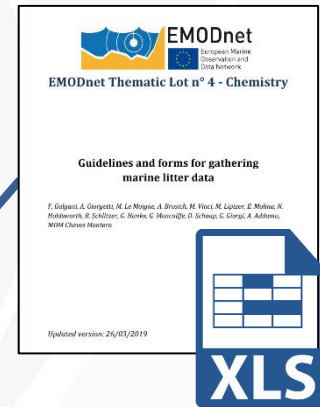
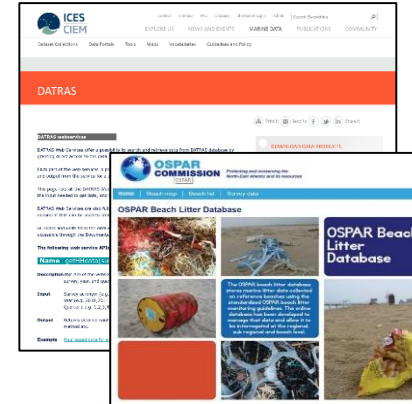
-
- No consolidated protocol
-
- Adaptation of EMODnet existing infrastructure, data formats and vocabularies

Marine litter data management - Collection



Sources:

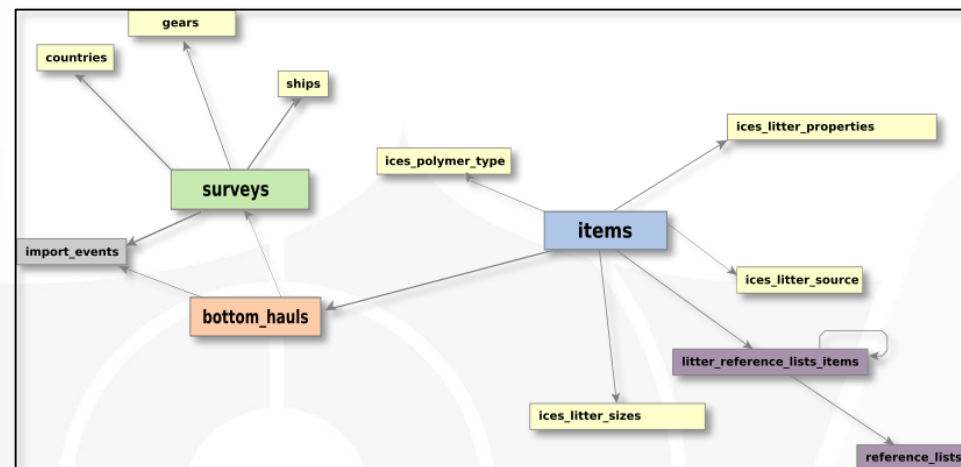
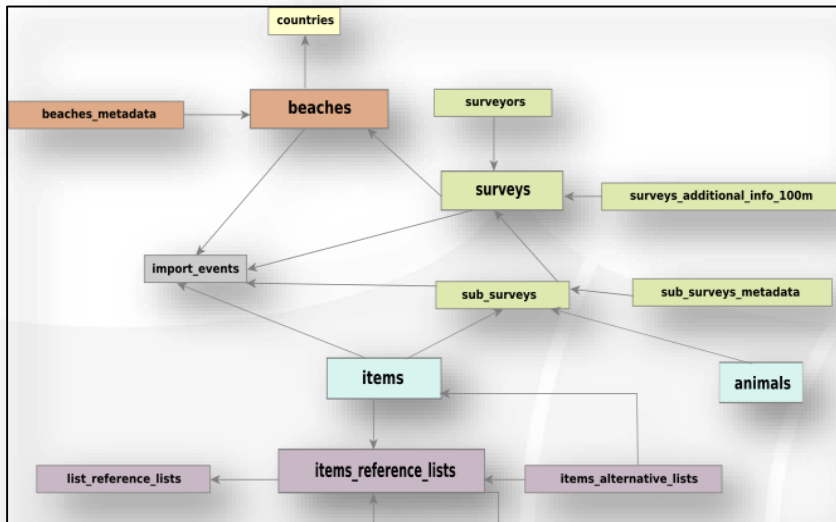
- Regular harvesting from existing databases:
 - OSPAR Database
 - ICES DATRAS SOAP Web Service
 - Requested a tailored-made Web Service for Marine Litter Watch EEA data
- Harvesting of beach litter data from Member States collated by JRC
- Harvesting of data from EMODnet partners
- Harvesting of data through EMODnet ingestion portal and additional sources:
 - From DeFishGear project (Adriatic-Ionian region)
 - From EMBLAS project (Russia)
 - From Volvo Ocean Race (worldwide)



Marine litter data management - Storage



- Development of Central Databases for Beach Litter and Sea floor Litter



- Other Litter data are managed through SeaDataNet infrastructure and data formats. Data in common data format are kept by the assigned NODCs.

	A	B	C	D	E	F	G	H	L	M	T	U	V	W
1	//													
2	//<sdn_reference xlink:href="http://seadatanet.maris2.nl/v_cdi_v3/print_xml.asp?edmo=120&identifier=201818001_AkzoNobel" xlink:role="isDescribedBy" xlink:type="SDN:L23::CDI" sdn:scope="120:201818001_AkzoNobel"/>													
3	//SDN_parameter_mapping													
4	//<subject>SDN.LOCAL:MinimumObservationDepth</subject><object>SDN:P01::MINWDIST</object><units>SDN:P06::ULAA</units>													
5	//<subject>SDN.LOCAL:MaximumObservationDepth</subject><object>SDN:P01::MAXWDIST</object><units>SDN:P06::ULAA</units>													
6	//<subject>SDN.LOCAL:SampleID</subject><object>SDN:P01::EVNTID01</object><units>SDN:P06::UUUU</units>													
7	//<subject>SDN.LOCAL:EventEndLongitude</subject><object>SDN:P01::ENDXXLON</object><units>SDN:P06::DEGE</units>													
8	//<subject>SDN.LOCAL:EventEndLatitude</subject><object>SDN:P01::ENDXXLAT</object><units>SDN:P06::DEGN</units>													
9	//<subject>SDN.LOCAL:SamplingEffort</subject><object>SDN:P01::VOLWBSMP</object><units>SDN:P06::ULIT</units>													
10	//<subject>SDN.LOCAL:Net_opening</subject><object>SDN:P01::MTHWDTH1</object><units>SDN:P06::ULCM</units>													
11	//<subject>SDN.LOCAL:Mesh_size</subject><object>SDN:P01::MSHSIZE1</object><units>SDN:P06::UMIC</units>													
12	//<subject>SDN.LOCAL:MicroLitter_Type</subject><object>SDN:P01::MLITVOVO</object><units>SDN:P06::UUUU</units><instrument>SDN:L22::TOOL1321</instrument>													
13	//<subject>SDN.LOCAL:MicroLitter_Size</subject><object>SDN:H03::H0300011</object><units>SDN:P06::UUUU</units><instrument>SDN:L22::TOOL1321</instrument>													
14	//<subject>SDN.LOCAL:MicroLitter_Count</subject><object>SDN:P01::MLITCNTW</object><units>SDN:P06::UUUU</units><instrument>SDN:L22::TOOL1321</instrument>													
15	//													
16	Cruise	Station	Type	YYYY-MM-DDThh:mm:ss	Longitude [degrees_eas]	Latitude [degrees_north]	LOCAL_CDI_ID	EDMO_code	MaximumObservationDepth [m]	QV	SamplingEffort [L]	QV	Net_opening [cm2]	QV
17	Volvo Ocean Race AkzoNobel	Leg 7: Auckland to Itajaí/Brazil	B	2018-03-19T04:32:29	178.427808	-38.084513	201818001_AkzoNobel	120	1.5	1	45.152	1	1519.76	1
18			B	2018-03-21T20:28:33	179.336121	-44.438288	201818001_AkzoNobel	120	1.5	1	37.36	1	1519.76	1
19			B	2018-03-25T17:31:32	-127.26166	-51.134575	201818001_AkzoNobel	120	1.5	1	24.524	1	1519.76	1

Marine litter data management - Sharing



Search and Discovery Service through EMODnet Chemistry Portal

Datasets 0 **Proceed to check out** **Reset basket**

Layer control

- ☐ CDI entry Points
- ☐ CDI entry Tracks
- ☐ CDI entry Areas
- ☐ Grid Lines
- ☐ Regional sea
- ☐ Regional sea labels
- ☐ Main sea
- ☐ Main sea labels
- ☒ Bathymetry
- ☐ Blue Marble
- ☒ World

Lat/long

Upper-left Lower-right

Search **Search** **Clear**

Free search

Matrix categories

All
biota
sediment
water body

Groups of variables

Heavy metals
Hydrocarbons
Marine litter
Organic matter

Discovery parameters

All
Beach litter abundance
Micro-litter in water bodies
Sea-floor litter abundance

Cruise/Station name

Instrument type

All
acoustic tracking systems

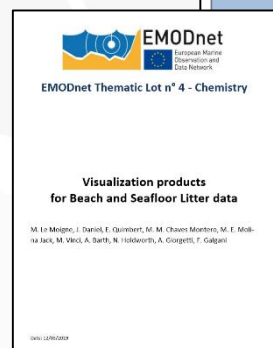
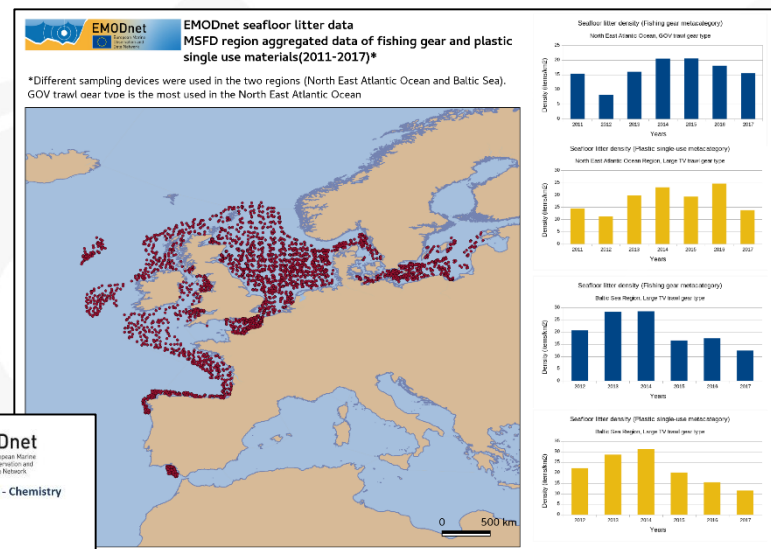
- Metadata
 - Originator
 - Collator
 - Dataset description
- Data download (depending on data policy)
- Acknowledgment requested

Marine litter data management – Products



Develop products that fit society needs, allowing the quick visualization and assessment of the database content and enhancing the direct use of the data.

- Map layers of relevant information:
 - Static maps of seafloor litter
 - Dynamic maps of beach and seafloor litter
- Documentation about methods used
- Assessed by board of experts



* The visualization products have been developed for EMODnet Chemistry by Ifremer and OGS.

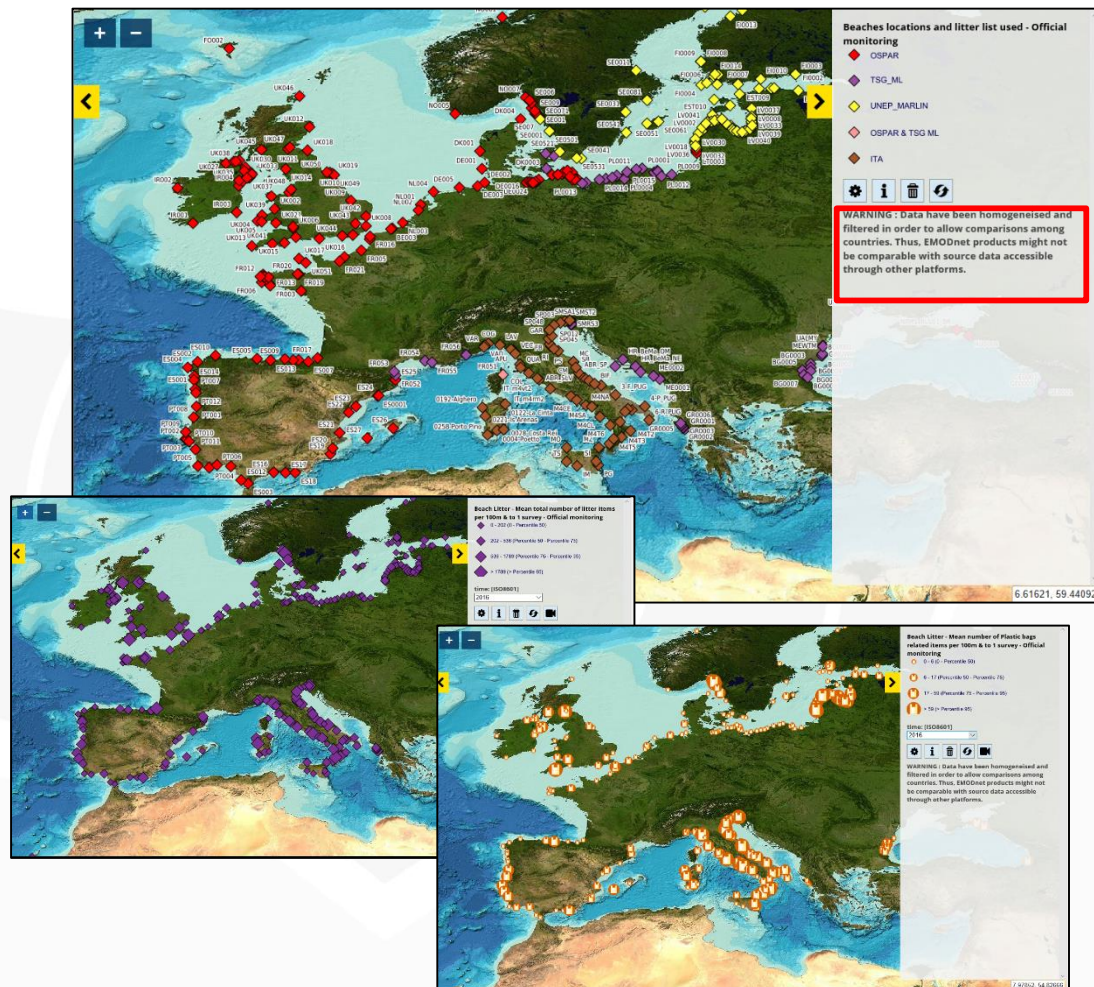
Marine litter data management – Products



Viewing and Downloading Service through EMODnet Chemistry Portal

EMODNET CHEMISTRY - LITTER

- ✓ Beach litter [2001 - 2018]
 - ✓ Official monitoring
 - Beaches locations and litter list used - Official monitoring
 - Number surveys & temporal coverage - Official monitoring
 - Beach Litter - Mean total number of litter items per 100m & to 1 survey - Official monitoring
 - Beach Litter - Composition of litter according to material categories in percent - Official monitoring
 - Beach Litter - Mean number of Cigarette related items per 100m & to 1 survey - without UNEP_MARLIN - Official monitoring
 - Beach Litter - Mean number of Cigarette related items per 100m & to 1 survey - UNEP_MARLIN - Official monitoring
 - Beach Litter - Mean number of Fishing related items per 100m & to 1 survey - Official monitoring
 - Beach Litter - Mean number of Plastic bags related items per 100m & to 1 survey - Official monitoring
 - Other sources



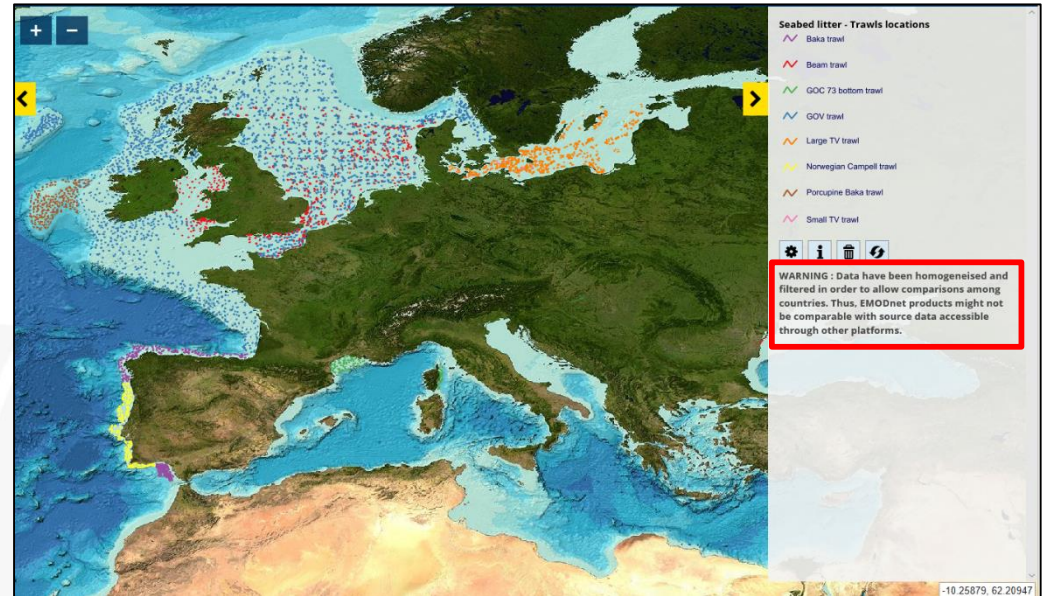
Marine litter data management – Products



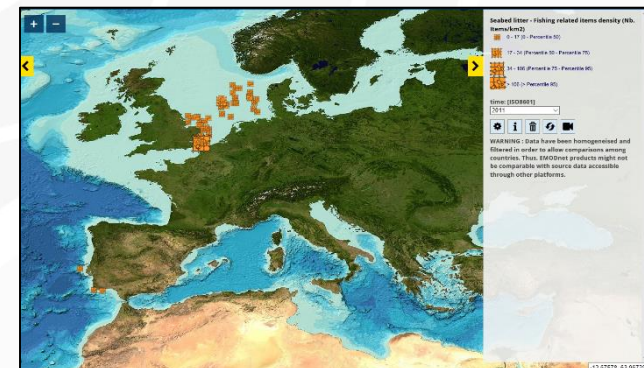
Viewing and Downloading Service through EMODnet Chemistry Portal

EMODNET CHEMISTRY - LITTER

- ✓ Beach litter [2001 - 2018]
 - Official monitoring
 - Other sources
- ✓ Seabed litter [2006 - 2018]
 - 📄 Seabed litter - Trawls locations
 - 📄 Seabed litter - Density (Nb. Items/km2)
 - 📄 Seabed Litter - Material categories percentage per year
 - 📄 Seabed litter - Fishing related items density (Nb. Items/km2)
 - 📄 Seabed litter - Plastic bags density (Nb. Items/km2)



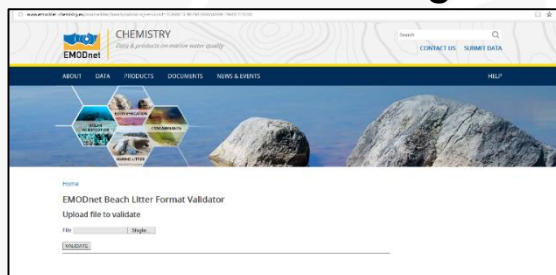
WARNING : Data have been homogenised and filtered in order to allow comparisons among countries. Thus, EMODnet products might not be comparable with source data accessible through other platforms.





EMODnet Chemistry commits with providing the best quality data and products with data control all over the data flow.

- During formatting and insertion phase:
 - Direct contact with originators to clarify possible issues with the data
 - Online **validation tool** to check formatting errors (beta version)



- Assessment of products in development phase by consultation with EMODnet board of experts and other collaborators as needed.
- Data assessment and quality control during the generation of data products.
- Feedback loop with the originators to ensure the correction of possible detected errors



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Uses

The data and products may be freely used for non-commercial, educational and research purposes, as well as for general information, within the limits of the methods used.

Research



Policy makers



Society



EMODnet litter data have been used for:

- EU plastic assessment
- Beach litter baselines dataset
- Ongoing update of TG-ML reference list





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Summary

- Development of a **data management system** for marine litter at EU scale:
 - beach + seafloor through Marine Litter Database
 - floating micro litter with bio-ODV
- **Visible and accessible Data + Visualization products** at multibasin scale
- Ensured data and products **quality** :
 - Data quality control and feedback with originators
 - Products evaluation through expert consultation
- Highlight the necessity to keep working on the **harmonisation** of monitoring programs and sampling and reporting methods, for which strong cooperation of the international is essential.



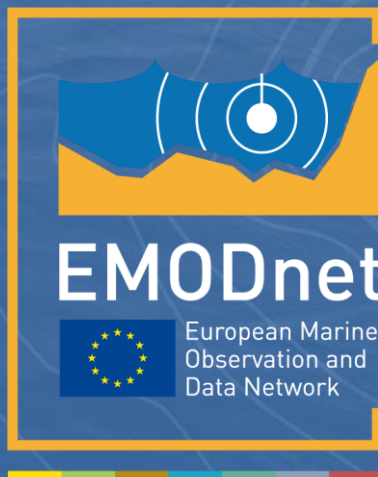
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Future developments

- **EMODnet 4, EMODnet Ingestion 2**
- **Data insertions:**
 - Updated datasets from MS through TG-ML
 - Updated data from OSPAR, ICES databases
 - New data by partners
 - Marine Litter Watch dataset from EEA
- Extended **data types** and **data formats**:
 - Floating macro litter
 - Seafloor litter from images and sub sampling?
- Updated/new **visualization products**

THANKS FOR YOUR ATTENTION!



@EMODnet

www.emodnet.eu

www.emodnet-chemistry.eu

Your gateway to marine data in Europe



This work exists only thanks to the synergy and active interaction with EMODnet partners, OSPAR, HELCOM, EEA, DeFishGear, ICES DATRAS, facilitated by MSFD Technical Group on Marine Litter and JRC.