

Enlarging the EMODnet Chemistry focus with the EU Marine Litter data challenge

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EMODnet

The European Marine Observation and Data Network as a long-term initiative of the European Commission is continuing its path to become a reliable pillar of the European Maritime policy for the development of the Blue-Green Economy.

EMODnet Chemistry

EMODnet Chemistry represents one of the eight thematic data portals, each one related to a different area of expertise. Started in 2009 with a pilot phase, it was born to ensure that European marine data would become easily accessible, interoperable, and without restrictions on use. From the outset, and also thanks to the positive evaluation of the pilot phase, it has been increasingly enlarged to cover a wider area and more environmental parameters. The main activities are collection, standardization, aggregation and dissemination of data and products related to nutrients and contaminants in three matrices: water, sediment and biota. The scope of EMODnet Chemistry has been extended recently to marine litter. Marine litter is a global concern that represents a threat for all the oceans and seas, it is recognized in the Marine Strategy Framework Directive (MSFD) as one of the descriptors (Descriptor 10) essential for achieving Good Environmental Status of EU marine waters and protecting the marine resources. Marine plastics and its reduction is the core of a political action through the new EU Plastics Strategy.

MSFD Descriptor 10 Marine Litter

MSFD Descriptor 10 considers several marine litter compartments, though the EMODnet Chemistry focus has been limited for the moment to beach litter, seafloor litter (i.e. for now on litter collected by bottom trawl fishing surveys), and micro plastic in the sea surface layer.

EU marine litter data management presents a complex and heterogeneous situation in which different levels of protocols and standards have been developed (e.g. regional, national, etc.). The plan of the

consortium is either to adopt consolidated data formats when available, to adapt them when it is possible or to develop new solutions when needed.

The initial ambition was to develop a single database able to handle all the EU information from the three marine litter compartments. After the analysis of the available information, three different approaches have been proposed in order to develop a tailor-made standard procedure on a European scale, each based on the best available reference documents for each litter compartment:

- the beach litter approach is based on the OSPAR (Convention for the Protection of the Marine Environment of the North-East Atlantic) experience. The proposed data format provides the chance to describe in a detailed way the surveyed beaches, the surveys, the eventual animals harmed by litter entanglement or ingestion and the items found in the beaches. The items have been described following any of the three main litter reference lists available in EU: OSPAR, MSFD or UNEP/MAP (Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean).
- the bottom trawl litter approach follows the ICES DATRAS (International Council for the Exploration of the Sea Database of Trawl Surveys) experience. The data format provides an essential description of the bottom trawling survey and the collected litter items. The litter have been described using the three main litter reference lists available in EU: ICES, MSFD or MEDITS (International Bottom Trawl Survey in the Mediterranean).
- the floating marine micro litter approach adopts SeaDataNet formats that have been fitted after the comparison with the available information in Europe. CDI ISO XML format with little modifications is used to host micro litter metadata. Bio-ODV format has been adapted to include the information related to the surveys and the items collected in the water surface. For this scope a set of new standard oceanographic vocabularies has been minted.

The biggest challenge faced during the first phase has been dealing with the heterogeneity related to differences in formats, protocols and data quality. A huge effort has been made to handle a varied set of data in order to guarantee an efficient data management of the information. As a result, a series of basic products (including aggregated datasets and maps) has been released through the web site and the product visualization service. A more dynamic and tailored set of products is currently under discussion and development.

The relevance and actuality of the marine litter topic has favored strong interactions between the consortium and stakeholders or institutions dealing with marine litter data management (i.e. TG-ML MSFD Technical Group on Marine Litter, JRC European Commission Joint Research Centre, Regional Sea Conventions, Member States, EEA European Environmental Agency, etc.). These collaborations pursue the common goal of defining the best possible data management strategies and identifying the most valuable products. One outcome from the assessment of the available EU marine litter data is the contribution to the ongoing revision of the MSFD TGML Master List of Litter Item Categories Items with the aim of improving the data quality in future surveys. In addition, the first aggregated maps of marine seafloor litter have been used to support a preliminary assessment of single use plastics and fishing gear impact. These types of interactions demonstrate the necessity and utility of a consistent, harmonized marine litter dataset, and encourage the continuation of the work.