



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

Maria del Mar Chaves Montero, Matteo Vinci, Maria Eugenia Molina Jack, Alberto Brosich, Elena Partescano, Alessandro Altenburger, and Alessandra Giorgetti

National Institute of Oceanography and Applied Geophysics (OGS), Oceanography, Trieste, Italy (mchavesmontero@inogs.it)

The European Marine Observation and Data Network (EMODnet) is a long term initiative from the European Commission DG-MARE. It supports the implementation of the Marine Strategy Framework Directive (MSFD) with a data management plan focused on disclosing the fragmented and inaccessible environmental information. Having accessible and comparable data is the basis for evaluating the environmental state and implemented monitoring plans, protocols and sampling methodologies, allowing to identify gaps of knowledge.

EMODnet is formed by a wide consortium of European research institutes and environmental agencies. It is organized in eight data portals, each related to a different area of expertise. Among them, EMODnet Chemistry is involved in the collection, standardization, aggregation and sharing of data related to nutrients, contaminants and, recently, also marine litter. For marine litter, the focus is on beach litter, seafloor litter and floating micro litter.

The marine litter data at European scale are heterogeneous. This is due to differences in the environmental policies at the different territorial levels of action (Regional, National...) leading to multiple sampling protocols and methods. The data management plan relies on existing consolidated data formats that were adapted to convey all the available litter information. When no consolidated format was available, new solutions were set up.

The best available reference documents were used to develop tailor-made approaches on a European scale for each matrix considered. For beach litter, the approach is based on the OSPAR (Convention for the Protection of the Marine Environment of the North-East Atlantic) data format, which was adapted to open the possibility of reporting data collected with all protocols and litter reference lists used in Europe (OSPAR, MSFD, United Nations Environmental Programme -UNEP-, UNEP under the Marlin project). For bottom litter collected with trawls, the approach followed the ICES DATRAS (International Council of Exploration of the Sea - Database of Trawl Surveys) experience, providing the opportunity to report data collected using ICES, MSFD or the MEDITS project protocols and reference lists. For floating marine micro-litter, the SeaDataNet format has been adopted and fitted after the comparison with the other European available information. It gives the chance to handle also data from not conventional monitoring sources like the Volvo Ocean Race microplastic surveying.

Besides the formats definition and standardization effort, there is the consolidated work flow of the infrastructure that provides access to metadata, data and products (maps) through interoperable on line services.

The initial analysis of litter data and the ongoing maps production provide a good European overview of the marine litter status and the related monitoring efforts. The results highlight that more efforts are needed to improve the standardization, the monitoring coverage, the implementation of protocols and quality assurance and controls. The communication with relevant EU stakeholders has provided useful feedback to improve all the work flow.

More data sources, like citizen science and seafloor imaging, have been identified and probably in the next years will enrich the ongoing data collection with their additional information and management challenges.