

# EMODnet Chemistry: biogeochemical data management for long-term research and support to EU policies

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The EMODnet initiative is developed through a stepwise process that foresees different phases.

The positive outcomes from the EMODnet Chemistry Pilot phase led to a second ongoing phase where the partnership, the parameters requested and the geographical coverage have been enlarged. As in the Pilot phase, the aim is to make available and reusable a large amount of fragmented and inaccessible data, hosted by European research institutes and environmental agencies. Furthermore, there is an increased focus to provide tools useful to address the requirements of the Marine Strategy Framework Directive –MSFD, developing visualization and data access services.

**EMODnet Portal for Chemistry**  
European Marine Observation and Data Network

Home Data Access Data Products Partners Acknowledgment Contact us

>>Portal Services Map>>

OVERVIEW  
PRIVATE AREAS  
REPORTS TO EU  
MEETINGS  
DOCUMENTS

>>Emodnet Central Portal>>

European Marine Observation and Data Network on EU maritime forum

NEWS

- 6th Steering Committee, Venice, on 3rd and 4th of December 2015.
- EMODnet Information Day, organised by OGS with INGV, Cogeia, ETT with the endorsement of ISPRA, the Italian Ministry of Environment, DG MARE - Giornata Informativa EMODnet, 25/11/2015, Rome
- EMODnet Chemistry 2nd Expert Workshop, 21/10/2015, Ostende
- EMODnet Chemistry 2nd Year Meeting, 15-16 June 2015, Istanbul
- 4th Steering Committee, Amsterdam
- European Atlas

FEEDBACK

Legend - number of measurement data sets for each variable per marine region.

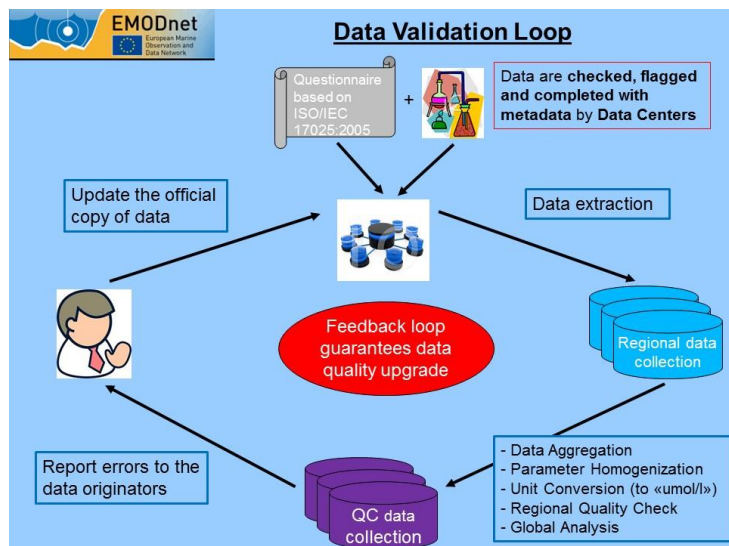
Sea regions	Greater North Sea - Celtic Sea - Norwegian Sea	Baltic Sea	Iberian peninsula - Macaronesia - Bay of Biscay	Mediterranean Sea	Black Sea - Sea of Azov
Acidity				35076 Results	
Antifoulants					
Chlorophyll					
Dissolved gasses					
Fertilisers					
Hydrocarbons					
Heavy metals					
Organic matter					
Polychlorinated biphenyls					
Pesticides and biocides					
Pharmaceuticals					
Plastics					
Radionuclides					
Silicates					

EMODnet Chemistry data portal: quick search of chemicals by region (here showing acidity data in the Mediterranean Sea)

The technical set-up is based on the principle of adopting and adapting the SeaDataNet infrastructure. SeaDataNet is developing a decentralized infrastructure following EU-INSPIRE implementation rules; it can be considered a European *de facto* standard with more than 100 nodes connected; it is part of the Ocean Data Interoperability Platform (ODIP project) that links the experience of European data management infrastructures with American and Australian ones. The management relies on a

distributed network of National Oceanographic Data Centres. They contribute to data harvesting and enrichment with the relevant metadata. Data are processed into interoperable formats (using agreed standards ISO XML, ODV) with the use of common vocabularies and standardized quality control procedures.

Data quality control and data aggregation are key points for EMODnet Chemistry as the consortium is



dealing with heterogeneous data coming from different sources. A data validation loop has been agreed within the EMODnet Chemistry community and is routinely performed. Data quality control is first done at national and then at regional level (in the Atlantic, in the Baltic, in the North, in the Mediterranean and in the Black Sea).

Beside quality control, aggregations of parameters and units conversions are performed routinely thanks to the development of a dedicated vocabulary (P35) embedded in the ODV software. This combination of

tools provides an effective help to the regional leaders to homogenize the great variability of harvested information in categories relevant for a standard environmental reporting. A panel of experts has been established to discuss and validate a standard and agreed vocabulary.

The validated and aggregated regional datasets are used to develop data products useful for analysis of long- term variability in biogeochemical parameters and to address MSFD requirements. EMODnet Chemistry provides interpolated maps of nutrients, generated as 10 years seasonal running windows, useful to detect temporal and spatial variability, and services for the visualization of time series and profiles of several chemical parameters. All visualization services are developed following OGC standards as WMS and WPS.

In order to test new strategies for data storage, reanalysis and to upgrade the infrastructure performances, EMODnet Chemistry has chosen the Cloud environment offered by Cineca (the Consortium of Italian Universities and research institutes) to store both regional aggregated datasets and analysis, with their visualization services.