

# YOUR DATA WORK IT

12+ success stories  
180+ data providers  
1200+ data sets



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With the **UN Ocean Decade** in front of us, all eyes are on the data. More data for accurate science, smarter engineering and durable policy making. More data for a resilient ocean.

Take part in our success story.

Join the **EMODnet community**

## DISCOVER OUR SUCCESS STORIES – Cases 1 to 12



UK  
**BODC**

**Marine Scotland Science**, provides numerous datasets on seawater quality, including on eutrophication and on contaminants, collected from up to 10 cruises per year. Some are time series important for *EMODnet Physics*.

IT  
**COGEA**

Spirulina and algae are increasingly farmed throughout Europe. This green gold provides us with food, fuel, health and beauty products. The **Joint Research Centre** maps this booming business to fit it in a sustainable blue bio-economy (*EMODnet Human Activities*).

SE  
**SMHI**

Another game changer catches data while fishing: the **Berring Data Collective** integrates sensors with nets, filling gaps in the dynamic shelf and coastal seas data. These data complement existing observation networks for ocean forecasting, and climate change monitoring.

BE  
**RBINS**

Fourteen years of CTD, turbidity and chlorophyll data were shared by the **Belgian Navy** and published to *EMODnet Chemistry and Physics*. These data were collected by autonomous underwater vehicles during 880 missions across Europe for port protection and mine hunting operations.

BU  
**IO-BAS**

The **Black Sea - Danube Coastal Association for Research and Development** is an independent non-profit organisation. The submission of coastal *bathymetry data* for the port of Varna raised the interest of a provider, **CORES Ltd.** to become an **EMODnet Associated Partner**.

DK  
**AU-BIOS**

A win-win collaboration with the **Centre for Environment and Energy** allowed the publication of the 2015 survey on microplastic-like particles in sediments from Danish waters to *EMODnet Chemistry*. The data are now fit for reporting to **MSDF descriptor 10**.

GE  
**TSU**

Communication tools translated into Georgian were used by **TSU** to establish permanent collaboration with data providers in Georgia. Since 2017, the **Poti Laboratory Research Centre** has been sharing long-term monitoring data with *EMODnet Chemistry*.

NL  
**Deltares**

Long-term macrobenthos monitoring data from 1991 to 2015 has been shared by the **Dutch Ministry of Infrastructure and Water Management**. The data were published to *EMODnet biology* after harmonization and matching of taxonomical names to WoRMS.

ES  
**CSIC**

Raising awareness of databases and access to existing data in EMODnet convinced the **ESGEMAR company** to submit its *bathymetry* data and even become an **Associated Partner** in the EMODnet family. A good example of an SME providing data to the Ingestion Portal!

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More than ever before, European marine data work together. Embrace the opportunity to contribute to Blue Society. **Set your data free** for others to work with and you will get a strong net in return. Wake them up at **EMODNET-INGESTION.EU**

## DISCOVER OUR SUCCESS STORIES – Cases 1 to 12



FI  
GTK

The **Radiation and nuclear Safety Authority of Finland** collects <sup>137</sup>Caesium data from seabed sediments in the Baltic Sea for environmental monitoring purpose. The data have been used for sedimentation rates estimates in *EMODnet Geology*.

IT  
OGS

The marine litter data collected by **four** NGO's and **five** European **monitoring & research centres** are reported and accessible via the *Chemistry Portal*. The data were collected around the Baltic Sea, the Mediterranean Sea and the Black Sea between 2013-2020.

RO  
NIMRD

In eight years, the **Mare Nostrum** NGO has become the most important provider of marine litter data in the Black Sea. The data covers the entire Romanian coastline. It is shared with *EMODnet Chemistry* and thus contributes to the European Marine Litter Data Base.

SO  
EASY

The data ingestion portal funnels massive quantities of documented data packages, providing them with spic-and-span metadata. Using it is quick and easy thanks to the straightforward submission workflow and **support of our local data ambassadors**.



YOU  
?

Watch the **animation movies** *WAKE UP YOUR DATA!* and *YOUR DATA, WORK IT!* In no time you will become the local data barrista!





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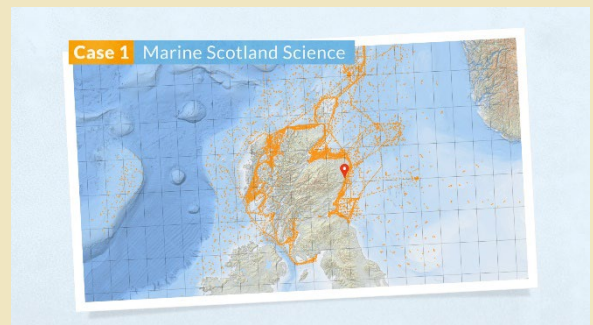
## Marine Scotland Science

provides numerous datasets on seawater quality to *EMODnet Chemistry*, including on eutrophication and on contaminants, collected from up to 10 cruises per year. Some are time series important for *EMODnet Physics*.

### Case 1. A champion in the provision of numerous datasets

UK  
BODC

Marine Scotland Science (MSS), the scientific division of Marine Scotland, plays an integral part in supporting the Scottish Government's vision of marine and coastal environments that are clean, healthy, safe, productive, biologically diverse and are managed to meet the long-term needs of both nature and people.



In the context of EMODnet Ingestion, the British Oceanographic Data Centre (BODC) has been able to re-establish contact with MSS organisation which had been a regular data supplier in the past, but where contact had been lost through staff changes and lack of funding. The data are CTD casts, measuring temperature, salinity, dissolved oxygen, fluorescence and turbidity.

The BODC was able to catch up on a backlog of data. This covers about 10 cruises per year over the last 4 years. For 2016-17, it has delivered to Phase II 1038 CTD casts (21 cruises) with a similar amount to follow for the period 2018-19. The data are available from SeaDataNet and *EMODnet Chemistry*. Some of the data are time series, which is important for analysis in the context of *EMODnet Physics*.

The BODC is proud of this achievement thanks to EMODnet Ingestion because it has helped mobilise a substantial amount of data from Marine Scotland Science. **Now that contact has been re-established, data have flowed smoothly and will hopefully lead to regular submissions in the future.**



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Spirulina and algae are farmed throughout Europe. This green gold provides us with food, fuel, health and beauty products. The **Joint Research Centre** and *EMODnet Human Activities* map this booming business to fit it in a sustainable blue bio-economy.

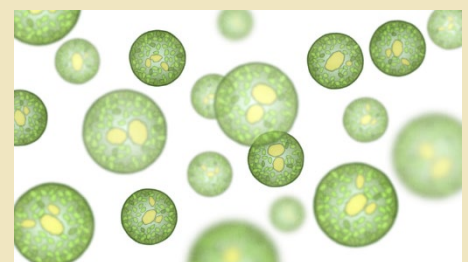
## Case 2. The algae production business now on the map

IT  
COGEA

The Joint Research Centre (JRC) is the European Commission's science and knowledge service. It employs scientists to carry out research in order to provide independent scientific advice and support to EU policy. The JRC is data collator on algae and spirulina aquaculture farms. It gathers the data on algae production facilities directly from the European farmers.



During the last 2 years, JRC made an effort to increase the quality of the mapping of the algae production facilities which included the launch of a survey with the industry and a consultation with experts. Resulting from this work the number of algae companies in the database almost duplicated, including now more than 200 macro- and microalgae companies spread between 17 countries. The updated database also includes some new categories of data such as the species and volumes produced by each company which adds interesting information to the global understanding of the sector in Europe. Besides algae-based products, the aquaculture farms deliver also valuable data for the blue bio-economy.



Algae and spirulina are farmed all around Europe. Spirulina (*Arthrospira*) has even become one of the most popular food supplement in western human nutrition since the 1970's. **You can now visualise where they are produced in Europe** by accessing the dataset on the various algae and spirulina production facilities on the *EMODnet Human Activities* portal.



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Another game changer catches data while fishing: The **Berring Data Collective** integrates sensors with nets, filling gaps in the dynamic shelf and coastal seas data. These data complement existing observation networks for ocean forecasting, and climate change monitoring.

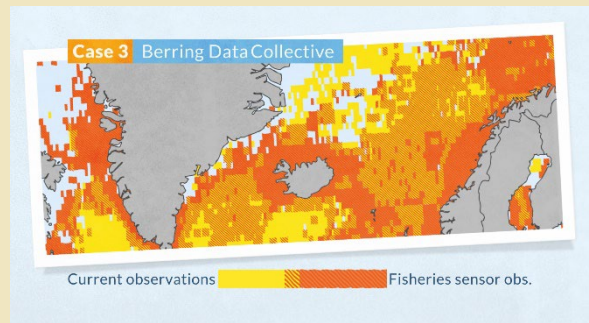
## Case 3. Fishing for data : Collaborative ocean data where it is needed most

SE  
SMHI

The collaborative integration of sensors with fishing can fill some of the most pressing gaps in the sustained ocean monitoring. Fishing vessels operate exactly where autonomous platforms cannot, leading to a surprising lack of data for fishermen close to shore compared with the open ocean. The mission of the Berring Data Collective (BDC) is to collect high-quality, cost-effective ocean data and connect traditionally divergent users of the ocean space.

The BDC is currently collecting data from an emerging global network of vessels, 81 of which are fishing for data, also in the Arctic. The use of sensors on fishing nets provides high-quality, low-cost subsurface oceanographic data in coastal ocean regions. The data is used for weather forecasting and climate monitoring, predicting ocean changes, improving fisheries science, and avoiding by-catches by understanding the ocean conditions preferred by different species.

The Swedish Meteorological and Hydrological Institute's collaboration with the BDC has led to the ingestion of about eighteen thousand data profiles into the *EMODnet Physics* databases with the support of EMODnet Ingestion. **By now, the data collected** by the BDC from European waters and ranging as far as Alaska **are already flowing to EMODnet in near-real time !**





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Fourteen years of CTD, turbidity and chlorophyll data were shared by the **Belgian Navy** and published to *EMODnet Chemistry and Physics*. These data were collected by autonomous underwater vehicles during 880 missions across Europe for port protection and mine hunting operations.

## Case 4. Fourteen years of archived data shared and saved forever

BE  
RBINS

Since 2006, the Belgian Navy operates 5 Hydroid REMUS 100 Autonomous underwater vehicles (AUVs). Four more were acquired in 2012 and 2016. Till 2019, 880 missions have been undertaken in Europe for port protection and mine hunting operations, for which side scan sonar images are used.

From the first contact of the data ambassador with the Research Centre of the Belgian Navy, it was quite willing to share some of the data gathered by the AUVs. The data that matters to the Belgian Navy, the side-scan sonar images, have not been shared and remain classified. The Navy data manager did a lot of work in extracting the data from the files. This process actually improved the data accountability of the data owner: reorganising and renaming the proprietary files from the AUVs, and extracting the data in a human readable format (txt) also serves their own interest in the long term.

Collaboration with RBINS in this processes raised the point of data quality and recalibration after maintenance of some AUVs. Further follow-up with the manufacturer of the AUVs is foreseen to get an idea of the sensor models included in the AUVs and of calibration curves. The data were published 'as is' to *EMODnet Chemistry* and *EMODnet Physics*. **This experience opens perspectives for other national navies to join the EMODnet family !**





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The **Black Sea - Danube Coastal Association for Research and Development** is an independent non-profit organisation. The submission of coastal *bathymetry* data for the port of Varna raised the interest of a provider to become an EMODnet Associated Partner.

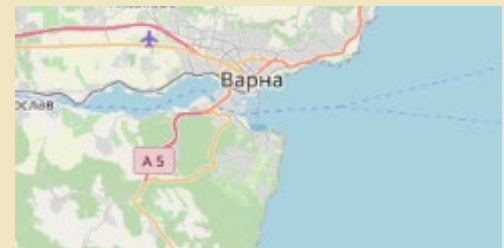
## Case 5. An example of a mutually beneficial cycle of scientific data

### BU IO-BAS

The Black Sea - Danube Association of Research Development (BDCA) is an independent non-profit organisation. It is an association of universities, consultancy, other organisations, and individuals involved in research, training, engineering and advisory activities in sustainable use of marine resources, coastal protection against flooding and erosion, harbour and coastal structures, environmental protection on the western Black sea coast and lower Danube.

For 30 months, BDCA was in charge of a fishing port project called “Quarantine” and located in the territory of Asparuhovo residential area, Varna municipality. The project covered the modernisation and reconstruction of the existing fishing port with the construction of hydro-technical facilities in the water area and infrastructures with the necessary facilities. The aim was to provide an efficient, regulated, safe and hygienic landing, storage, first sale and shipping facility for catches. As part of the project, coastal bathymetry data was collected in August 2019.

The main challenge faced by IO-BAS as data ingestion ambassador was converting the data from Projected Coordinate System to WGS84 before publication to *EMODnet Bathymetry*. IO-BAS provided a full assistance throughout the entire submission process. The provider was trained how to download data from EMODnet sites for the needs of his own projects and consultations. One member of the provider association, **CORES Ltd.**, even **became EMODnet Associated Partner**.





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A win-win collaboration with the **Danish Centre for Environment and Energy** allowed the publication of the 2015 survey on microplastic-like particles in sediments from Danish waters to *EMODnet Chemistry*. The data are now fit for reporting to MSDF descriptor 10.

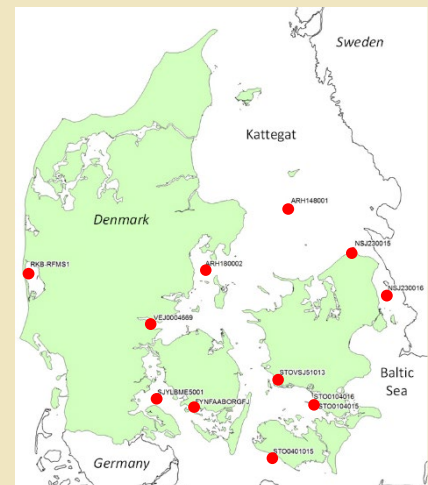
## Case 6. Microplastic-like particles in sediments fit for reporting

DK  
AU-BIOS

The Danish Ministry of Environment and Energy initiated the national monitoring programme using the environmental indicator “microplastic” so that it can be used for the national implementation of EU’s Marine Strategy Framework Directive (MSFD) in relation to Descriptor 10 for assessments of characteristics, state, impact and trends of litter in the marine environment.

The data provider, the Danish Centre For Environment and Energy (DCE), is Aarhus University’s central unit for knowledge exchange within the areas of nature, environment, climate and energy. Under the scientific assessment Report No. 178, the DCE describes the results of the national monitoring programme on microplastic contents and composition in sediments collected in the inner Danish waters in 2015.

The Ingestion team supported the data provider all the way during the process including data and metadata submission and the organisation of data in a relational structure. The main challenges were to convince the data provider to allocate the necessary time for the data preparation and submission, and to database the dataset according to the EMODnet guidelines. **The efforts for the data publication were largely outweighed by the fact that the DCE can use EMODnet Ingestion structures and services:** (i) as a repository for stocking data and metadata, (ii) as an add-on to the national monitoring programme on microplastic, (iii) for organising and presenting the data in a relational, databased format, (iv) for generating data products on a European scale, and publishing the data and data products for Marine litter to *EMODnet Chemistry*.



Map of 11 sediment sampling stations in Danish waters in 2015.





Check out the movie



Communication tools in the national language and a tailored relationship have been the key to ongoing collaboration with data providers. Since 2017, the **Poti Laboratory Research Centre Ltd.** has been sharing long-term monitoring data with *EMODnet Chemistry*.

## Case 7. Stages of a long-term collaboration with a data provider in Georgia

GE  
TSU

The Laboratory Research Centre Ltd. is in charge of the long term monitoring of the chemical parameters of the sea water within the City of Poti seashore area in Georgia. Together with the bacteriological lab, the chemical lab carries out analysis of drinking, surface and waste waters.



As EMODnet Data Ingestion ambassador, the Tbilisi State University (TSU) established the first contact with the Laboratory Research Centre in Autumn 2017. The actual submission of chemical data to EMODnet started the same year and is still ongoing. **The success of this permanent collaboration is due to a tailor-made procedure supported by the use of the Georgian language throughout the contacts** with the data provider, and also to the continuous support of MARIS and HCMR to the TSU. The use of the local language with the data provider helped a lot in understanding the rather technical processes and facilitated the training in publishing their own data.

In the preparatory phase, a questionnaire was sent to reveal a comprehensive list of marine-oriented institutions in the Black Sea, and to establish their capacities to obtain and process marine data. The value of data sharing was then explained to data holders; they were informed of the requirements of the EMODnet project and offer to participate as data providers. Specific roles were distributed among the TSU staff to carry out the ingestion tasks. One person was designated to work with potential data holders on site, another was designated to serve as data centre contact person. The TSU programmer was involved in the work of processing the datasets during Phase II. All the TSU team members followed the procedure for testing the submission service.



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Long-term macrobenthos monitoring data from 1991 to 2015 has been shared by the **Dutch Ministry of Infrastructure and Water Management**. The data were published to *EMODnet biology* after harmonization and matching of taxonomical names to WoRMS.

## Case 8. Dutch long term macrobenthos monitoring data 1991-2015

NL  
Deltares

The Dutch Ministry of Infrastructure and Water Management is responsible for all ecological monitoring in the Dutch part of the North Sea. The Ministry applies an open data policy, according to which all monitoring data can be shared.

The main difficulty of Deltares, as data ambassador in the project, was that data are gathered by different parties. Therefore, some harmonization (mostly done by the provider) was necessary to publish the best data possible. Conveniently, the ingestion portal guides the addition of relevant metadata, which is necessary for continued use of this kind of project-wise collected monitoring data. Taxonomical names were matched to WoRMS by the data ambassador. The data provider published to *EMODnet Biology* the long term ecological monitoring data of the benthos collected in the period 1991-2015.

**The Dutch Ministry of Infrastructure and Water Management has interest in the EMODnet data for analyses that require cross-border observations.** Therefore, in the future, EMODnet data may be used by the Ministry for assessments.





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Raising awareness of open databases and access to existing data convinced the **ESGEMAR company** to submit its bathymetry data and even become an **Associated Partner** in the EMODnet family. A good example of an SME providing data to the Ingestion Portal!

## Case 9. The SME sourcing to the Data Ingestion Portal and partnership

ES  
CSIC

ESGEMAR is a Spanish technical consultancy company which operates in a diverse range of areas and sectors from marine technical assistance, support, training and research. It has a vast experience in marine geophysical exploration, marine geology, submarine resources, submarine hazards cartography, seafloor mapping and charting, fisheries studies support and control, sea-weeds resources exploration, underground hazards mapping for fishing, biodiversity studies, marine environment and underwater environmental impact reports.



Challenges encountered by the CSIC as data ambassador were the lack of knowledge of the EMODnet website on the side of the data provider and the confidentiality of much of the data as they belong to private companies. The difficulties were solved with the interplay of several actions, such as showing other cases of data providers of the nearby community and whose data have been already ingested. ESGEMAR was also invited to visit the **EMODnet website** to download data, maps, etc., from the area where it usually works, as this information **may be useful for the company's future work**. This action raised awareness of the importance of open database and open data access.

After the agreement with ESGEMAR, the CSIC supported the creation of the metadata and the data were ingested. The data provider was also convinced that EMODnet is a good showcase for the company and its activities, so much so that **ESGEMAR became an Associated Partner of EMODnet**.



The **Radiation and Nuclear Safety Authority of Finland** collects  $^{137}\text{Caesium}$  data from seabed sediments in the Baltic Sea for environmental monitoring purpose. The data are used for sedimentation rates estimates in *EMODnet Geology*.



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## Case 10. $^{137}\text{Caesium}$ activity contents in seabed sediments in the Baltic Sea

FI  
GTK

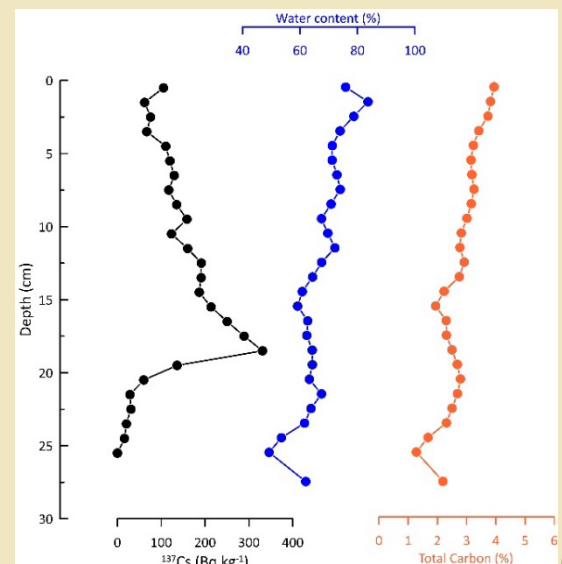
Fallout from the 1986 Chernobyl nuclear power plant accident has rendered the Baltic Sea as the most polluted marine body in the world with respect to  $^{137}\text{Caesium}$ . Radioactivity from  $^{137}\text{Cs}$  in sediments has generally declined due to decay of  $^{137}\text{Cs}$  over the last decades. However,  $^{137}\text{Cs}$  contents in subsurface sediments remain at elevated levels compared to pre-Chernobyl levels, especially in the northern Baltic Sea sediment and it is considered that Chernobyl fallout created a clear chronostratigraphic marker.



Laminated sediments

The Radiation and Nuclear Safety Authority (STUK) supervises radiation and nuclear safety in Finland with the purpose to protect people and the environment from the detrimental effects of radiation. STUK measures  $^{137}\text{Cs}$  data in the sediments of Baltic Sea for environmental monitoring purposes. The Geological Survey of Finland (GTK) contacted STUK and received the data in April 2021 after a few encouragements.

Acting as data ambassador, GTK submitted the standardized data on behalf of the data owner, to the *EMODnet Geology portal*. It was considered that the  $^{137}\text{Caesium}$  peak in the sedimentary record could be used to define recent rates of sedimentation. After this fruitful collaboration, [a joint article about  \$^{137}\text{Cs}\$  in the Baltic Sea sediments](#) was published in Sept. 2021 in the *Marine Pollution Bulletin*.



$^{137}\text{Caesium}$  ( $\text{Bq kg}^{-1}$ ) activity content (black), water content (%) (blue), and total carbon (%) (orange) down-core vs. depth profile in sediment core from the Bothnian Bay, the Baltic Sea.



The marine litter data collected by **four NGO's** and **five European monitoring and research centres** are now fit for reporting and accessible via the *Chemistry Portal*. The data were collected around the Baltic Sea, the Black Sea and the Mediterranean Sea between 2013-2020.



Check out the movie



## Case 11. Marine litter data fit for reporting to EU marine strategies

### IT OGS

Since October 2019, EMODnet Chemistry has been collecting, harmonizing and validating marine litter data. Five European monitoring and research centres, and four NGO's submitted their datasets through the *EMODnet Ingestion Portal*. Once elaborated, the data are included in the database maintained by the National Oceanographic Data Centre (NODC) at the National Institute of Oceanography and Applied Geophysics (OGS).



Picture: [Joint List of Litter Categories](#) for marine macro-litter Monitoring

Time range of the different datasets stretches from one to five years and covers the period 2013-2020. The datasets come from 8 countries bordering the Baltic Sea, the Black Sea and the Mediterranean Sea: Estonia (TalTech), Latvia (LHEI), Bulgaria (BGODC), Romania (Mare Nostrum), Slovenia (NIB), Croatia (IZOR), Turkey (TUDAV) and Cyprus (ORION). Marine litter composition and abundance were defined in sediments, mostly coastal deposits, well known as beach litter, by means of visual census methodologies. A Croatian dataset comes from seafloor samples collected by trawling.

The main challenge achieved via the work of EMODnet Chemistry in collaboration with the EC Joint Research Centre and the MSFD Technical Group on Marine Litter was to develop agreed European standard formats, based on existing best practices set out by consolidated communities. Standardization enables to compare marine litter data collected with many different methodologies by numbers of data sources. EMODnet Chemistry works in strict cooperation with the NODCs and the Member States to produce validated data collections on a European scale. Besides MSFD monitoring data, EMODnet Chemistry also manages, stores and gives access to marine litter data from both research surveys and monitoring or cleaning initiatives of citizen science.



In eight years, the **Mare Nostrum NGO** has become the most important provider of marine litter data in the Black Sea. The data covers the entire Romanian coastline. It is shared with *EMODnet Chemistry* and thus contributes to the European Marine Litter Data Base.



Check out the movie



## Case 12. An NGO makes important contributions to the EU ML database

Ro  
NIMRD

The Mare Nostrum NGO is a non-profit, apolitical, independent environmental association from Constanta, Romania, founded in 1993 at the initiative of several young specialists, from various fields related to marine research and environmental protection. In a spirit of partnership, Mare Nostrum works to raise public awareness, educate about ecology and create pressure on decision-makers for effective environmental protection of the Black Sea and the Romanian coastal zone.



Collection of litter along the Romanian littoral.

Reducing the amount of **marine litter** is one of the strategic objectives of Mare Nostrum. Its most important project in this field is the marine litter monitoring programme, a permanent and continuous programme that keeps track of the amount of litter recorded on Romanian beaches. The association's experience in this respect speaks for itself: the first monitoring of beach litter was organised in 1999 and since 2014 the monitoring has been carried out according to the European methodological standards. Thanks to the data collected as a partner in several European projects, the NGO Mare Nostrum has gathered an impressive volume of data on beach litter.

The Mare Nostrum NGO was keen to share its beach litter data with *EMODnet Chemistry* and thus to **contribute to the European Marine Litter Data Base**. As EMODnet Data Ingestion ambassador, the National Institute for Marine Research and Development "Grigore Antipa" (NIMRD) provided full support throughout the data submission using *EMODnet Ingestion* services or directly using EMODnet Chemistry services. With more than 130 data sets on beach, seabed and floating litter along the entire Romanian Black Sea coastline over a period of eight years, Mare Nostrum has become one of the most important providers of marine litter data in the Black Sea and a future Associate Partner of EMODnet.

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The **EMODnet Data Ingestion portal** is developed to facilitate and streamline the process where (sleeping) marine data from whatever source is delivered on a voluntary basis for safekeeping and further distribution. **EMODnet keeps your data future proof.**

## JOIN OUR SUCCESS STORIES



In 5 years, EMODnet Data Ingestion has received 1248 submissions. The number of processed and published data submissions is now over 1120. Of them, over 510 data submissions are fully elaborated; this implies uptake in national and European marine data infrastructures and feeding into EMODnet.

The 184 data providers come from 28 countries and a **diversity of fields of activity**: research institutes, universities, governmental departments, NGO's, and companies from different horizons (fishermen, dredging companies, oil and gas industry, engineering companies, consultancies, wind energy sector). Take part in our success story.

**Join the EMODNET community,  
Work your data at  
EMODNET-INGESTION.EU**

