Using SeaDataNet for EMODnet Chemistry

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EMODnet is a long-term initiative as part of the Blue Growth strategy (Marine Knowledge 2020). It aims to assemble and make available marine data, metadata, and products from over 150 organizations. The initiative involves thematic portals such as Human Activities, Bathymetry, Biology, and Seabed Habitats. The EMODnet Timeline shows the progression from 2009 to 2018, highlighting phases and milestones, such as the transition from limited sea basins to multi-resolution data over 150 institutes. The platform provides a Central Portal (www.emodnet.eu) and an Ingestion Portal facilitating the submission of new datasets.
**EMODnet Chemistry 3**

**6/3/2017 - 5/3/2019**

Aims to collect, aggregate, **standardize**, check the **quality** of data developing new services to **share** information and products.

<table>
<thead>
<tr>
<th>Collects data on:</th>
<th>Group</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>In 3 matrices:</td>
<td></td>
<td></td>
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<tr>
<td>- water column;</td>
<td><strong>Eutrophication</strong></td>
<td>nutrients, dissolved gasses ...</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>N, P, Si, Oxy, Chl-a</strong></td>
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<tr>
<td>- biota;</td>
<td><strong>Ocean acidification</strong></td>
<td>acidity</td>
</tr>
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<td></td>
<td></td>
<td><strong>pH, pCO2</strong></td>
</tr>
<tr>
<td>- sediment.</td>
<td><strong>Contaminants</strong></td>
<td>hydrocarbons, heavy metals, pesticides, ...</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>anthracene, fluroanthene, Me, Cd, Pb, TBT, DDTs</strong></td>
</tr>
<tr>
<td><strong>Marine Litter</strong></td>
<td></td>
<td>beach litter, seabed litter, microlitter</td>
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</tbody>
</table>

**Data products** generation are organized at **Regional level**
Link to EU Marine Strategy Framework Directive

- Tight connection with EEA, RSC, JRC, ICES, Experts Group to provide relevant information for parameters identified as indicators of MSFD descriptors
EMODnet Chemistry and EEA

- EMODnet Chemistry has shared validated data collections on Hazardous substances in marine organisms, Nutrients and Chlorophyll in TCM waters.

- EEA has informed the Eionet National Reference Centers representatives that data on contaminants and nutrients will no longer be requested via the WISE SoE data call, but collected from EMODnet Chemistry/ICES (Nov 2018).

- EMODnet Chemistry adapts data format to EEA needs, including collect additional metadata related to QA-QC methods and data collection programs.

- TG DATA discuss the adoption of EMODnet Chemistry/SeaDataNet platform for MSFD data reporting (Art. 19.3- delivery data INSPIRE compliant).
EMODnet Chemistry 3 network

Based on SeaDataNet network of NODCs

Involves **45 institutes** from **27 countries** and 3 international organisations (ICES, Black Sea Commission, UNEP/MAP)
Approach: to adopt and adapt SeaDataNet

CDI Data Discovery and Access service

≈ 650 European data originators

Data discovery and access

Aggregated collection

Regional subsets

Thematic portals

115 data centres

NODCs; HOs; GEOs; BIOs; ICES; PANGAEA

GEOSS portal

IODE ODP portal

Black Sea portal

Caspian portal

Geo-Seas portal

Bathymetry

Physics

Chemistry

Geology

Biology
Using SeaDataNet for EMODnet Chemistry

• SDN Standards for metadata, data and products
  – Metadata directories
  – Controlled vocabularies

• SDN Infrastructure:
  – CDI mechanism to access and download data with policy management
  – SDN Security Services for users registrations
  – SDN Products Viewing Services for discovery, visualization and downloading of products

• SDN Tools for data analysis and quality control
EMODnet Chemistry Architecture
Seasonal concentration maps

surface dissolved oxygen (winter 1980)
Using SeaDataNet for Marine Litter

- Build on existing systems two **central** databases:
  - For **beach litter**, modelled after the OSPAR-MCS, TG ML and UNEP/MAP approach
  - For **seafloor litter**, modelled after the ICES-DATRAS, TG ML and MEDITS approach
- Adopt **SeaDataNet infrastructure** and standards for **micro litter**
- Approach and developments endorsed by TG ML

- **Data** available from CDI Data Discovery and Access Service
- **Products** available from Viewing and Downloading Service
SeaDataCloud Mid-Term Review, Brussels, 6th December 2018

Marine litter data

<table>
<thead>
<tr>
<th>Discovery Parameter</th>
<th>Datasets</th>
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</thead>
<tbody>
<tr>
<td>Sea-floor litter abundance</td>
<td>12,777</td>
</tr>
<tr>
<td>Beach litter abundance</td>
<td>6,893</td>
</tr>
<tr>
<td>Micro-litter in water bodies</td>
<td>131</td>
</tr>
<tr>
<td>TOTAL</td>
<td>19,801</td>
</tr>
</tbody>
</table>
Adopting and adapting SeaDataNet

- **New vocabs** for Marine Litter (H01-...H05 for micro-litter types, shapes, size classes, colour classes, polymer type)

- **New Data Transport Format** for micro-litter with **CDIs** (include micro litter metadata, no change) & **ODVs** (extending ODV **mandatory** fields with **additional selected fields** necessary to describe marine micro litter)

- **CDI Service** extended to deliver data as EBL & ESFL

- **ODV** tuned for Nutrients (P35) and Contaminants (P01 to preferred units)
Conclusions

The use of SeaDataNet for EMODnet Chemistry, following approach of adopting and adapting

- **Synergy** between DG MARE, DG RTD and DG ENV
- **Win-win** interaction (EMODnet needs SeaDataNet, SeaDataNet improves with EMODnet)
- **No duplication** of efforts
- **Building on top** of consolidated system without reinventing the wheel, in close cooperation