Geology

EMODnet
European Marine
Observation and
Data Network

EMODnet Geology
Steering Committee

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EMODnet Geology current offer

Overview of services

- **Seabed Substrates:** Seabed substrate (multiscale), Sedimentation rates, Seabed erosion index
- **Sea-floor Geology**: Pre-Quaternary geology (incl. lithology and stratigraphy), Quaternary geology and geomorphology
- **Coastal Behavior**: Satellite and Field data based Coastal behavior, Coastal types
- **Geological Events and Probabilities:** earthquakes, submarine landslides, volcanoes, and Quaternary tectonics, landslide susceptibility,…
- **Marine minerals:** aggregates, critical minerals, hydrocarbons
- **Submerged landscapes:** palaeocoastlines, Submerged landscapes, Thickness of Post-LGM Deposit
- **Entity indexes:** borehole and grab samples, Seismic and multibeam survey data

EMODnet Geology current offer
Data/Data Products for EU Policy

EMODnet Geology data products have been/can be used for e.g., Maritime Spatial Planning Directive, Marine Strategy Framework Directive, Habitats Directive, Biodiversity Strategy, Blue economy, Green Deal, Blue Growth and European Critical Raw Materials Act

Green deal - EMODnet Geology data services used by the Offshore Renewable Energy sector (Use case Feb 2023)

- **Energinet,** an independent public enterprise owned by the Danish Ministry of Climate, Energy and Utilities. It builds, owns, and operates offshore electricity utility cables and gas pipelines and develops offshore wind farms and energy islands

- preliminary studies of the seabed prior to the development of new offshore windfarms and energy islands in the Danish waters. Several seabed investigations have been carried out to establish preliminary models of the subsurface in the selected areas prior to the possible establishment of offshore wind farms. The results are used for the tendering process where developers can bid on an informed basis.

- EMODnet Geology data products: the Seabed Substrate map has been used to avoid unsuitable areas; the Index Map to get an overview on available geological knowledge

- Energinet also uses map services and data from other EMODnet Lots such as EMODnet Bathymetry, EMODnet Human Activities, and EMODnet Seabed Habitats

EMODnet Geology, Future look (Renewal period 2023 – 2025)

Service evolution, key areas of service evolution in your current workplan

- Continue updating and improving available data products. Dynamic process.

- **Geological data specification and sourcing.** The main focus is to enable data access from **the Caribbean Sea**.

- **Seabed substrate.** Further development of **the seabed erosion data product**.

- **Sea-floor geology.** Optimise **the vocabularie**s and **harmonisation** process. Transfer them to **a machine-readable (SKOS) format** and examine suitable repositories to publish the vocabularies openly.

- **Coastal behaviour.** Visualise **the uncertainty of satellite-based coastline migration** in a confidence map. Extend the coastal type map with **a coastal-ribbon map**.

- **Geological events and probabilities. Working groups on selected sea areas** and a map of areas subject to **geohazards** (test)

- **Minerals. Align the strategic minerals, critical minerals/non-critical minerals classifications** with current EU guidelines (European CRM Act).

- **Submerged landscapes.** Case study areas for **paleogeographic reconstruction work**.

- **Data management, web portal and services. Geotechnical data**.

EMODnet Geology Future look (Renewal period 2023 – 2025)
Service evolution

- **Key areas of service evolution in our current workplan:**

  o **Develop Sub-areas: Caribbean area, Caspian area**

  o **Working groups: Continue data gathering, and initiate harmonization for selected sea areas, where applicable, e.g. Geomorphologic Features, Geology**

  o **Data products: Geotechnical data, Seabed erosion, Coastal Ribbon**

  o **Parameter/Data product: Uncertainty**

  o **Investigate and define applications: Machine readability**

EMODnet Geology Future look

Service evolution

- **Key gaps that remain in your thematic that need to be filled in future work/via further partnerships with other data producers/other marine data services?**

  - Take into account **the geographical or specific characteristics of the sea regions** regarding nomenclature and interpretation approaches, e.g., Deep Ocean vs. Shallow sea or the Arctic Ocean areas

  - Develop data products **consider**ing **different end users**, needs and purposes:

    - **Collaboration with other EMODnet Lots** in including additional information and finding the common datasets or approaches, e.g. chemical, physical, geotechnical, sediment dynamics / bedform migration, geodiversity, carbon storage potential, habitat-restoration

    - Information serving **industry**, e.g. green energy/offshore wind parks

    - Improve data continuity and visualisation of **the coastal ribbon**, area where the land meets the sea

    - **Continuous data layers (**rasters), modelling, AI, Machine readability

  - **A catalogue of signatures** – what geological features really look like in the field
- Continue with even **wider geographical scope**. Potential areas: South America, Africa.

  - Layer successions: **xyz models/ 2.5 D**

  - Parameters/products: Seafloor integrity, Sediment budgets, Water column and seabed subsurface data on gas/groundwater seeps etc

Engagement, Partnerships and Use Cases
Collaboration with Geological Service for Europe (GSEU)

Several EMODnet Geology partners are participating in HORIZON 2.5 - Climate, Energy and Mobility project Geological Service for Europe (GSEU), which enables synergy and direct feedback. For example:

- From the GSEU side, EMODnet Geology attributes are being queried and translated into applied attributes needed to build a geo-assessment matrix for determining seabed suitability to construction of offshore windfarms.

- The intended end product will be contributed to the EMODnet Central Portal as an applied data product.

- A Baltic Sea Windfarm Workshop, which fed directly into one of the activities within GSEU, was organised in February at Århus, Denmark. The workshop was attended by geological surveys of Finland, Sweden, Poland, Denmark, Lithuania, Germany and UK, which are also partners of EMODnet Geology. Data and knowledge sharing were among the main topics discussed serving also EMODnet Geology.

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