Harmonising seabed substrate data of European Seas - EMODnet Geology

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The European Marine Observation and Data Network (EMODnet) is a network of organisations supported by the EU's integrated maritime policy. FAIR principle (Findable, Accessible, Interoperable and Reusable) is at the core of the EMODnet. Organisations involved in EMODnet work together to observe the sea, process the data according to international standards and make that information freely available as interoperable data layers and data products. All EMODnet data are now freely available from EMODnet Central Portal, that was released in January 2023.

EMODnet Geology

The EMODnet Geology has been collecting and harmonising marine geological data from European marine areas in subsequent projects running since 2009. The partnership includes 40 marine organisations from about 30 countries, mostly consisting of the marine departments of the geological surveys of Europe.

Seabed substrate

Seabed substrates are one of the deliverables of EMODnet Geology. Seabed substrate information is essential for various purposes, including sustainable marine management, conservation, and research. For example, substrates on the seafloor are one of the key factors that shape the physical structure of benthic habitats.

Data harmonisation

Within EMODnet Geology national, highly heterogeneous seabed substrate datasets have been harmonized based on a shared translation schema. The final data products contain not only information about grain size, but also confidence estimates and background information. Based on a literature review, the EMODnet seabed substrate schema is referred to as one of the standards of seafloor mapping.
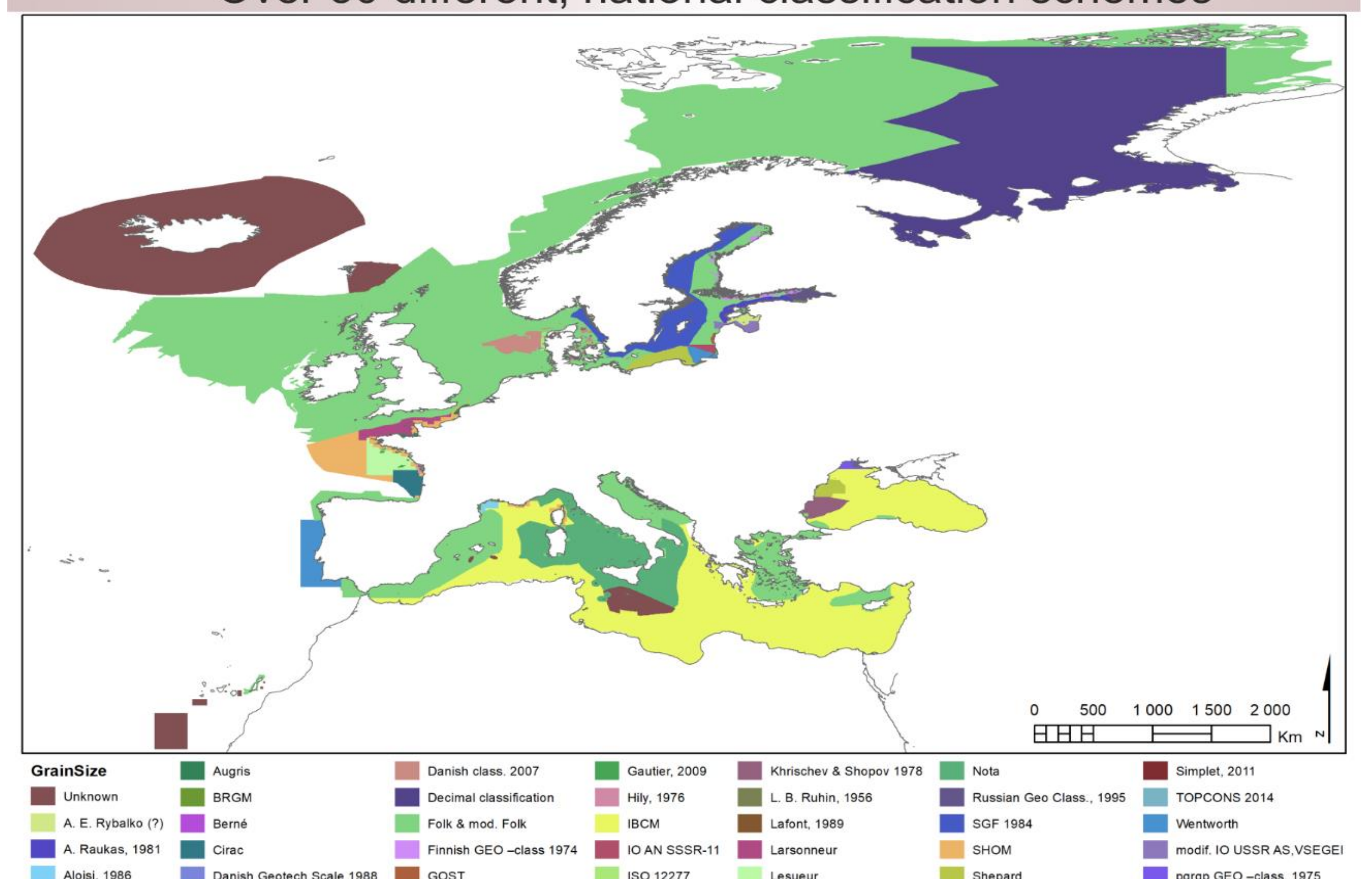
Data availability

Currently, harmonised seafloor substrate data are available at a variety of scales, from extensive 1: 1 000 000 datasets covering the European sea to more localised, high-resolution datasets (1:25 000 or more detailed). Data has been used for various purposes, e.g., in relation with Blue economy and environmental planning.
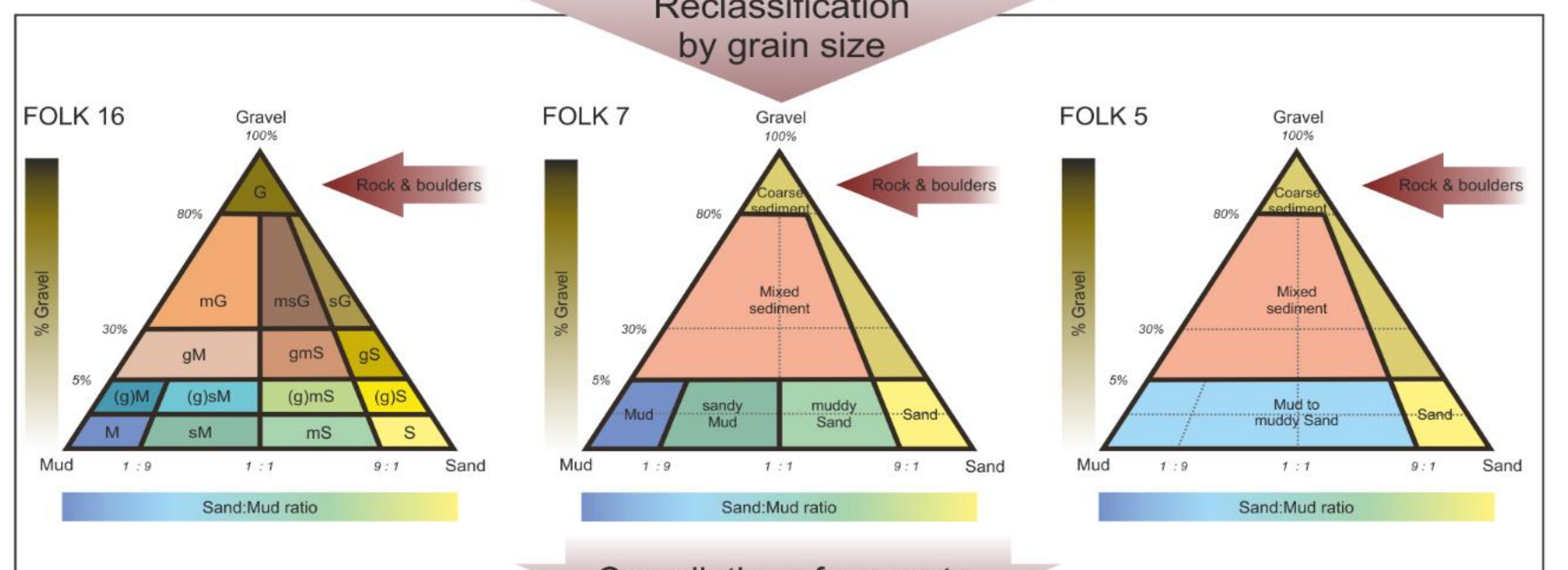
General context

The EMODnet provides the marine data, information and knowledge needed to deliver the objectives of the EU Mission 'Restore our Ocean and Waters by 2030' and the wider goals of the EU Green Deal. The project supports the Sustainable Development Goals of the UN Agenda 2030 and is a key partner to the UN Decade of Ocean Science for Sustainable Development.
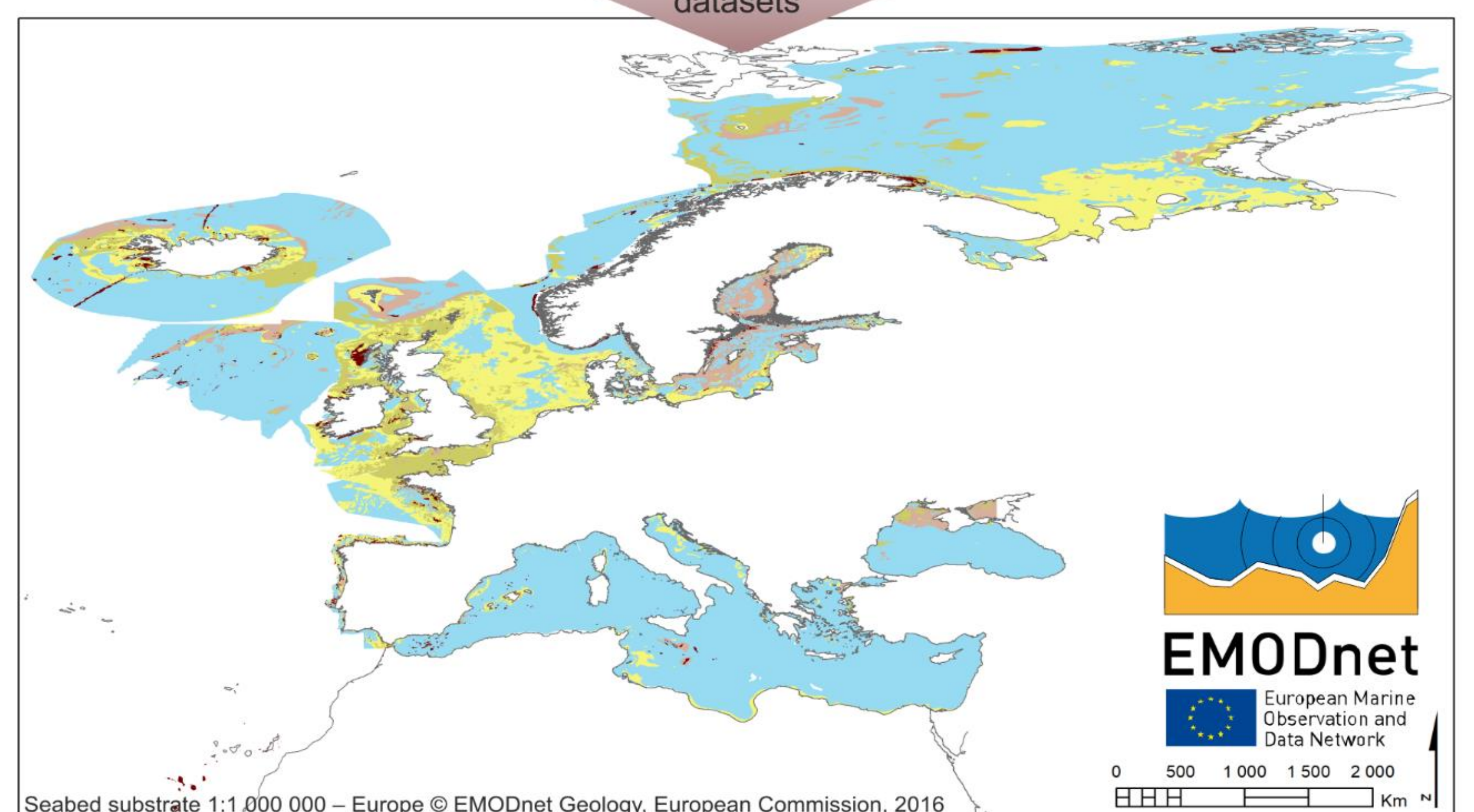

EMODNET GEOLOGY: Seabed substrate harmonisation
Over 30 different, national classification schemes
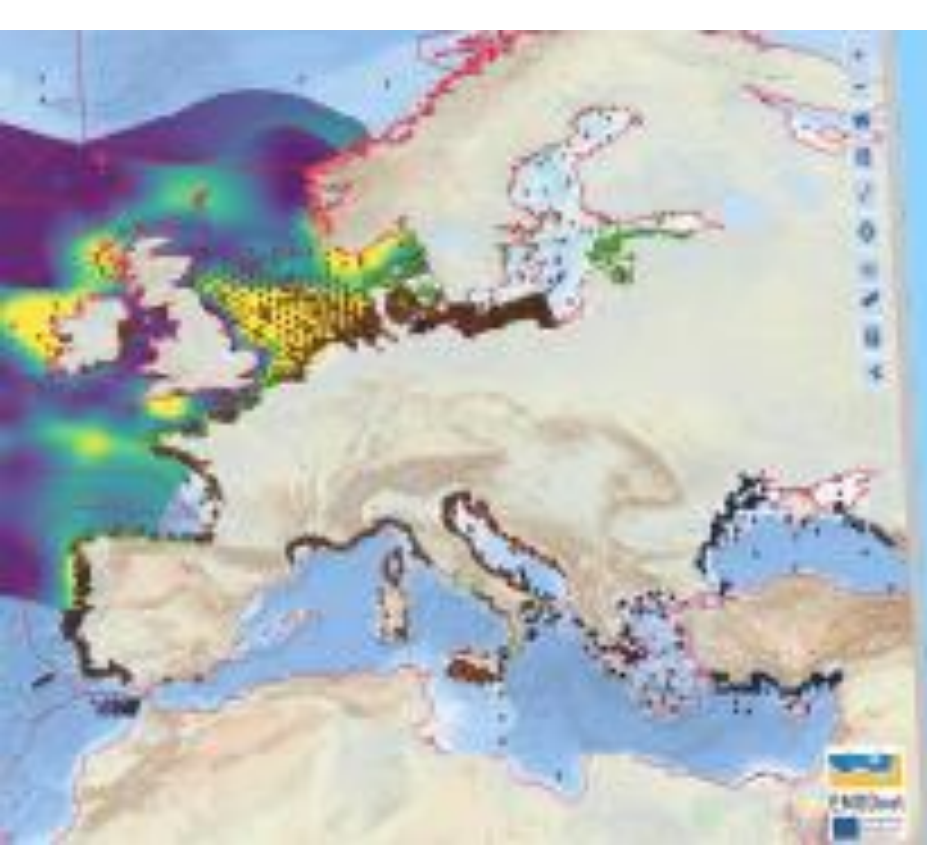
Reclassification by grain size

FOLK 16 / FOLK 7 / FOLK 5

Compilation of separate datasets

Seabed substrate 1:1 000 000 – Europe © EMODnet Geology, European Commission, 2016

1. Mud to muddy Sand 2. Sand 3. Coarse substrate 4. Mixed sediment 5. Rock & boulders

One data product with harmonised FOLK classification

The new Central Portal unites all EMODnet thematic marine data services into a single access point. Find out what it can do for you!

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