EMODnet
European Marine Observation and Data Network

Your gateway to marine data in Europe

EMODnet-Geology data for the offshore renewable energy sector

EMODnet for Business ORE - the Mediterranean Sea and Black Sea

20 October 2022

Henry Vallius & EMODnet Geology Partners

GTK
henry.vallius@gtk.fi

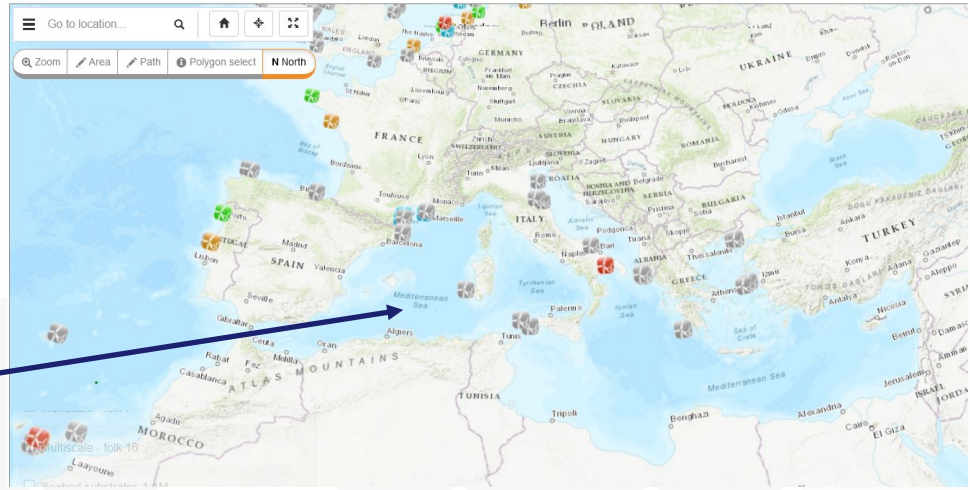
The European Marine Observation and Data Network (EMODnet) is financed by the European Union under Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund.

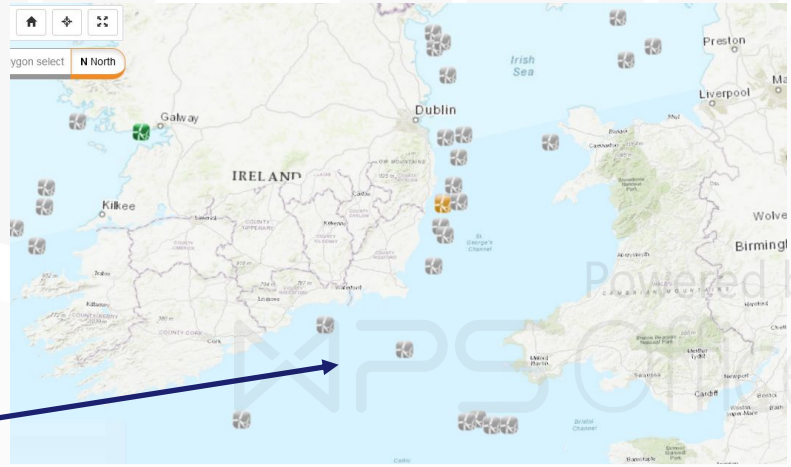
EMODnet-Geology data for the offshore renewable energy (ORE) sector

- We don't have any EMODnet Geology use cases on ORE from the Southern Europe (the Mediterranean and the Black Sea). Probably site surveys are still ongoing and data are thus not yet available.

- In the Southern area there are several planned ORE sites and according to data from EMODnet Human activities at least one plant under construction. Hopefully we can get the marine geological data from those site surveys when they are free to release.

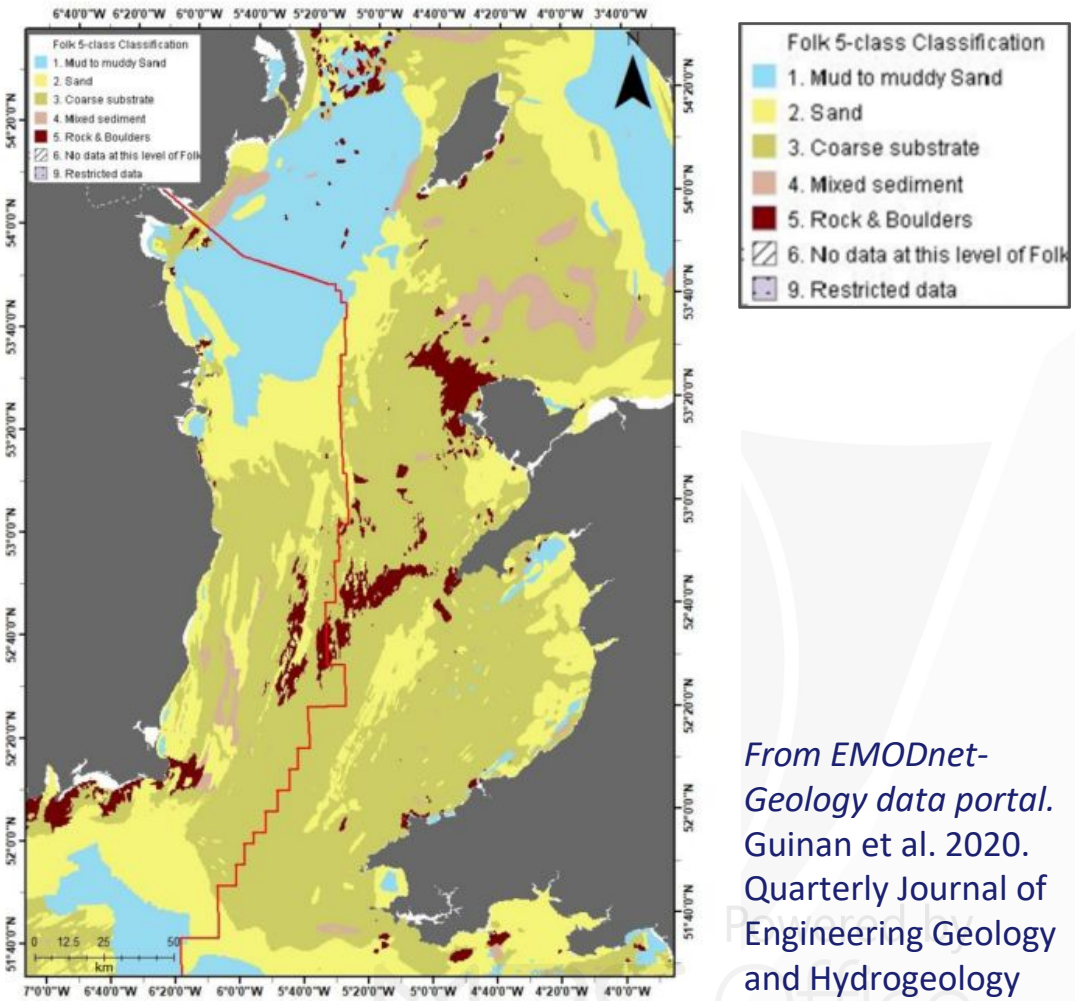
- Instead I'll say a few words about EMODnet Data in general and provide examples from the Irish Sea





EMODnet Geology Data Products

- Seabed characterization for siting and development is crucial
- Geological and geophysical data underpin our understanding of the ground conditions
- EMODnet-Geology broad-scale seabed substrate map is valuable in evaluating areas of seabed for ORE development



From EMODnet-Geology data portal. Guinan et al. 2020. Quarterly Journal of Engineering Geology and Hydrogeology and

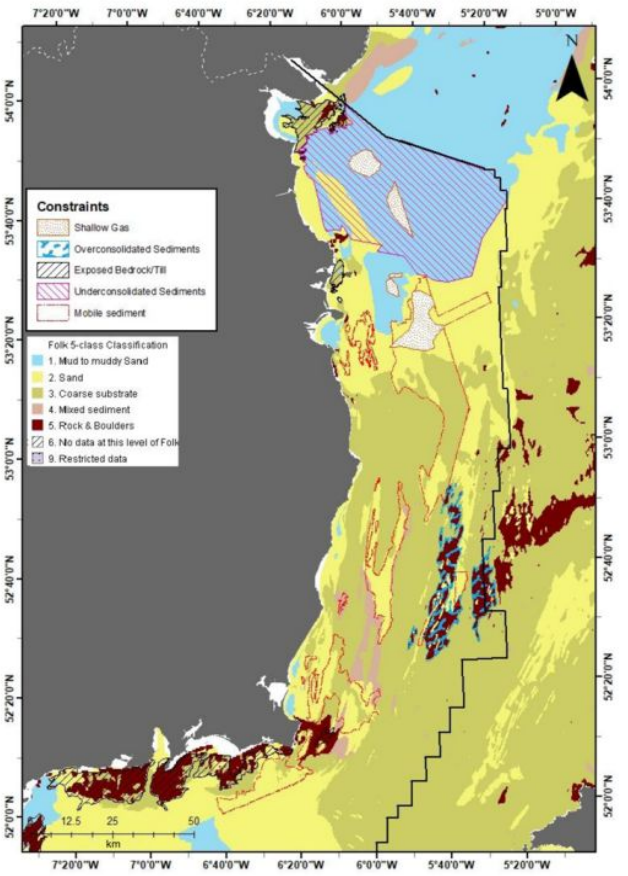
Seabed Substrate for Constraint Mapping

EMODnet
European Marine Observation and Data Network

- Sediment distribution relates to hydrodynamic processes
- Constraint mapping influenced by geological factors
- Geomorphological mapping combined with sediment substrate information
- Delineates potential areas for infrastructure development

Table 1. Geological features creating possible geotechnical constraints in the Irish Sea (after Mellet et al., 2015)

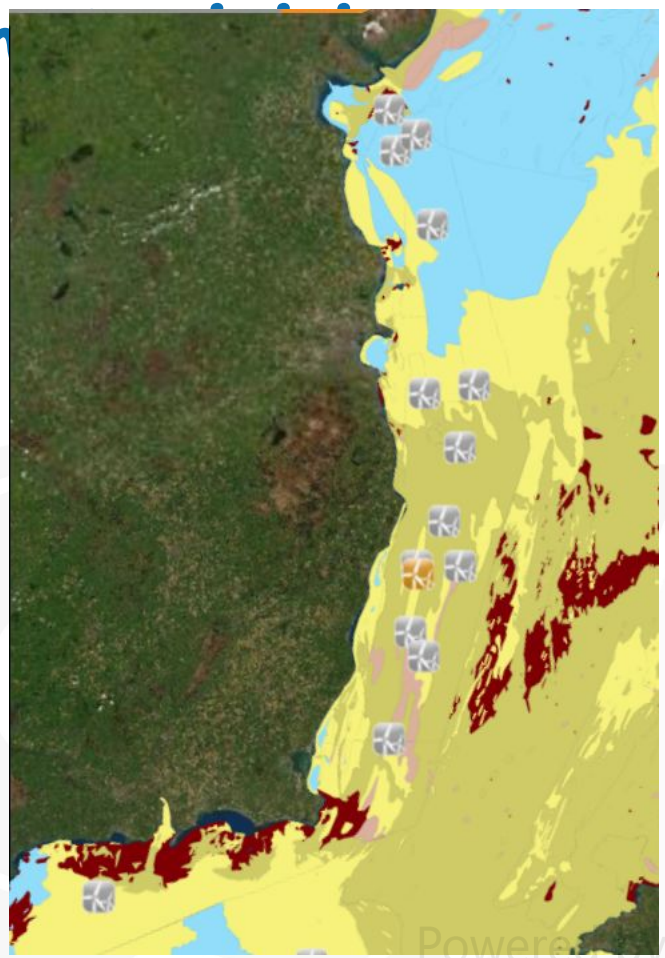
Geological Feature	Potential Constraint
Soft sediments	• Low shear strengths affecting bearing capacity • Implications for differential settlement • Prone to scour
Coarse-lag deposits	• High levels of lateral heterogeneity with coarse, hard substrates that are difficult to penetrate.
Mobile sediment	• Can bury structures • Can erode sediment at the base of structures causing instability (e.g. scour) • Affects seabed levels
Shallow gas	• Affects seabed instability (e.g. pockmark formations) and long-term behaviour of sediments (e.g. differential settlement) • Can create hard substrates at surface (i.e. MDAC)
Over-consolidated sediments	• Hard substrate restrictive to some foundation types
Bedrock	• Hard substrate restrictive to some foundation types



Reference: Coughlan et al. 2020 Geological and geotechnical constraints in the Irish Sea for offshore renewable energy., Journal of Maps, 16:2, 420-431.

Wind farm sites according to EMODnet Human

- Mainly planned sites but also one which has been in production since 2003, Arklow Bank Phase 1



EMODnet

European Marine Observation and Data Network

www.emodnet.eu

Your gateway to marine data in Europe