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Mapping marine minerals in Europe

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It is estimated that between 5-10 percent of the world supply of minerals will be sourced from marine environments by 2030 [1]. Global Interest in marine minerals has been ignited by society's growing demand for technology minerals and energy supply, but that is not all. Baseline datasets that will improve knowledge of this underexplored, extreme and technically challenging terrain are increasingly required to inform long term planning and policy making that address the instability of mineral market supply and our heightened awareness of the marine environments sensitive ecology. National seabed mapping programmes continue to uncover new information, detailing the formation and evolution of our Earth through high resolution multibeam mapping, explorative research and applied geophysical studies. Geological interpretation of these data facilitates new discoveries of marine mineral deposits as well as better understanding for their formation and endemic ecology.

Europe's heterogeneous submarine geology hosts a variety of landscapes that support energy resources and mineral deposits. Researchers are working toward gaining a better understanding of the formation and composition of marine minerals, while industry and governments invest in the advancement of marine exploration and mining technologies. Concurrently, policy makers and marine spatial planners are calling for the aggregation of information that supports sustainable growth of the marine sector and protection for fragile marine ecosystems.

To collate the varied existing environmental information across European seas, the European Commission (EC) created the Marine Observation and Data Network (EMODnet). Encompassing 8 marine environmental themes and more than 100 organisations, EMODnet assembles fragmented marine data, metadata and data products across all European seas. These data are free of restriction on use and published online in standardised, interoperable formats. EMODnet Geology is one of the environmental themes. It comprises 36 European geology surveys and agencies that deliver information on seabed substrate, seabed geology, coastal erosion, geological events and marine minerals, to data standards developed by the EC's Infrastructure for Spatial Information in the European Community (INSPIRE)

The Geological Survey of Ireland as leaders of EMODnet Geology's Minerals work package, has established a framework for mapping known geological occurrences of 9 different types of marine mineral deposits and accumulations in all European seas. The marine mineral deposit types, which include hydrocarbons, are: aggregates, hydrocarbons, gas hydrates, marine placers, phosphorites, evaporates, polymetallic sulphides, polymetallic nodules and cobalt rich ferromanganese crust. Unique data schemes have been devised detailing key components for each deposit type as well as metadata relating to the data source and contributing agencies. Mapping the spatial extent of marine mineral occurrences for all European seas has allowed us to communicate the extent of these deposits visually, using one common data standard, at one common mapping scale. This European wide marine resource inventory provides baseline datasets that inform interest groups, researchers, industry and public policy. Through its work, EMODnet also supports European initiatives such as sustainable economic

development in the marine sector, the further development of an integrated Maritime Policy for Europe the Marine Strategy Framework Directive and Marine Knowledge 2020.

References:

[1] Blue Growth, opportunities for marine and maritime sustainable growth. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. COM/2012/0494. 2012.

