EMODnet

European Marine Observation and Data Network

EMODnet Coastal Mapping

Tender n° MARE/2014/10

Contract Number no

EASME/EMFF/2014/1.3.1.4/SI2.708188

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Résumé

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.

Disclaimer

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The Coastal Mapping project's strategic objective is to develop an innovative analysis of the needs and means in Europe for the acquisition of marine data in coastal areas, as well as concrete propositions for the development of European strategy for marine data acquisition. This analysis is focused on the characterization of the coastal area, including bathymetry and topography, cover typology information, vegetation and sediment properties, considering also other kinds of data which may be assessed jointly (depending on the operating sensors).

In the framework of “Digital Mapping”, the project develops propositions concerning an infrastructure enabling partners to prepare, update, aggregate and disseminate data produced by themselves, as well as tools to prepare and optimize data, provide high performance services disseminating the prepared layers with respect to INSPIRE recommendations, propose an ergonomic web portal and provide training to potential users. It proposes an infrastructure enabling partners to autonomously prepare, update, aggregate and disseminate the data they produce through aggregative layers based upon data from several partners resulting in a European layer and specific complementary layers on detailed areas. It also aims to provide operating tools to prepare and optimize data with the aim to efficiently disseminate them in order to offer a good user experience and high performance services disseminating the prepared layers with respect to INSPIRE recommendations. These services was available via an ergonomic web portal providing visualization tools and co-visualization with internal and external data (i.e. base layer maps, coastlines, external map co-visualization, etc ...).

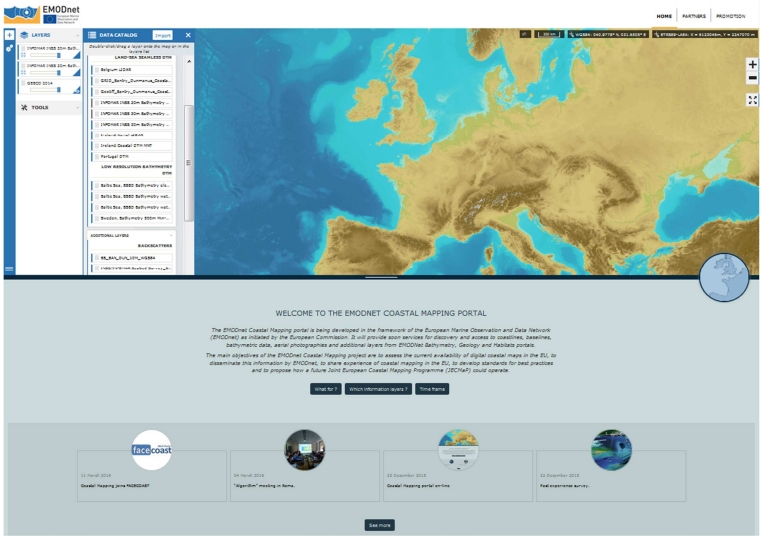
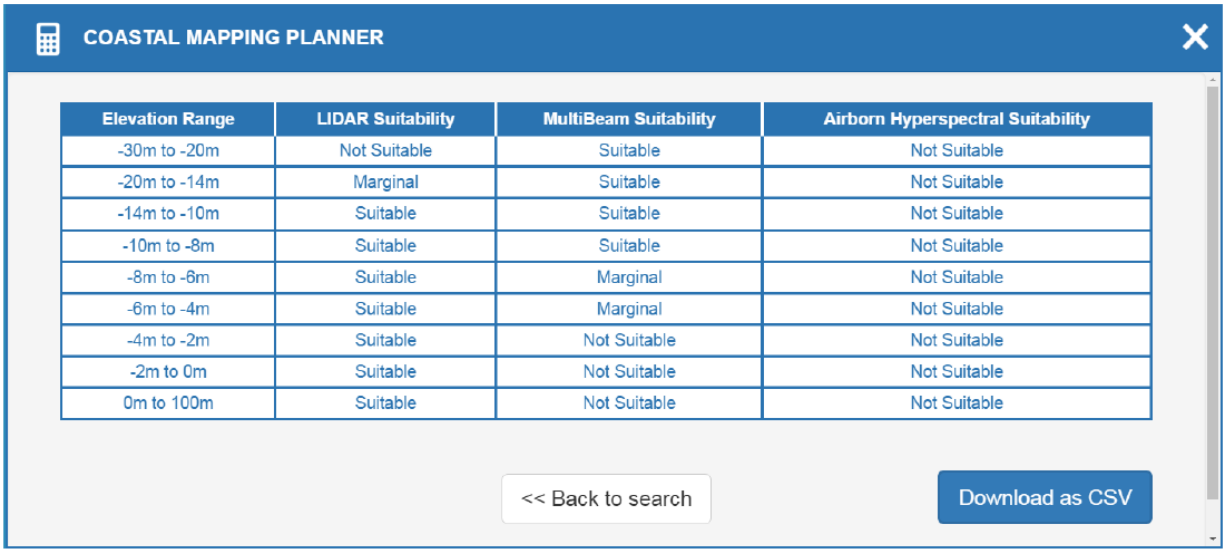


Figure 1 : Coastal Mapping portal

In the framework of "Share experience, standards and best practice", the project is assessing consistency of the existing vertical datum, listing and summarizing past experiences and best practices, developing and testing an algorithm for choosing the most appropriate surveying method, and building a technical and economical strategy. This framework develops systems approaches and methodologies for geographic and spatial observations of environmental parameters in coastal areas, producing a heuristic help to assess economic impacts, such as the submersion risks, and socio-economic benefits of successive coastal survey acquisitions. The considered systems and methodologies to assess the geographical coastal information range from the use of classical ship based survey methods like multi beam echo sounder to airborne techniques (Lidar) and satellite images at different levels. These are combined with field studies and statistics in geographic information systems. It makes an inventory of the ongoing studies dealing with fusion methodologies for heterogeneous, multi-scale data, simulation models of geographical structures and development of formalization based on the concept of fuzzy object localization that leads to define to what extent other surveys have appropriate quality assessment, and could be considered. It focuses on the construction of an algorithm based on past experience and on the development of space-time analysis models of different acquisitions. Moreover, it manages heterogeneous data and identify all the existing gaps that need to be filled in order to perform consistent characterisation of the coastal zone. The main task aims to set up the foundation of a set of protocols, organized knowledge and algorithm that helps EU data acquisition plan and to eliminate discontinuities between the national systems for a consistent and homogeneous survey method and strategy.



Elevation Range	LIDAR Suitability	MultiBeam Suitability	Airborn Hyperspectral Suitability
-30m to -20m	Not Suitable	Suitable	Not Suitable
-20m to -14m	Marginal	Suitable	Not Suitable
-14m to -10m	Suitable	Suitable	Not Suitable
-10m to -8m	Suitable	Suitable	Not Suitable
-8m to -6m	Suitable	Marginal	Not Suitable
-6m to -4m	Suitable	Marginal	Not Suitable
-4m to -2m	Suitable	Not Suitable	Not Suitable
-2m to 0m	Suitable	Not Suitable	Not Suitable
0m to 100m	Suitable	Not Suitable	Not Suitable

Figure 2 : Example of output of the interactive Coastal Mapping Planner

Finally, in the framework of "Future programme", the project develops a method to draw a Joint European Coastal Mapping Programme (JECMaP) in shallow waters for bathymetric data. The project's partnership directly involves a large number of European Hydrographic Organizations, ISPRA (Institute for Environmental Protection and Research, Italy) having strong experience in coastal mapping from imagery and survey processing for coastal environments, CPMR (Conference of Peripheral Maritime Regions), and the Worldline company, which has an internationally recognized expertise in the field of operational digital mapping and portal design. There is a need to support the data acquisition programme by proposing a governance model between Regions, States and the European Commission over the long term. The main goal is to propose a method to draw a Joint European Coastal Mapping Programme in the shallow waters for bathymetric data, taking into account:

- Project's outcomes, giving a review of the technical inputs, the possibilities of interoperability and the strategic algorithm;
- The existing data, at European, State and regional levels;
- Organizations like European Environment Agency and programmes like EMODnet and Copernicus;
- The needs of bathymetric data for management of the coastal zones and the connection to be established with the land side;
- The governance of these data in the coastal zone and the economic models in place;
- The financial opportunities offered by the European financial period 2014-2020, for a Joint European Programme.