Developing a common global framework for marine data management

Helen Glaves, British Geological Survey (U.K.) hmg@bgs.ac.uk
Dick Schaap, MARIS (The Netherlands), dick@maris.nl

In recent years there has been a paradigm shift in marine research moving from the traditional discipline based methodology employed at the national level by one or more organizations, to a multidisciplinary, ecosystem level approach conducted on an international scale. This increasingly holistic approach to marine research is partly being driven by policy and legislation. For example, the European Commission's Blue Growth strategy promotes sustainable growth in the marine environment including the development of sea-basin strategies (European Commission 2014). As well as this policy driven shift to ecosystem level marine research there are also scientific and economic drivers for a basin level approach. Marine monitoring is essential for assessing the health of an ecosystem and determining the impacts of specific factors and activities on it.

The availability of large volumes of good quality data is fundamental to this increasingly holistic approach to ocean research but there are significant barriers to its re-use. These are in part due to the heterogeneity of the data having been collected by many organizations around the globe using a variety of sensors mounted on a range of different platforms. The resulting data is then delivered and archived in a range of formats, using various spatial coordinate systems and aligned with different standards. This heterogeneity coupled with organizational and national policies on data sharing make access and re-use of marine data problematic. In response to the need for greater sharing of marine data a number of e-infrastructures have been developed but these have different levels of granularity with the majority having been developed at the regional level to address specific requirements for data e.g. SeaDataNet in Europe, the Australian Ocean Data Network (AODN). These data infrastructures are also frequently aligned with the priorities of the local funding agencies and have been created in isolation from those developed elsewhere. To add a further layer of complexity there are also global initiatives providing marine data infrastructures e.g. IOC-IODE, POGO as well as those with a wider remit which includes environmental data e.g. GEOSS, COPERNICUS etc.

Ecosystem level marine research requires a common framework for marine data management that supports the sharing of data across these regional and global data systems, and provides the user with access to the data available from these services via a single point of access. This framework must be based on existing data systems and established by developing interoperability between them. The Ocean Data and Interoperability Platform (ODIP/ODIP II) project brings together those organisations responsible for maintaining selected regional data infrastructures along with other relevant experts in order to identify the common standards and best practice necessary to underpin this framework, and to evaluate the differences and commonalties between the regional data infrastructures in order to establish interoperability between them for the purposes of data sharing. This coordinated approach is being demonstrated and validated through the development of a series of prototype interoperability solutions that demonstrate the mechanisms and standards necessary to facilitate the sharing of marine data across these existing data infrastructures.

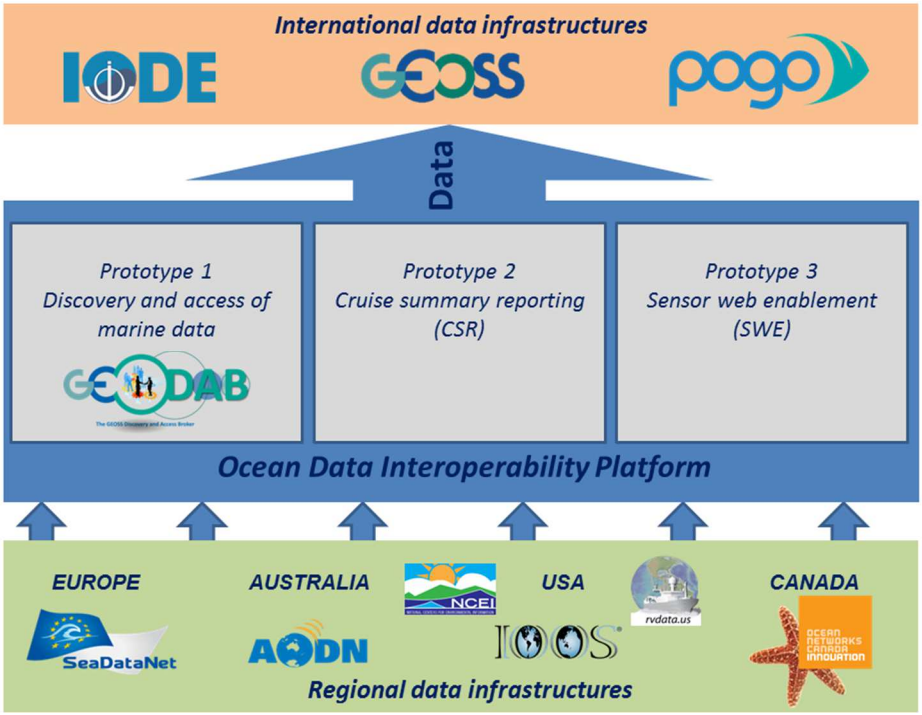

Figure 1: Ocean Data Interoperability Platform project