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Harmonising UK Marine Data

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Marine data and information are collected by a variety of UK government, non–government, academic, private sector and other research organisations for many different reasons. These include scientific research, defence, security, operational activities, regulation compliance and international reporting requirements amongst others. The result of these widely varying activities is a legacy of differing ways of storing and sharing data and information. As new questions are asked of marine science and more holistic assessments required, the UK needs to embrace a new philosophy for the management and stewardship of marine data and information, which will allow a more integrated ecosystem-based approach to managing the marine environment.

A Marine Data and Information Partnership

The concept of a Marine Data and Information Partnership (MDIP) was the main outcome of a short-life Expert Group set up as part of the "Marine Data and Information – Where to now?" review commissioned by the Department for Environment, Food and Agriculture (Defra) through the Inter-Agency Committee on Marine Science and Technology (IACMST). A broadly-based consensus produced agreement on the way ahead to attempt to solve a long-term problem of insufficient harmonisation between the large numbers of diverse data holdings and an increasing number of initiatives in marine data and information. The Partnership includes UK Government holders of marine data at its core, but is open to all marine data providers on an equal basis.

Objectives

The Marine Data and Information Partnership will provide a coordinating framework for managing marine data and information across the UK. Its mission is harmonised stewardship of and access to marine data and information, to facilitate improved management of the seas around the UK.

The overall objectives are:

(a) To provide a framework for the UK marine data community with respect to data capture (including ingestion), interoperability, curation and dissemination;
(b) To develop, adopt and promote standards, specifications and procedures in support of (a);
(c) To contribute to the marine component of and support for the geospatial strategy for the UK.

Thus the purpose of MDIP is to provide direction towards increased custodianship and re-use of data and information, so as to increase the strategic value of investment in data collection and synthesis. The need for increased levels of integration in marine data and information has long been recognised by data providers and users, and there have been previous attempts to provide a solution but none of these has been particularly successful. The Government endorsed it's commitment to achieving this principle of 'capture once, use many times' for data and information through a proactive partnership approach within the speeches of the Environment Minister, Elliot Morley and Defra's Chief Scientist, Howard Dalton at MDIP's formal launch on the 1st March 2005.

The MDIP approach encompasses e-Government requirements and also maintains compatibility with EU and international initiatives and agreements. It is in tune with the Freedom of Information (FoI) and Environmental Information Regulations (EIRs), the development of a European geospatial data infrastructure, developments in international data policies, and the wider availability of open-source software. It also recognises that although this should be led by Government and that the public sector role would be substantial in such an approach, any mechanisms that are developed should incorporate private sector interests.

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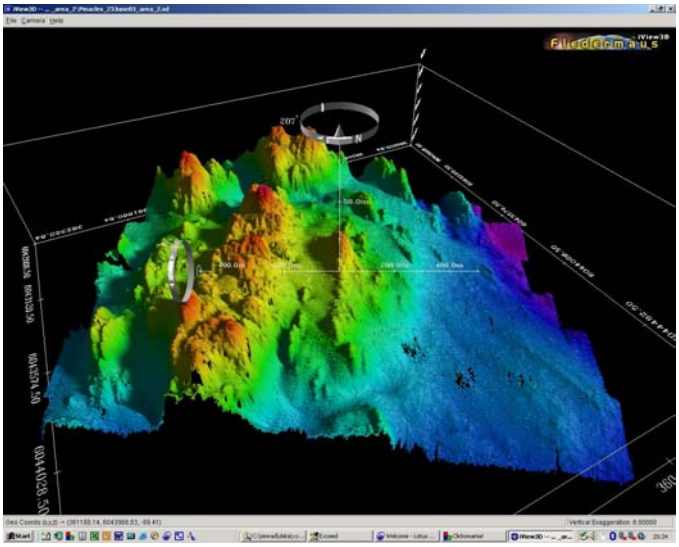
A SmartBuoy is deployed in Liverpool Bay to assess nutrient status and ecosystem response (© CEFAS)



Multibeam survey image from rocky pinnacles in the Irish Sea by DARD and JNCC (© Defra, 2004)

MDIP covers all aspects of marine data and information management from data collection through to final products

Initial Progress

In order to provide the framework for managing marine data and information across UK organisations standards are required including metadata standards for data management and discovery, geo-referencing standards for mapping and inter-operability standards for data dissemination and exchange. These will provide a common basis for finding information, a common basis for mapping, wider, improved and harmonised access and uptake using the Internet and improved long term data stewardship. The results can be measured in terms of increased use of existing data resources, improved data for models, more integrated and robust research, more accessible monitoring and reporting, improved and more integrated spatial planning and better transformation of marine data and information into evidence and knowledge.

An interim Coordinator harnessed the initial momentum of the Partnership earlier in the year and a Programme Manager will soon be appointed to drive the process forward and help it realise its objectives. In the mean time three working groups have been established to consider issues relating to data standards, data archiving centres and marine mapping. The IACMST Marine Environmental Data Action Group (MEDAG) is already giving a lead in marine data collection and storage principles. This continuing key activity will support the work of the Partnership and will be an essential component of the framework. MEDAG has also developed UK-wide marine data catalogues and has experience in emerging metadata standards. These will also provide input to the developing national framework.

Data and metadata standards

A fundamental aim of MDIP is the provision of services to users to discover, browse/query and access distributed data across internet enabled GIS search and display tools and download systems. The quality of these services is dependent on interoperability between the data and metadata catalogues of contributing organisations. There is a range of ongoing initiatives in this area that MDIP will work alongside (e.g. MarineXML, INSPIRE, MOTIIVE, NERC DataGrid, SeaDataNet).

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At this stage the standards working group is recommending that the metadata profile used by Partners is based on published standards such as FGDC, ISO19115, Dublin Core or DIF (e.g. GCMD/MEDI/EDMED) & is made available as a downloadable XML-Schema for others to use.

Box 1. Data Archiving Centre (DAC) requirements:

- adherence to e-GIF and appropriate international principles
- data collection according to defined quality principles and accepted procedures
- quality assurance of the collected data
- databasing and banking with appropriate metadata standards
- auditable process for long term custodianship and updating of data sets, with appropriate disaster planning
- making datasets freely available wherever possible (not necessarily at zero cost)
- committed to raising awareness of the holdings
- committed to advising 3rd party organisations collecting similar types of data on procedures, and providing data-banking (warehousing) and curation facilities for such similar data from other sources
- committed to promoting the use of the data
- committed to, and focus on, customer service
- generally exhibiting evidence of expertise and a track record in the scientific area of the data
- committed to return of data holdings to originators, or lodging with an alternative and suitable repository, if the DAC becomes unsustainable

Data Archiving Centres

Another early strand of activity of the Partnership has been agreement on the requirements for Data Archiving Centres and identification of a list of appropriate organisations that could fulfil this function in a coherent manner as part of the future strategy for increasing the value and use of marine data in the UK. The 'Requirements' (See Box 1) are designed as a simple check-list of characteristics which, taken together, will ensure a basic profile of adherence to (compliance with) best practice.

Conclusions

Establishment of the Marine Data and Information Partnership provides a new opportunity to solve an old problem. There is general consensus across a wide range of organisations that a harmonised approach is the preferred way forward, but there is much to do to consolidate progress made so far. The Partnership has the potential to contribute to and increase the value of UK and European spatial data infrastructures.

MDIP will initially run for two years, but with the possibility of extension. It will interact closely with the activities of MEDAG and the MED Coordinator – working together to build the framework, with the working groups contributing the detailed technical infrastructure. The overall output will be a national framework for managing marine data and information supported by a series of standards and procedures together with supporting guidance to help organisations and individuals adopt this more co-ordinated approach.

Looking further ahead, say five years hence, it is anticipated that users will easily be able to discover, explore and, where appropriate, exploit marine and coastal data using a single gateway to multiple diverse sources, inter-operability of marine and coastal data will give significant efficiency gains and the UK will be better able to respond to marine/coastal environmental monitoring and policy making the at national and pan-European level, rapidly and at least cost.

For further information email mdip@defra.gsi.gov.uk or visit: www.oceannet.org

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