

This Issue...

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by Dave Cotton - MEDIN

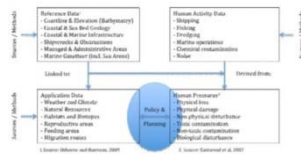


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[more »](#)

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[more »](#)

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[more »](#)

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[more »](#)

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[IMBER releases Data Management 'CookBook'](#)

[Coastal Partnership Network website goes live](#)

[Contracting Marine Data Collection?](#)

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MEDIN Recommendations for Funding Marine Data Archiving in the UK

by Dave Cotton - MEDIN

One of the central MEDIN objectives is to establish a robust network of definitive, integrated, Data Archiving Centres (DACs) to provide secure long-term archival and managed third party access to marine environmental data.

There are currently four accredited DACs within the MEDIN network: The British Oceanographic Data Centre (BODC) covering oceanographic components; the British Geological Survey (BGS) covering sea floor and sub seabed geophysical and geological data; the Data Archive for Seabed Species and Habitats (DASSH) dealing with the benthic data; and the UK Hydrographic Office (UKHO) holding bathymetric data. An expansion of coverage of the MEDIN DAC network is being considered to include meteorological, fisheries and historic environment data.

Of course, archiving data costs money, and so as well as establishing technical processes and agreements for archiving data it is important to ensure that sustainable long-term funding arrangements are in place. MEDIN was tasked by its Sponsors' Board to investigate this issue and come up with some practical, equitable (and affordable!) recommendations.

This note outlines the approach recommended by MEDIN to ensure sustainable long-term funding of the DACs and data archiving. The full paper can be found on the MEDIN website [here](#).

MEDIN's Recommendations

MEDIN recommends a co-ordinated UK wide funding approach, based on the following principles:

- Organisations with a strategic interest in maintaining a national marine DAC capability for particular data themes contribute to the funding of the relevant DAC.
- Organisations who have signed up to the MEDIN principles of improving management of and access to marine environmental data support the costs of the MEDIN coordination role.
- Those who fund the collection of marine data also bear the responsibility to ensure the data are archived and available for re-use, and so should cover scale related archiving costs for new data sets.
- Data will be available free of cost to users wherever possible (in line with the new Open Government Licence).

This model is consistent in large part with the current approach for funding the DACs, but provides greater clarity of roles and responsibilities. It does require an acceptance that data archiving costs money and that those funding data collection include in the project costs the funding necessary to support the archival of the data, in return for the services provided by the Data Archiving Centres.

The four aspects to the approach recommended by MEDIN are described in more detail below:

- **Cooperative Funding Support for Core DAC Capability**

It is important to recognise that the DACs are independent entities in their own right, but linked together in the MEDIN network to provide a coordinated archiving capability for UK marine data and information.

Thus core DAC funding, which includes infrastructure costs and some routine data archiving, is not supported by MEDIN funds, but is provided directly to the DACs by organisations with a strategic interest in a national DAC capability for specific data types. It is recommended that MEDIN brings together DAC funders to provide high-level oversight and ensure the overall marine DAC capability meets national needs.

Estimated Total Annual Cost (2009-10) (not including UKHO): £1,686k

To be supported by: NERC for BODC and BGS; UKHO for the bathymetry DAC; DEFRA, Marine Scotland, Countryside Council for Wales (and others) for DASSH. The Met Office would fund the Met-Ocean DAC.

- **Funding for MEDIN coordination of the marine DAC network**

MEDIN acts to ensure common standards and service provision across the MEDIN DAC network. It is recommended that the cost of MEDIN coordination activities is shared between MEDIN Sponsorship funds and the DACs themselves.

Estimated Total Annual Cost (2009-10): £159k

To be supported by: MEDIN Sponsor funds and DAC in kind support

- **Scale related archive costs for new data**

The costs of archiving newly collected data should be met by the data providers, who pay one-off fees to the DACs in return for the services provided. This data archiving cost is not currently included in the overall budget of many monitoring and research programmes.

Estimated Total Annual Cost (2009-10): £840k (not including UHKO) – would be expected to increase if more partners archive their data in MEDIN DAC network.

To be supported by: Data suppliers, includes all MEDIN sponsors and partners

- **Data retrieval**

MEDIN DACs will provide data access the original data provider at no cost, and will manage third party access to data sets according to terms agreed with the data provider. If no constraints are required by the owner, data will be made available to third parties at no cost, beyond any necessary to cover costs of retrieval / provision.

Routine Supply Costs on DACs is met from DAC core funding. Data users pay media/retrieval costs only.

MEDIN believes that these recommendations offer an equitable and cost-effective approach that would ensure sustainable long-term funding of the DACs and the archiving of new data sets. Organisations collecting marine data must recognise that they bear a responsibility to make these data sets available for future reuse and so ensure that project budgets include funds to cover data archive costs.

MEDIN Action Plan for Marine and Coastal Reference Data

by Mike Osborne - Oceanwise

An important area of concern to MEDIN partners is the need to improve the availability and quality of key datasets that support numerous applications and are used to derive higher-level datasets. This need, the definition of which datasets should be prioritised and the problems and issues experienced by users were identified in a series of workshops held during 2009 and 2010. The outputs have been used to develop an action plan that is now being implemented by MEDIN and its partners.

Reference data can be defined as collectively providing real world context and is found to underpin the majority of marine and coastal activities. These datasets are not only important in their own right but also provide essential input to other applied datasets, such as 'human pressure'. Acting on these dependencies and the inter-relationships that exist between spatial datasets (Figure 1), contributes to efficiency and re-use immeasurably. The value of individual datasets is multiplied many times when considered in this wider context.

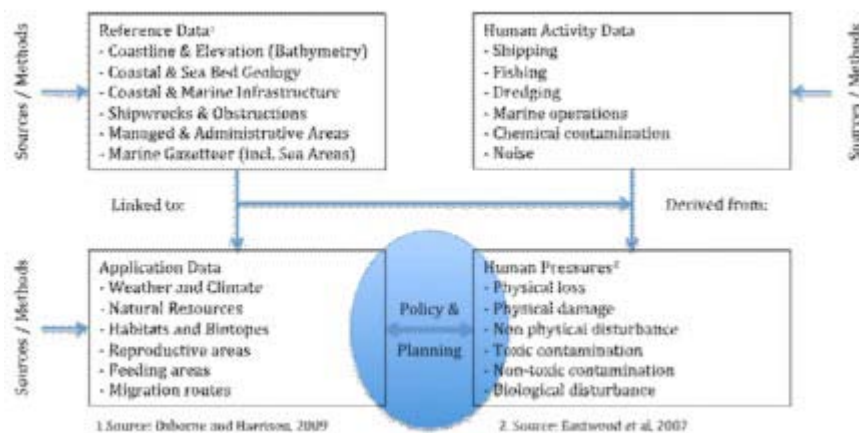


Figure 1 A Generalised Process Model for Marine Spatial Data

The MEDIN action plan for marine reference data recognises that many organisations acquire and manage data to meet their own business objectives. However, these datasets are often useful to a multitude of other users, if only they could discover and gain access to the data in a machine readable and consistent format. By encouraging and helping organisations technically and, in some cases, financially, to improve and make their data more readily available, MEDIN is helping the wider community and the originator, as data management practices, data re-use and ultimately content improve.

The creation and management of spatial datasets holistically and the ability to link spatial and non-spatial datasets to achieve beneficial outcomes for the public good are at the heart of a Spatial Data Infrastructure (SDI). SDI is as applicable to the marine and coastal environment as it is on land. By publishing data more easily, data holders will expose the need to strengthen and harmonise content and drive the quality improvement processes that will achieve these outcomes. At the same time, data holders will be contributing to the Government's data sharing and transparency agenda and meeting their information asset registration and publishing obligations, INSPIRE Directive related or otherwise.

The MEDIN action plan for marine and coastal reference data will be implemented over the next 12 months, although the overall aim is to provide the foundations for sustained maintenance (and publication) of these datasets and, where required, continual improvement. Organisations contributing data or expertise to each theme will be consulted but ultimately a data holder will be identified as the lead authority for each dataset and invited to work with MEDIN to obtain the desired outcomes. Where applicable, the lead authority will be the Legally Mandated Organisation (LMO) for that dataset or theme, as notified under the INSPIRE Directive.

For some themes, there are likely to be quick wins, with datasets that already support internal business needs being made ready and published as part of a view and download service. This may be implemented by the data holder or the data loaded to a third party portal, the MEDIN portal or a central UK portal or one of the devolved administration portals. Whichever portal the user chooses as an entry

point, metadata and portal interoperability will ensure data and related services are easily discovered and data accessed.

For other themes more work will be required. This is likely to include datasets where further interpretation of existing data is needed or where there are gaps in coverage. In some cases data may be being acquired or processed for one purpose and changes in specifications and procedures will be required to make the data more widely applicable. In others, harmonisation of content will be required between extant but disparate datasets, with the data holders agreeing boundaries and protocols for future data sharing.

Where there is no obvious authority, MEDIN intends to take a lead to create and publish data via the MEDIN portal. An example of where this approach has succeeded is in the development of the MEDIN Marine Gazetteer. The work, undertaken by the Geodata Institute, has resulted in an area dataset, as a UK subset of the SeaVox sea area gazetteer, and a point dataset, compatible with the Ordnance Survey 1:50 000 Scale Gazetteer. The MEDIN Marine Gazetteer will provide marine search terms for data discovery on the MEDIN, UK and devolved administration portals and will be available from the MEDIN website as standalone dataset.

Details of further developments will be included in future editions of Marine Data News. In the meantime, please contact Dr Mike Osborne, co-chair of the MEDIN Resources and Applications work stream and author of this article for more information (email: mike.osborne@oceanwise.eu).

Atlas of the seas: a first for Scotland

Marine Atlas created for marine planners and schools across the country
by Martyn Cox - Marine Scotland

An atlas of Scotland's seas – with visual representation of its competing uses, productivity and health – has been compiled for the first time.

The Marine Atlas will inform key planning decisions in Scottish waters while providing everyone with an accessible and detailed insight into the geography and vast richness of Scotland's seas. The Marine Atlas has been developed by a wide range of partners and provides an unparalleled level of analysis of a country's marine environment.

This unique resource is being made freely available online so that anyone with an interest in the varied waters around Scotland's shores can find out more. In addition, school packs have been developed, including two hard copies of the atlas for every secondary school, colourful posters and an accompanying DVD.

Launching the new resource aboard marine protection vessel MPV Hirta in Leith Harbour, Environment Secretary Richard Lochhead said:

"Scotland's seas are a precious resource that, as a nation, we must treasure. That's why we have developed the Marine Atlas, a world-leading resource that draws together a vast array of information to enable an accurate picture to be built up of the complex interactions taking place, region by region, throughout Scottish waters.

"The Atlas explores the state of marine life and biodiversity; how competing pressures on an area have an impact; the economic contributions of fishing, marine energy, telecommunications and leisure activities; the effects of climate change; and the environmental legacy of Scotland's industrial past.

"The uses of the Marine Atlas are as diverse as its contents. It will ensure that informed marine management decisions can be made by planners. It gives pupils a fantastic tool for growing their knowledge of our seas and the rich contribution – environmental and economic – they make to Scotland. And as an easily accessed and free website, many people in this country and beyond can explore the wonders of Scotland's seas."

Scotland's Marine Atlas can be accessed at www.scotland.gov.uk/marineatlas. The accompanying DVD can be viewed at <http://www.youtube.com/watch?v=WVVINp9uKLo>

The Atlas is based around the Scottish Government vision of clean, healthy, safe, productive, biologically diverse marine and coastal environments, managed to meet the long term needs of nature and people.

The atlas gives an overall assessment of Scotland seas and chapters cover: physical characteristics; clean and safe; healthy and biologically diverse; productive; and climate change.

Led by Marine Scotland Science, the Atlas has been developed as a collaboration involving SEPA, SNH, JNCC and MASTS.

The Marine Atlas fulfils the requirement set out in section 3 of the Marine (Scotland) Act 2010 to prepare an assessment of the condition of the Scottish marine area and a summary of the significant pressures and impacts of human activity.

Publishing Metadata and Data to the UK Location Programme and INSPIRE through MEDIN

by Dave Cotton - MEDIN

1. Introduction

Under the European INSPIRE directive all organisations holding Public Geospatial Data are required to publish metadata, and provide data view and download services for their data. The UK Location Programme (UKLP) is working in cooperation with data.gov to establish a central national framework to support UK organisations in meeting these obligations. This framework includes a national discovery portal and an architecture for publishing data view and download services.

In this short note we describe how the metadata and data publishing services being developed by MEDIN will link to the UKLP / data.gov system, and how readers can use the MEDIN resources through these links to meet INSPIRE metadata and data publishing obligations.

We do not discuss what specific data types and themes are covered by INSPIRE and UKLP. A brief overview of which data themes are included within each of the three INSPIRE "annexes" is provided at the end of this paper.

2. Overview

The UK Location Programme refers to "Data Providers" – organisations that create the data and supply data for web publications along with its metadata; and "Data Publishers" – organisations that publish the data on the web and supply data services to users.

MEDIN has established a network of *Data Archive Centres (DACs)*, with which all partners are encouraged to archive their data, and also a central *Discovery Metadata Portal and Catalogue* to which all partners are required to publish their discovery metadata.

MEDIN is ready to act as the *Metadata and Data Publisher* on behalf of the Marine Community, through the onward publication of its Discovery Metadata Catalogue to the UKLP /data.gov Discovery Portal, and the provision of data view and download services by the DAC network. Figure 1 provides a schematic from the UKLP on how data publishers can act on behalf of data providers and link to the central UKLP service.

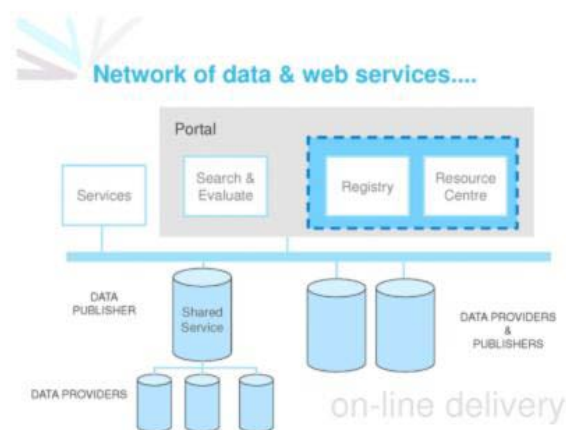


Figure 1. MEDIN as a thematic metadata /data assembly and publication centre for the marine community, into the UKLP framework

This note covers four metadata /data services:

[Discovery Metadata Service](#)

Discovery metadata provide a description of the data held within a data set. Each data set must have a Discovery Metadata record to describe it. These descriptions are the basis of most initial searches for data, through a Discovery Portal.

Data View Service

A Data View Service will provide over the web a visual representation of the data within a data set. The discovery metadata record will provide a link to the view service of the data described.

Data Download Service

A Data Download Service provides over the web a direct download of the data identified in the discovery metadata record.

Data Transformation Service

A Data Transformation Service will allow the user, over the web, to transform data from one format to another. For instance, a transformation service could be used to transfer a data set from a format that does not meet an INSPIRE specification to a format that does.

3. Generating and Publishing Discovery Metadata

Overview – The MEDIN Discovery Portal and Metadata Catalogue

MEDIN has developed a marine discovery portal to provide a single central access point through which all major UK holdings of marine data can be searched. The UKLP is developing a Discovery metadata portal for all UK public geospatial data. MEDIN is maintaining a separate Discovery Portal to UKLP as the UKLP portal will not include all MEDIN data and the MEDIN portal provides marine specific search capabilities supported by an enhanced portal functionality and a higher level of metadata content.

Thus all MEDIN partners are encouraged to generate MEDIN format discovery metadata records, and to publish these metadata records to the MEDIN Discovery Portal. MEDIN will publish metadata onto the UKLP portal as requested by the data owner.

Once metadata records are generated and published by MEDIN Data Archive Centres and MEDIN partners, they are harvested onto a central MEDIN metadata catalogue which is searched through the MEDIN portal on the oceannet web page[1].

As soon as the UKLP system is ready MEDIN will publish metadata records on to the UKLP / data.gov Discovery Portal, and so on to INSPIRE. The metadata set to be re-published in this way will be a subset of the full MEDIN metadata catalogue as not all data within MEDIN will be relevant to INSPIRE and /or UKLP (non-relevant data include non-public data, data not held in a geo-spatial format, and data not covered by INSPIRE themes) .

The INSPIRE timetable requires that a Discovery Metadata Service for data in INSPIRE themes I and II is available in an initial capability by May 2011, and in fully compliant form by November 2011. The equivalent deadline for data in Annex III (which includes most marine data sets) is December 2013.

Discovery Metadata Standard

MEDIN has developed a specially adapted version of the Gemini 2.1 discovery metadata standard (the standard adopted by UKLP) to suit the specific requirements of the marine community. This is a higher-level standard than the generic version, but remains entirely compliant with Gemini 2.1, INSPIRE requirements and with the relevant ISO standards. It includes the use of particular vocabularies and code lists within certain fields. These vocabularies are widely accepted across the UK and European marine communities, are subject to a managed update process, and ensure that the data content of data sets is precisely and unambiguously specified.

An up to date specification of the MEDIN Discovery metadata standard is maintained on the MEDIN web pages at http://www.oceannet.org/marine_data_standards/medin_disc_std.html

How Can I Create Discovery Metadata? Guidelines and Tools

On its website MEDIN provides comprehensive guidelines on how to generate MEDIN Standard Discovery Metadata, and an online metadata creation tool. Further metadata tools, including a stand alone downloadable tool, and a database tool will be available shortly. MEDIN also runs a metadata helpline (phone 01752 633291, email medin.metadata@mba.ac.uk).

How Do I Publish my Metadata?

MEDIN recommends that all UK marine data should be archived within a MEDIN accredited DAC, who will publish metadata records on behalf of the data owner. If you prefer to manage data within your own organisation, and publish your metadata yourself, you should ask MEDIN for guidance. You can either publish through an Open Geospatial Consortium (OGC) Cataloguing Services for Web (CSW) service, or using a server configured with OAI-PMH (Open Archive Initiative - Protocol for Metadata Harvesting) software (downloadable from <http://www.dlese.org/Metadata/tool/index.php>). In either case you must register your metadata publishing service with MEDIN. Again contact the MEDIN metadata helpline with any queries.

Do I want MEDIN to publish my Metadata records to UKLP and INSPIRE?

All metadata published to MEDIN will be searchable through the MEDIN Discovery Portal. MEDIN will also publish metadata records, *on request*, to the UK geoportal and thence onward to INSPIRE. You should decide if you wish all or some of your metadata to be included in the UK Geoportal and the INSPIRE Portal, and advise MEDIN accordingly.

Can I use the UKLP metadata tool to produce metadata?

No – the UKLP metadata tool will not produce MEDIN compliant discovery metadata and so these data would not be searchable within the MEDIN portal. Please use one of the MEDIN metadata tools available through the MEDIN website.

4. Data View Services

Overview

UKLP has defined a technical architecture to support the publication of data view services. MEDIN is planning to act as a data publisher on behalf of the marine community through its network of DACs. The intention is that the MEDIN DACs will publish data view (and download) services to the UKLP framework.

The INSPIRE Timetable requires that View services for Annex I and Annex II data sets are available in an initial operating capability by May 2011, with full view services available by November 2011. The equivalent dates for Annex III data, which includes most marine data, is December 2013

The UKLP (and INSPIRE) data view services will be based on the use of the Open Geospatial Consortium (OGC) standard for Web Map Services (WMS). Web Map Services present location information as an image (GIF, JPEG or PNG).

What Should I Do?

MEDIN will publish further guidance shortly, when it has agreed with the DACs how to implement view services. In the meantime please contact us with any queries.

5. Data Download and Transformation Services

The INSPIRE timetable requires that initial capability for Data Transformation and Data Download services for Annex I and Annex II data shall be available by 28 June 2012, with services fully conforming to the regulation by 28 December 2012. The equivalent deadline for Annex III data (most of the marine data) is December 2013.

The full technical specifications for these services are not yet available, though a regulation passed in November last year has provided some initial requirements and quality of service specifications (see

Commission Regulation No 1088/2010, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:323:0011:0102:EN:PDF>)

It is planned that MEDIN DACs will support Download Services, but not Data Transformation Services.

What Should I Do?

MEDIN will publish guidance when final specifications are provided by INSPIRE. In the meantime please contact us with any queries.

Glossary

CSW – Cataloguing Services for the Web
DAC – Data Archive Centre
MEDIN – Marine Environmental Data and Information Network
OAI-PMH - Open Archive Initiative - Protocol for Metadata Harvesting
OGC – Open Geospatial Consortium
STFC – Science and Technology Facilities Council
UKLP – UK Location Programme
WMS – Web Map Service

References

UKLP Getting Started Notes – all available at location.defra.gov.uk/resources/getting-started

Guide 1: UK Location, an introduction
Guide 2: Organisation and Data Coverage
Guide 3: What Needs to Happen and When
Guide 4: Publishing Discovery and View Services
Guide 5: UK Implementation of INSPIRE

UKLP and AGI “System Supplier Workshop Presentations

<http://location.defra.gov.uk/resources/media/presentations-agi-system-supplier-sig-25-jan-2011/>

WMS “primer”: <http://www.gommap.org/gommap/docs/ogc-wms-primer.pdf>

Guide to Distributing your data products by WMS 1.1.1 :
<http://oceanesip.jpl.nasa.gov/esipde/guide.html>

INSPIRE View Service Technical Guide:

http://inspire.jrc.ec.europa.eu/documents/Network_Services/Technical_Guidance_View_Services_v2.12.pdf

Links

MEDIN: <http://www.oceannet.org>
UKLP: <http://location.defra.gov.uk>
Data.gov: <http://data.gov.uk/>
INSPIRE: <http://inspire.jrc.ec.europa.eu/>
DLESE OAI software: <http://www.dlese.org/oai/>
OGC WMS information: <http://www.opengeospatial.org/standards/wms>

INSPIRE Themes (see <http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2/list/>)

Annex I	Annex II	Annex III
1 Coordinate reference systems	1 Elevation	1 Statistical units
2 Geographical grid systems	2 Land cover	2 Buildings
3 Geographical names	3 Orthoimagery	3 Soil
4 Administrative units	4 Geology	4 Land use
5 Addresses		5 Human health and safety

6 Cadastral parcels
7 Transport networks
8 Hydrography
9 Protected sites

6 Utility and governmental services
7 *Environmental monitoring Facilities*
8 Production and industrial facilities
9 Agricultural and aquaculture facilities
10 Population distribution and demography
11 Area management/restriction/regulation zones & reporting units
12 Natural risk zones
13 *Atmospheric conditions*
14 *Meteorological geographical features*
15 *Oceanographic geographical features*
16 *Sea regions*
17 *Bio-geographical regions*
18 *Habitats and biotopes*
19 *Species distribution*
20 *Energy Resources*
21 *Mineral Resources*

[1] <http://portal.oceannet.org/search/full>

Marine and Coastal Data on GeoStore

by Mike Osborne - Oceanwise

Astrium GEO-Information Services has introduced new marine and coastal geospatial data that is now downloadable from its Internet store. The new data includes the Admiralty Raster Charts, and a new generation of vector data known as Marine Themes that is based on information sourced from the UK Hydrographic Office. Easily accessed online, the new marine and coastal data will be particularly relevant for environmental protection and planning professions in the public sector, as well as for commercial organisations - such as utility companies and other organisations - that are planning offshore wind farms or other coastal projects.

In addition to marine and coastal geospatial data, GeoStore provides customers with access to digital terrestrial mapping, aerial imagery and lidar height data. As with all Geostore data products, the new marine and coastal datasets can be fully defined by the customer, providing organisations with the ability to select data on demand - either as an immediate download or even delivered on CD or DVD depending on the amount of data purchased for each application?

The GeoStore Marine Themes data comprises authoritative data from the UK and other Hydrographic Offices. It consists of a comprehensive suite of individual marine layers corresponding to important marine features: elevation, shipwrecks and obstructions, transport, industrial facilities, administrative and management units and geographical regions. This data is ideal for general situation awareness, planning, site selection and investigation, and outline engineering design. It is also applicable for projects where features need to be selectively displayed or interrogated to create derived outputs. Alternatively, it can be used as a reference base for the user's own data layers. Standard symbology is provided free of charge allowing for immediate use of the data in GIS.

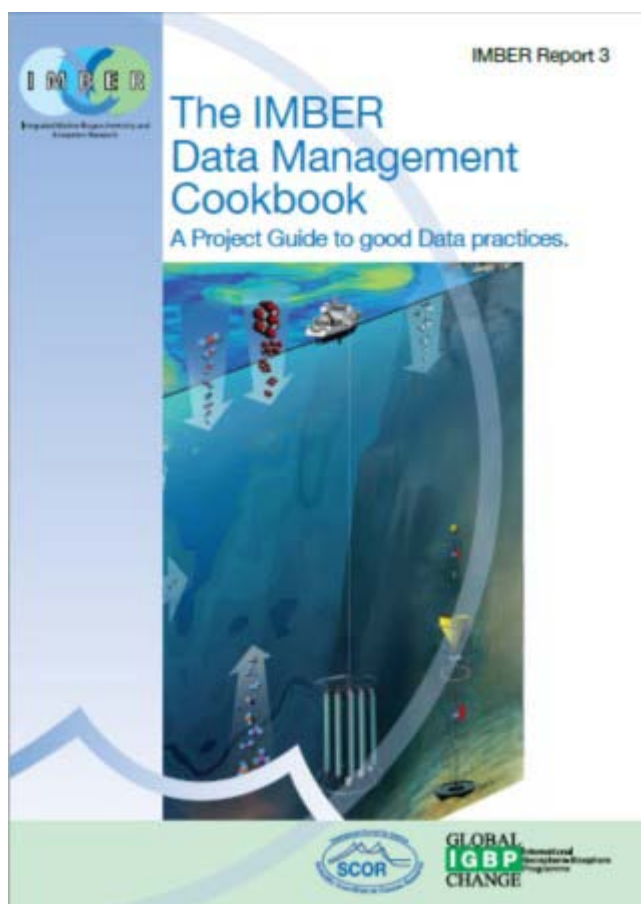
For more information visit www.geostore.com.

News

IMBER releases Data Management 'CookBook'

The IMBER Data Management Committee (DMC) has been working to make Data Management a useful aid to research and has created a **CookBook** (pdf) to take you step by step through recipes of how to do good data management.

See **Data Policy** for an overview and the **CookBook** (pdf) for details. Powerpoint tutorials from the IMBER IMBIZO are also available **HERE**.



Coastal Partnership Network website goes live

The Coastal Partnerships Network (CPN) has launched their new website, <http://www.coastalpartnershipnetwork.org.uk/>.

The website is intended to provide an introduction to the network of different Coastal Partnerships (CPs) in the UK and guide people to who to contact for specific needs. A map is provided as a first port of call to seek out the Coastal Partnerships that are required, whether that be local, within your Marine Plan Area, or to help you with an issue.

Visit the website yourself here: <http://www.coastalpartnershipnetwork.org.uk/>.

Contracting Marine Data Collection?

Are you going to be issuing contracts for marine data collection this year?

If so MEDIN has a set of clauses in recommends are included in your tendering documents to ensure that best practices in data management are implemented, including:

- The application of, and documentation of, appropriate standards during data collection
- The generation and publication of metadata to MEDIN standards
- Making provision for the secure long-term archival of the data to be collected
- Clear terms and conditions for access and reuse of the data.

Please go the MEDIN website at http://www.oceannet.org/data_submission/ to download a short document describing these terms (bottom of the screen), and contact MEDIN at enquiries@oceannet.org for advice specific to your data collection programmes.

Marine Knowledge 2020

Marine Knowledge 2020

The European Commission has launched "Marine Knowledge 2020", an initiative which aims to unlock and assemble marine data from different sources and facilitate their use for purposes other than those for which they were originally intended. This will have three major benefits.

First, it will improve the efficiency of all those private bodies, public authorities and researchers which presently use marine data. Less time and effort will be spent assembling and processing incompatible data from heterogeneous sources.

Second, it will open up new opportunities and drive innovation in the maritime economy. I am confident that universal and reliable access to accurate marine data will enable European business to offer products and services that nobody could have anticipated beforehand.

And third, it will reduce uncertainties in our knowledge of the behaviour of the seas and oceans. This will not only benefit those living and working on the seas and at the coast. Circulation in the oceans drives the terrestrial climate. Improved knowledge of the sea is not a sufficient condition for better forecasting of the future severity or mildness of Europe's seasons. But it is a necessary one. Thus better marine knowledge can contribute towards Europe's adaptation to climate change.

For more information visit: <https://webgate.ec.europa.eu/maritimeforum/node/1305>