SeaDataNet - Pan-European infrastructure for ocean and marine data management

Present state and relations to other initiatives, such as EMODNet

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Supported by the European Commission
SeaDataNet has set up and is operating a pan-European infrastructure for managing marine and ocean data by connecting 40 National Oceanographic Data Centres (NODC’s), national oceanographic focal points, and ocean satellite data centres, in Europe.
Interoperability is the key to distributed data management system success. This is achieved in SeaDataNet via:

- Adopting the ISO 19115 metadata standard for all metadata directories
- Providing standard metadata entry tools
- Providing XML Validation Services to quality control the metadata maintenance
- Using common and controlled vocabularies, including international content governance
- Using harmonised Data Transport Formats for data sets delivery
- Using common quality control protocols and flag scale
- Adopting of OGC standards for mapping and viewing services
- Using SOAP Web Services in the SeaDataNet architecture
- Organising training and instruction workshops for transfer of expertise and hands-on training
Portal with harmonised services, data products and tools for users and data centres

http://www.seadatanet.org
The SeaDataNet portal provides overviews of marine organisations in Europe and their engagement in research, scientific cruises, monitoring and data management for European waters and global oceans:

- **EDMO**: European Directory of Marine Organisations (>2200 entries)
- **EDMED**: European Directory of Marine Environmental Data sets (>3000 entries)
- **EDMERP**: European Directory of Marine Environmental Research Projects (>2500 entries)
- **CSR**: Cruise Summary Reports (>31500 entries)
- **EDIOS**: European Directory of Ocean-observing Systems (>270 programmes for the UK alone and many underway for other European countries)

These Directories are maintained by NODCs for their country and published at pan-European level.
Pan-European Directory Services

All these Directories have been harmonised and mutually tuned in format, syntax and semantics (common vocabularies), a common XML editor (MIKADO), online CMS and online user interfaces.
Relations between Directory Services

From the EDMO interface one can oversee and retrieve cross related entries in each of the Directories.
SeaDataNet from data discovery to unified access to analysis
**Common Data Index (CDI) Data Discovery and Access Service**

- **CDI** is a fine-grained index to individual data measurements. The CDI Service provides users a highly detailed insight and unified access to the large volumes of marine and oceanographic data sets.

- An intelligent middle tier connection is configured between the SeaDataNet portal and the local data management systems at each of the data centres.

- A shopping basket allows users to submit a shopping request for multiple data providers in one go and to follow its processing by each of the providers *via* an online transaction register.

- Users need to register once to agree with the SeaDataNet Data Policy and licence. Their registration is also technically required to enable processing of requests for data of various natures to multiple data providers over time.
SeaDataNet CDI – Data retrieval and downloading

Search

Include in Basket

Request Confirmed

Check Status In RSM

Ready at DC x

Download

Shopping list

Submit + Authentication

SeaDataNet authentication service

For security reasons, please log out or close your web browser when you are done.

Login:
Password:

Want to register?  Want to change or recover your password?

In RSM

Data SDN format
CDI new functionalities and refinements

- Improved CDI Quick Search and CDI Extended Search interfaces
- CDI XML format now can also handle detailed tracks and polygons as GML (refining previous Lat-Lon boxes)
- CDI Summary function for search results with statistics and drill-down function
- CDI Mapping now supports OGC WMS services with option to add external WMS layers
- A query and GIS layer configuration can be stored by users as a favourite and can be forwarded to other users as a URL
Example: CDI Bathymetric surveys on a GEBCO WMS layer
CDI new interoperability services

- CDI entries from the CDI portal are available as a series of OGC WMS and WFS services, e.g. for inclusion in the EMODNet portals.

- CS-W service on top of the CDI portal to deliver CDI XML entries in the INSPIRE compliant ISO 19139 format (at present aggregated by discipline and by data centre)
SeaDataNet Expansion

SeaDataNet standards and tools are being adopted by other EU-funded projects:

- **Up-Grade Black Sea SCENE project**, (2009 – 2011) involving 6 NODCs and 35 other data holding institutes from the 6 Black Sea countries, to provide metadata and data access and to strengthen their national NODC networks. EU-funding 3.4 Million Euro.

- **CASPINFO project**, (2009 – 2011) involving 12 institutes and private industry from the Caspian Sea region, to provide metadata and data access and to build their capacity for data management and user services. EU-funding 0.8 Million Euro.

- **Geo-Seas project**, (2009-2012) involving 24 geological and geophysical data centres from 16 European countries (EuroGeoSurveys), to provide metadata and data access. EU-funding 4.9 Million Euro.

- **EuroFleets project**, (2009-2012) involving 24 research institutes and data centres from 17 European countries, to optimise the management of research vessels and to streamline the flow of data from the research cruises to the data centre infrastructure. EU-funding 7.2 Million Euro.

In each project several SeaDataNet partners are participating for transfer of knowledge & expertise, to secure interoperability and to achieve crossfertilisation leading to upgrading of the SeaDataNet standards and tools as well as enriching of the services.
EU has adopted a new Marine Strategy Framework Directive (MSFD) which includes a requirement for an overarching **European Marine Observation and Data Network** (EMODNET).

SeaDataNet has qualified itself as leading infrastructure for the EMODNet data management component and is undertaking several preparatory EMODNet projects:

- **Chemistry** – focus on the groups of chemicals required for monitoring the MSFD for establishing Good Environmental Status – cooperation with EEA, ICES and Regional Conventions
- **Hydrography** – to produce and deliver a higher resolution digital bathymetry for European seas
- **Physics** – together with MyOcean and EuroGOOS Regions to give wide access to operational metocean data, real-time and archives

These pilots stimulate a wider uptake of SeaDataNet standards and contribute to enriching the standards and services.
CDI Service as common service

www.geo-seas.eu
www.emodnet-chemistry.eu
www.emodnet-hydrography.eu
(www.emodnet-physics.eu)
www.blackseascene.net
www.caspinfo.net
CDI coverage at mid March 2011: > 850.000 CDI entries from 28 countries and >50 data centres for physics, chemistry, geology, bathymetry and biology; connecting another 40 data centres and increase in CDIs is well underway
Regional Products services

Climatologies and interpolated data products for the Arctic seas, Atlantic Ocean, Baltic sea, Mediterranean sea and the Black Sea regions. Statistical output in NetCDF files, that are visible via WMS.
SeaDataNet II proposal submitted to FP7

There are many challenges and recent innovations which need taking up. A number of objectives of the SeaDataNet II proposal are:

- Achieving full INSPIRE compliance and contributing to the INSPIRE process for developing implementing rules for oceanography
- Achieving data access and data products services that meet requirements of end-users and intermediate user communities, such as GMES Marine Core Service, WISE-Marine (EEA), regional marine conventions, establishing SeaDataNet as the core data management component of the EMODNet infrastructure and contributing on behalf of Europe to global portal initiatives, such as the IOC-IODE - Ocean Data Portal (ODP), and GEOSS.
- Achieving an improved capability for handling also marine biological data and interoperability with the emerging biodiversity data infrastructure in Europe

Recently a favourable evaluation report has been received and we expect to be invited for negotiation with the EU.
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