The contribution of the SeaDataNet infrastructure in the extreme weather events study

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EGU Conference, Vienna, Austria, 8-13° April 2018
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SeaDataNet is a comprehensive Pan-European semi-distributed marine data infrastructure, providing access to multidisciplinary, integrated marine and ocean data and products of standardised quality, services, as well as an overview of marine organisations, research and monitoring activities related to the sea.

Selection of data along tracks

sdn-userdesk@seadatanet.org – www.seadatanet.org
• Origins
• Architecture
• Data services (visualisation, quality check)
• Metadata services
• Data products
• Vocabulary services
• Software tools
• Main on going activity
• Challenges for extreme weather events
• How SeaDataNet supports extreme weather events study
• The highlights
• SeaDataNet standards and tools in other EU projects
• IMDIS conference
SeaDataNet started in 1990s and has been developing over the years thanks to EU funded projects:

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Project Name</th>
</tr>
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<tbody>
<tr>
<td>2002-2005</td>
<td>Sea-Search (FP5)</td>
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<tr>
<td>2006-2011</td>
<td>SeaDataNet (FP6)</td>
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<tr>
<td>2011-2015</td>
<td>SeaDataNet II (FP7)</td>
</tr>
<tr>
<td>2016-2020</td>
<td>SeaDataCloud (H2020)</td>
</tr>
</tbody>
</table>
→ a single access for a wide range of data of different types
SDN provides useful information to know which organisations operate in marine environment, what they do and where chances for future collaborations in research or in the private sector.
EGU Conference, Vienna, Austria, 8-13 April 2018

Access Products

Download the SeaDataNet aggregated datasets: ODV collections of all SeaDataNet measurements of temperature and salinity by sea basins, or the SeaDataNet climatologies: regional gridded field products based on the aggregated datasets.

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Data Products

Catalogue

Aggregated datasets

Historical data collections of all T and S measurements within SeaDataNet covering all EU sea basins (DOI)

Climatologies

gridded climatologies (DOI)

Documentation

reports describing products’ characteristics and quality (DOI)
Product Catalogue

MEDITERRANEAN SEA - TEMPERATURE AND SALINITY OBSERVATION COLLECTION V2

SeaDataNet Temperature and Salinity historical data collection for the Mediterranean Sea contains all open access temperature and salinity in situ data retrieved from SeaDataNet infrastructure at the end of 2014. The data span between -9.25 and 37...

Source: Seadatanet

Download

Viewing tools Ocean Browser and Oceanotron

Metadata record (DOI)
**Vocabulary services**

Controlled vocabularies used in all metadatabases and data formats (interoperability) organised with international governance, user interfaces and web services

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To present and analyse data

To convert data file

To convert to the internal formats

To create metadata CDI, CSR, EDMO, EDIOS, EDMERP

To generate the spatial objects for CDI files

To make available data in data centres
This project has received funding from the European Union’s Horizon 2020 Research Infrastructures programme, under the grant agreement No 730960”.

Upgrading and innovating existing services for users and data providers:

- Advancing the CDI service by adopting cloud
- Introducing 'Linked Data principle' to catalogues for semantic web
- Adding transformation facility for INSPIRE compliance

Developing new services for users and data providers:

- SWE Ingestion service for Real Time data streams
- Brokerage service for mutual exchange with international data networks
- Virtual Research Environment (VRE) with advanced services: subsetting, online ODV, DIVA, and visualisation
Challenges for extreme weather events
EGU Conference, Vienna, Austria, 8-13 April 2018

How the ocean drives extreme weather events?
• To improve the understanding of variability and climate change and the link between the latter and extreme events
• To improve the knowledge of global climate pattern
• To predict human influence on climate change

Carrying out research in this field of sea sciences can help the humanity. The availability of great amount of high quality ocean data allows hazard vulnerability assessment and gives the possibility to plan the risk mitigation strategies and the adaptation measures.

Credit: Consorzio Venezia Nuova
High tide in Venice (01dic2008)

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How SeaDataNet supports extreme weather events study

In the SeaDataNet infrastructure are available more than 2 M of data sets comprising bathymetry data as well as temperature, salinity, currents, etc. In situ data is used mainly for validation activity of climate-hazard modelling data and satellite data.

Improved models are used to better forecast and to predict areas that are likely to be very high exposure to climate hazards.

SDN released qualified temperature and salinity historical data collections in the European regional seas as well as climatological maps.

Credit: C. Papucci
Rosette sampler
Availability of aggregated dataset 1900-2014
SDN provides temperature and salinity climatologies, based on the aggregated datasets, for all the European sea basins produced using DIVA software.
• Easy to use for end-users and data providers
• 110 Data centres providing data and metadata
• More than 2.100.000 ocean data sets available
• Vocabulary governance and services
• Standard QA-QC procedures, method for checking possible duplicates
• Standards and interoperability solutions widely recognized by the international community, beyond European borders.

SeaDataNet is present in the ODIP project and it collaborates with the existing global infrastructures such as the IOC-IODE – Ocean Data Portal (ODP), GEOSS and the International Council for Science World Data System (ICSUWDS).
Cooperation and involvement

- **Copernicus Marine Environmental Monitoring Services (CMEMS):** providing long-term archives and standards
- **Marine Strategy Framework Directive (MSFD):** providing infrastructure, standards and data collections for several indicators
- **Large ocean monitoring systems (EuroGOOS, AtlantOS, Euro-ARGO, JERICO-Next, EuroFleets, ..):** providing standards and validation + long-term archiving services
- **Ocean Data Interoperability Platform (ODIP):** exploring and demonstrating common standards and interoperability with leading data management infrastructures in USA and Australia
- **GEOSS - EuroGEOSS:** feeding GEOSS portal with SeaDataNet in-situ data collections from large community of European data holders (> 100 data centres; >600 data originators)
- **European Open Science Cloud (EOSC):** shaping the pilot Blue Cloud
- **European Marine Observation and Data Network (EMODnet):** driving and serving many EMODnet thematic portals
CDI service driving and serving many portals and communities

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CDI Data Discovery and Access service

≈ 650 European data originators

NODCs; HOs; GEOs; BIOS; ICES; PANGAEA

> 110 data centres

Aggregated collection

GEOSS portal

IODE ODP portal

Black Sea portal

Caspian portal

Geo-Seas portal

Regional subsets

Thematic portals

Bathymetry

Physics

Chemistry

Geology

Biology
Barcelona, 5-7 November, 2018
imdis.seadatanet.org
Organised in the frame of SeaDataCloud project funded by the EU Horizon 2020 Research Infrastructures programme

4 plenary sessions:
1. Data services and tools in ocean science
2. Technical developments for marine information and data management
3. Marine environmental infrastructures for observation data (data management and access)
4. Data products, information and knowledge

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