



Guidelines for visualisation of data products and product web page design



HORIZON 2020

sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960

Disclaimer

The content of this document reflects only the authors' view; it cannot be considered to reflect the view of the European Commission or any other body of the European Union. The European Commission is not responsible for any use that may be made of the information it contains.



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960

Table of contents

1. Introduction	4
2. What are the SeaDataNet data products?	4
3. How are they displayed on SeaDataNet portal?	4
4. How to access data products	5
4.1. How to access product description (metadata)	8
4.2. How to access product documentation	10
5. How to use products visualisation	11
References	13
List of acronyms	13



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960

1. Introduction

In this guide, you will find information on how to use the Data Products service displayed on SeaDataNet website, which facilitates the visualisation and download of data products.

2. What are the SeaDataNet data products?

SeaDataNet provides different types of data products from its database:

- harmonised and quality controlled aggregated datasets (ODV collections of all SeaDataNet measurements of temperature and salinity by sea basins)
- derived climatologies (regional gridded field products based on the aggregated datasets)

Both types of data products are created for all the European sea basins, namely: Arctic Ocean, Baltic Sea, Black Sea, Mediterranean Sea, North Atlantic, and North Sea.

The aggregated datasets are provided as ODV¹ data collections, while the climatology gridded fields are provided in NetCDF files.

The data products are published in SeaDataNet web portal <https://www.seadatanet.org>, through the Sextant web catalogue.

SeaDataCloud maintains the data products that are being developed in the framework of the project and the products that were developed within its predecessors – the SeaDataNet and SeaDataNet 2 (SDN and SDN2) projects.

Table 1 – Products currently maintained by SeaDataCloud project

Sea region	Aggregated dataset			Climatology	
	SDN V1.1	SDN V2	SDC V1	SDN V1	SDC V1
Arctic Ocean	X	X	X	X	
Baltic Sea	X	X	X	X	X
Black Sea	X	X	X	X	X
Mediterranean Sea	X	X	X	X	X
North Atlantic Ocean	X	X	X	X	X
North Sea	X	X	X	X	X

3. How are they displayed on SeaDataNet portal?

The SeaDataNet page “Data Products” displays an embedded version of the Sextant web catalogue.

The Sextant web catalogue serves as publishing and discovery service for data products. The Sextant web catalogue is one of the main tools of the Sextant marine and coastal Geographic Data Infrastructure (GDI) (<https://sextant.ifremer.fr/eng/Presentation>). It allows producers and developers to publish metadata of their products and services while end-users can search for metadata according to different criteria (geographical area, theme, and producer). The metadata descriptions follow ISO standards and are INSPIRE compliant.

The Sextant web catalogue maintenance includes:

¹ <http://odv.awi.de/>



- Web interface for the administration of the SeaDataCloud product catalogue,
- Discovery User Interface for SeaDataCloud products,
- OGC Web Map Service for product visualisation.

The products, published in Sextant, and displayed on SeaDataNet portal, have an annexed unified documentation (Product Information Document, PIDoc) describing the methodology applied, informing about the product quality, and acknowledging the data sources and the tools used. The products obtain persistent Digital Object Identifier - DOIs, allowing their citation in scientific publications.

The products are provided with web links to product data files, documentation and visualisation tools, i.e. from the product description in the catalogue, the user can jump to download and visualization services.

4. How to access data products

Access to products on seadatanet.org is straightforward: it can be done directly from the main page of the SeaDataNet portal <https://www.seadatanet.org> by clicking on “Access Products” (Figure 1), or through the menu, by clicking on the “Products” tab (Figure 2).

Note: access from the “Product” tab is done via intermediate pull-down menu containing links to brief description of product types and links to products and documentation (Figure 2).

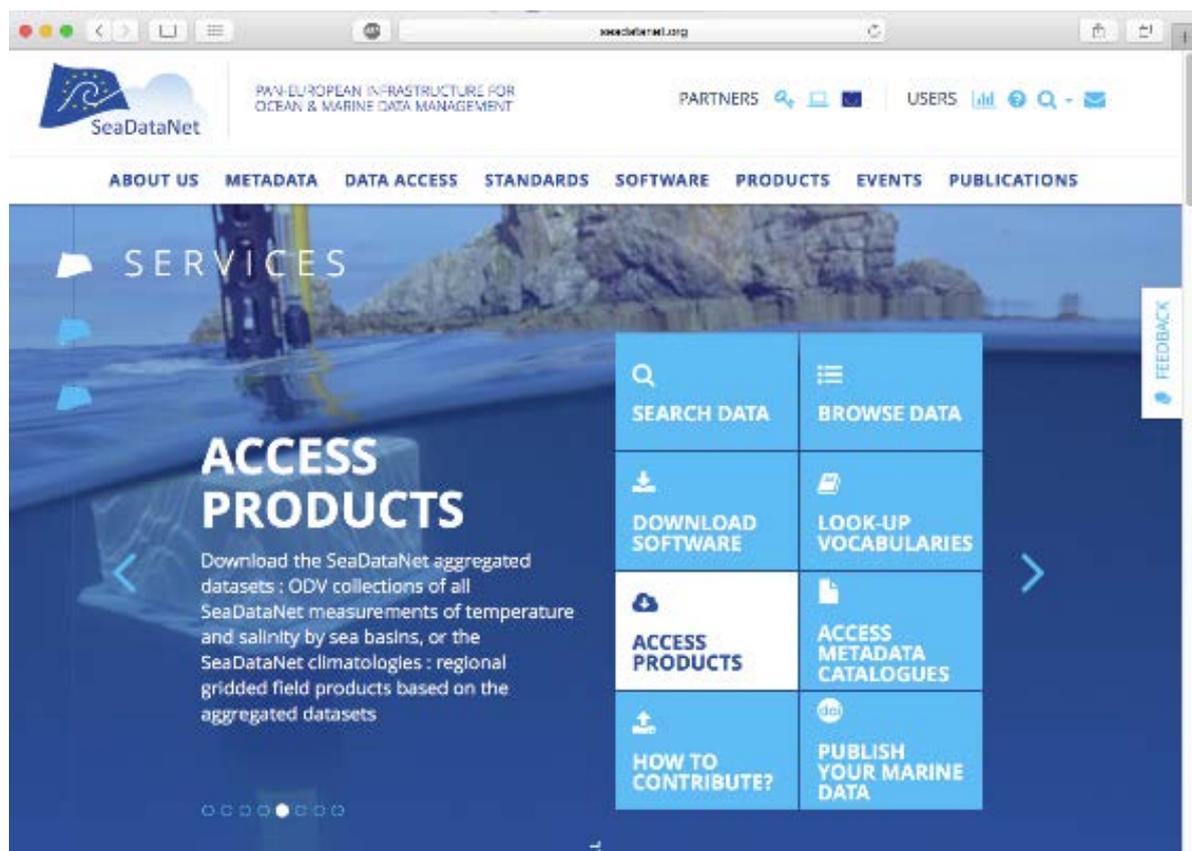


Figure 1 - SeaDataNet portal main page as a gateway to products



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960



Figure 2 – Access to SeaDataNet Data Products through the “Product” tab

Whichever way you choose to access the data products, you will arrive at the webpage with embedded interface to Sextant metadata catalogue, showing all available SeaDataNet products produced during SeaDataNet, SeaDataNet 2 or SeaDataCloud projects (Figure 3).

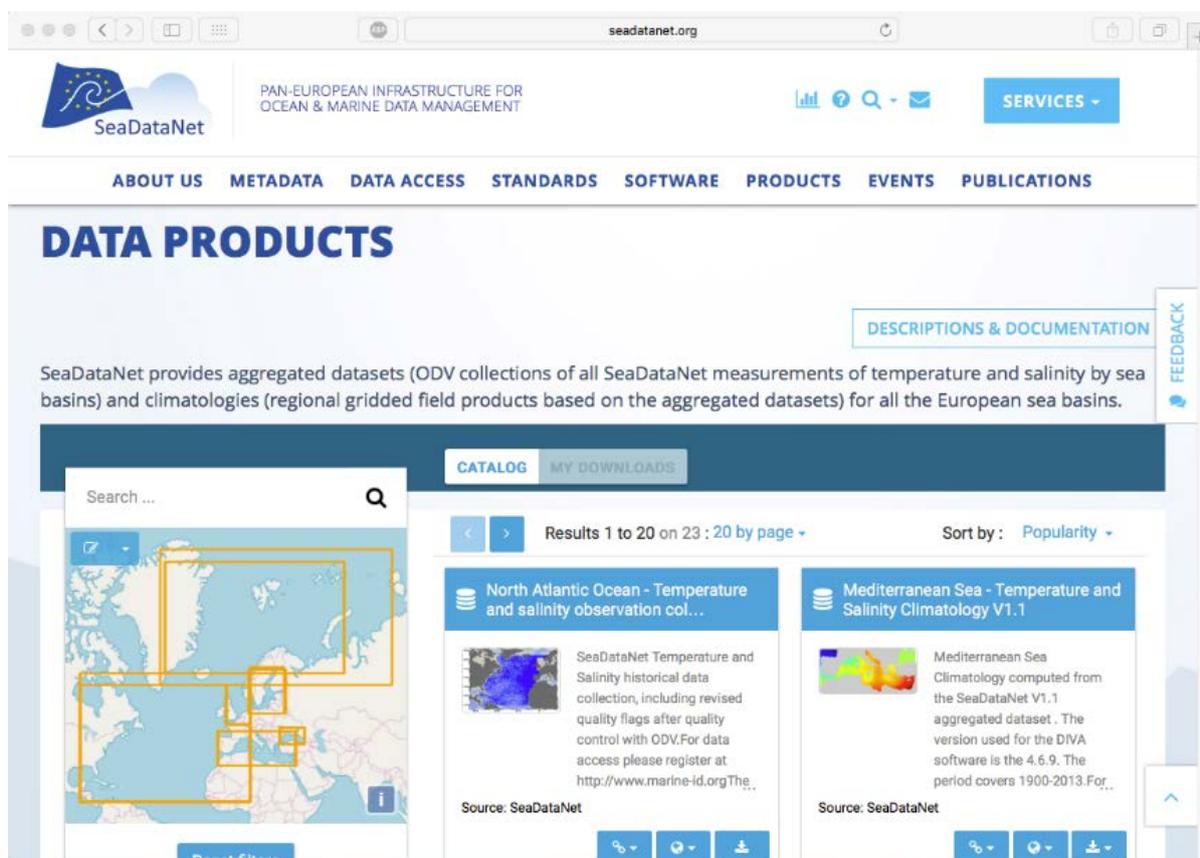


Figure 3 - Data products in Sextant Catalogue in SeaDataNet portal



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960

You can filter the products with the help of the search tool (Figure 4) or by drawing an area on the map to obtain products made with data located inside the drawn box or intersecting with it (Figure 5).

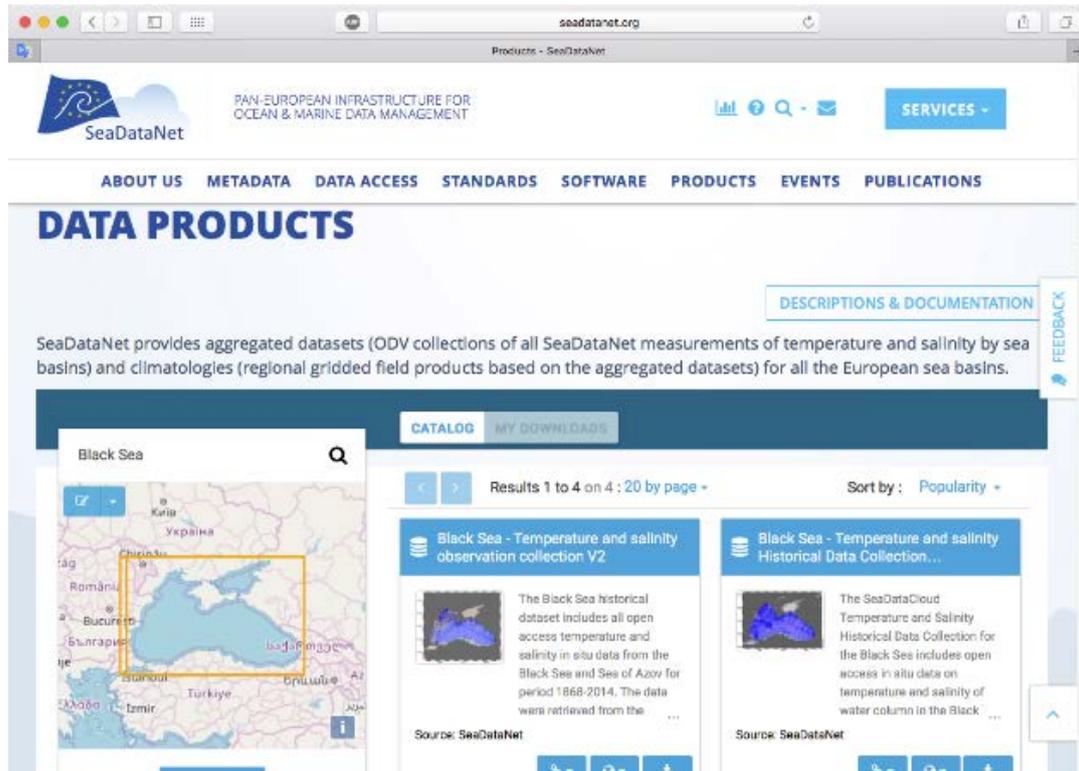


Figure 4 – Filtering the products with Search tool

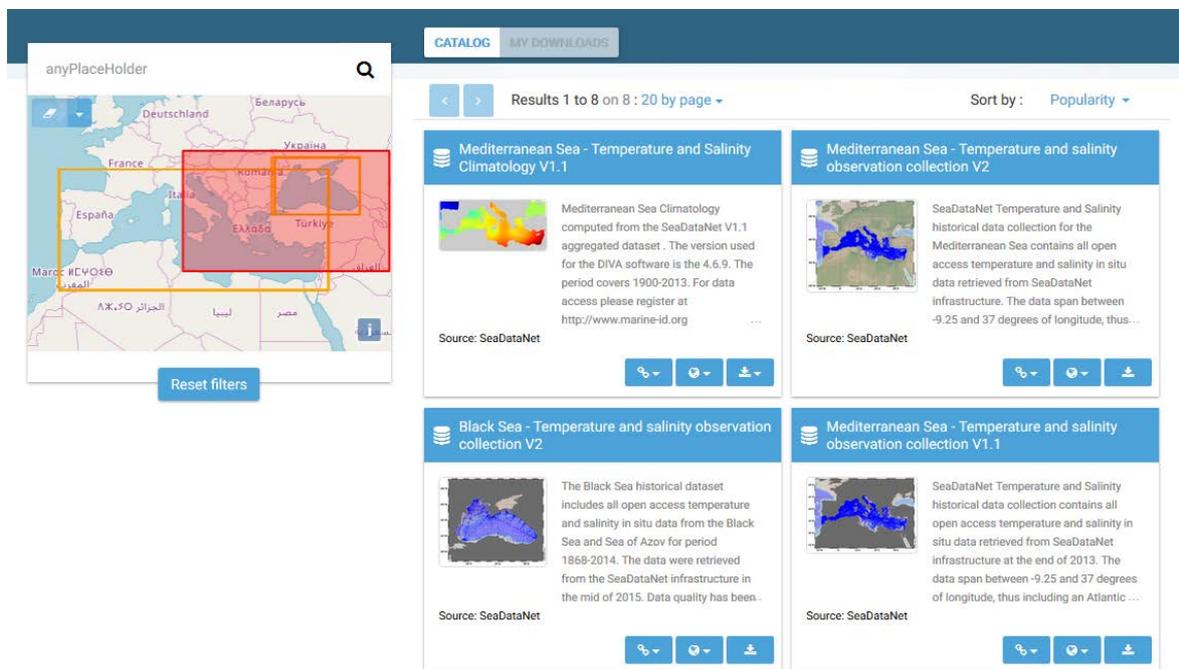


Figure 5 – Filtering the products by drawing a zone (Spatial filter)



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960

4.1. How to access product description (metadata)

Each product is presented in an individual frame (Figure 6) containing brief information about the product -title, overview, and source - and links to its online resources: download services, visualisation tools, and documentation.

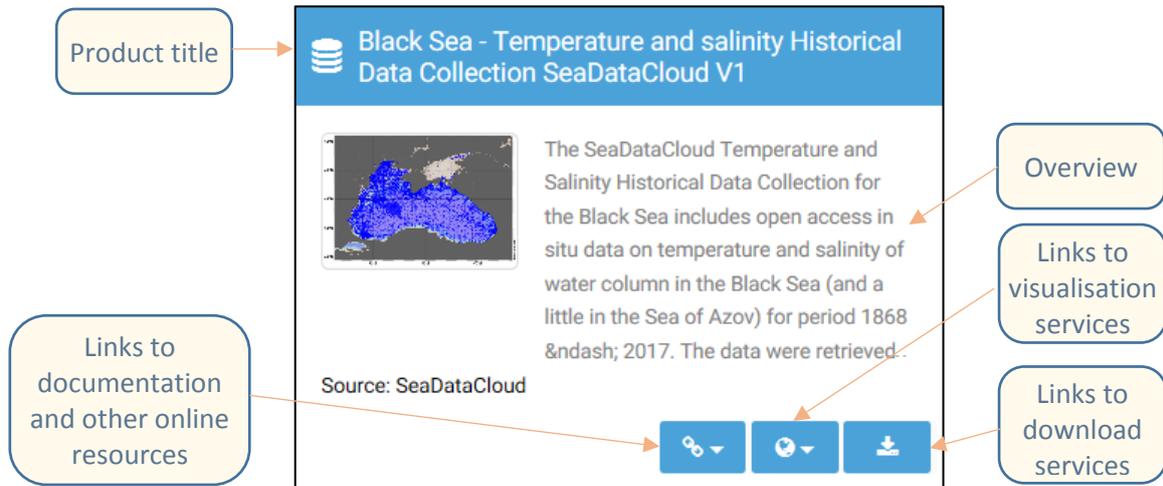


Figure 6 - Product frame in Sextant catalogue

You can begin exploring the product directly from here by using the links described above, or you can click on the product title and get to the detailed product description (metadata) webpage (Figure 7).

Figure 7 - Product description (metadata) webpage

The detailed product metadata include:



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960

- Product identification
 - Title
 - Overview
 - Product short name
 - Metadata language
 - Date of creation
- Related INSPIRE themes and keywords
- Data Access section, containing the links to the online resources
- Contacts
 - Resource providers
 - Custodians
 - Authors
 - Data Originators
- Spatial and temporal references
 - Geographic location
 - Temporal extent
 - Vertical extent
- Conditions of usage
- Quality of the product
- Metadata information

From this page you can also view and/or download the data.

The metadata can be exported as PDF file and also as XML that can be used as a template for other product.



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960

4.2. How to access product documentation

You can access products landing page via the DOI link present on both the frame of each product on the Data Products page and on each product description page.

The DOI webpage is a concise view of the product metadata (Figure 8). This webpage contains also a link to the product PIDoc and “How to cite” reference (Figure 9).

SEXTANT Spatial Data Infrastructure for Marine Environments **ifremer**

Mediterranean Sea - Temperature and salinity Historical Data Collection SeaDataCloud V1

Date(s) 2018-05-31 (Creation)

Author(s) Simona Simoncelli¹, Dick Schaap², Reiner Schlitzer³

Custodian(s) IFREMER / IDM/SISMER

Originator(s) National Oceanography Centre, Southampton⁴, British Oceanographic Data Centre⁵, Plymouth Marine Laboratory⁶, Proudman Oceanographic Laboratory⁷, CNR, Istituto di Scienze Marine (Sezione di Venezia - ex IBM)⁸, OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Division of Oceanography⁹, SAACLANT Undersea Research Centre (SAACLANTCEN)¹⁰, CNR, Institute of Marine Science (ISMAR) (Trieste)¹¹, CNR, Istituto per lo Studio della Dinamica delle Grandi Masse¹², Institute of Marine Science S.S. of Lerici (SP)¹³, ENEA Centro Ricerche Ambiente Marino - La Spezia¹⁴, University of Genova - Laboratory of Marine Geology and Sedimentology, Dpt for the Study of the Territory and Resources¹⁵, CNR, Institute of Marine Science (ISMAR) - Ancona¹⁶, CNR, Institute of Marine Science (ISMAR) - Bologna¹⁷, CNR, Institute of Atmospheric Sciences and Climate (ISAC) (Rome)¹⁸, Hellenic Centre for Marine Research, Institute of Oceanography (HCMR/IO)¹⁹, Università degli Studi di Napoli 'Parthenope' - Istituto di Meteorologia e Oceanografia²⁰, Stazione Zoologica Anton Dohrn of Naples²¹, Marine Biology Laboratory of Trieste²², ICM-CSIC/ Institute of Marine Sciences (ICM-CSIC)²³, Balearic Islands University, Environmental Biology Department, UIB²⁴, IEO/Spanish Oceanographic Institute²⁵, Marine Institute²⁶, IRD /CENTRE DE BRETAGNE²⁷, IFREMER / EEP / LEP-DEEP ENVIRONMENT LABORATORY²⁸, IFREMER / GM-MARINE GEOSCIENCES²⁹, IFREMER / IDM / SISMER - Scientific Information Systems for the SEA³⁰, LABORATORY OF OCEANOGRAPHY OF VILLEFRANCHE (LOV) / OOV³¹, MUSEUM NATIONAL D'HISTOIRE NATURELLE / LABORATOIRE D'OCEANOGRAPHIE PHYSIQUE³², COM - Physical and Biogeochemical Oceanography Laboratory (LUMINY)³³, UNIVERSITY OF PERPIGNAN / CEFREM³⁴, IFREMER / RBE Department / Biogeochemical and Ecotoxicological Research Unit (Nantes)³⁵, Developmental Biology Research Laboratory³⁶, CNRS / Microbiology, Geochemistry and Marine Ecology Laboratory³⁷, Shom³⁸, CEA / Laboratory of climatological and environmental Sciences(LSCE)³⁹, CNRS / Laboratory of studies on Spatial Geophysics and Oceanography (LEGOS)⁴⁰, CEREGE⁴¹, IHPT, Hydrographic Institute⁴², NIOZ Royal Netherlands Institute for Sea Research⁴³, Atlantic Scientific Research Institute for Marine Fishery and Oceanography⁴⁴, P.P.Shirshov Institute of Oceanology, RAS⁴⁵, National Institute of Fisheries Research (INRH)⁴⁶, Institute of Marine Sciences, Middle East Technical University⁴⁷, Institute of Oceanography and Fisheries⁴⁸, Center for marine research - Rudjer Boskovic Institute⁴⁹, International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit⁵⁰, Malta Centre for

Access to data and metadata
Link to the data services and to the full metadataset

Is cited by
Simoncelli Simona, Myroshnychenko Volodymyr, Coatanoan Christine (2018), SeaDataCloud Temperature and Salinity Historical Data Collection for the Mediterranean Sea (Version 1), Product Information Document (PIDoc)

Link to product PIDoc

Figure 8 - Screenshot of the product DOI

How to cite

Simona Simoncelli, Dick Schaap, Reiner Schlitzer (2018). Mediterranean Sea - Temperature and salinity Historical Data Collection SeaDataCloud V1. <https://doi.org/10.12770/2698a37e-c78b-4f78-be0b-ec536c4cb4b3>

Figure 9 - Screenshot of the “How to cite” reference in product DOI

Product PIDoc contains detailed information about the product: the data source, statistics on spatial and temporal data coverage, information about quality procedures, applied methods and tools used, comparison with previous versions, information about validation procedures and so on.

The PIDocs of SeaDataCloud products have their own DOI and can be cited and referred to in publications.



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960

5. How to use products visualisation

Visualisation of data products has two goals:

- provide user with a quick hint on what is the product about,
- provide user with the possibility for a deeper view of the product and even for its online analysis.

Visualisation starts in Sextant catalogue insert, where you can see the geographical extent of the product and thumbnails representing examples of data distribution for aggregated datasets and maps of gridded fields for climatology products.

Further visualisation is performed with the SeaDataCloud viewing services:

- **Oceanotron** – the tool to visualise observations data from the aggregated datasets. It can be used in conjunction with the OceanBrowser.
- **OceanBrowser** – the web-service that allows visualising gridded 4-D fields on-line (<http://modb.oce.ulg.ac.be/mediawiki/index.php/OceanBrowser>).

Both OceanBrowser and Oceanotron are integrated with the Sextant catalogue, i.e. you can discover and select a data product in the Sextant catalogue and then visualise it with viewing services using links from the product metadata.

Hereby we provide the example of visualising climatology field in OceanBrowser.

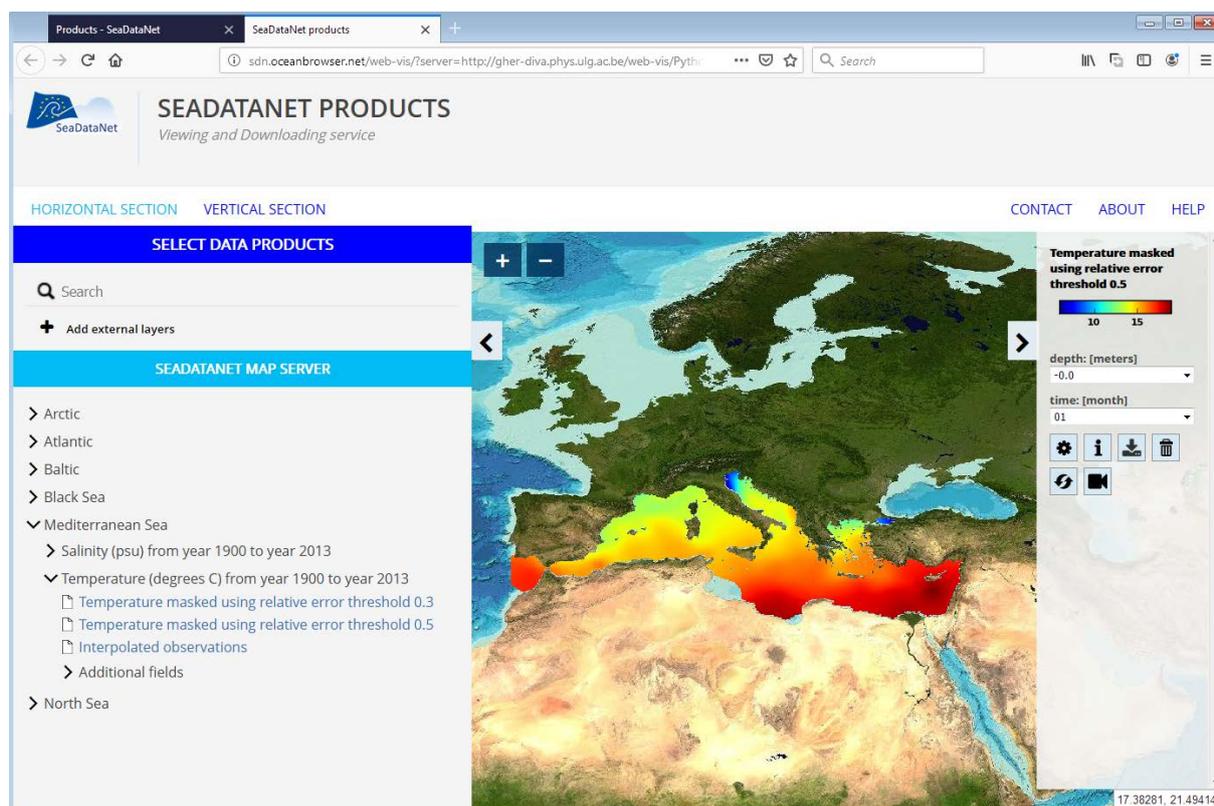


Figure 10 - Screenshot of the temperature field view in OceanBrowser

Figure 10 presents Mediterranean temperature field for January on the sea surface. Using left panel, you can browse available climatologies and add any other field to be displayed. You can switch between map view and vertical section view. With the controls on the right panel, you can customise visual representation, e.g. select depth level and time (month), animate maps and sections in order to

study the evolution in time, download the map image/animation, download the gridded field as a whole or as a subset from OPeNDAP server. You can display locations of the underlying observations and via the online links you can access the full observation metadata in the SeaDataNet CDI service with possibility to order the data. Moreover, from OceanBrowser, via backward link, you can access the product description in Sextant catalogue.

Thus, with the OceanBrowser you can not only visualise climatologies but also perform express analysis and download resulted maps and plots for inclusion in a report.



sdn-userdesk@seadatanet.org – www.seadatanet.org

SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management

Grant Agreement Number: 730960

References

1. SeaDataCloud - Further developing the pan-European infrastructure for marine and ocean data management. Grant Agreement Number: 730960 - HBM4EU - H2020-SC1-2016-2017/ H2020-SC1-2016-RTD. <https://www.hbm4eu.eu/wp-content/uploads/2017/03/HBM4EU-Grant-Agreement.pdf>
2. SeaDataCloud Deliverable D11.1 (2017) Definition of product documentation
3. SeaDataCloud Deliverable D11.11 (2017) Strategy for publishing and dissemination of data products.
4. Simoncelli S., Coatanoan C., Back O., Sagen H., Scory S., Myroshnychenko V., Schaap D., Schlitzer R., Iona S., Fichaut M., 2016. The SeaDataNet data products: regional temperature and salinity historical data collections. EGU 2016 - European Geosciences Union General Assembly 2016. 17-22 April 2016, Austria.
5. Satra Le Bris Catherine, Quimbert Erwann, Treguer Mickael, Louarit Abdelaziz (2013). Sextant: the French Spatial Data Infrastructure for Marine Environment. Bollettino di Geofisica teorica ed applicata, 54(Suppl.), 211-212. Open Access version : <https://archimer.ifremer.fr/doc/00157/26827/>
6. SeaDataCloud Deliverable D11.12 (2019) Outcome of publishing, dissemination and visualisation of data products and product web page design

List of acronyms

Acronym	Definition
DIVA	Data Interpolating Variational Analysis
DOI	Digital Object Identifier
ERDDAP	Data server that provides consistent way to download subsets of scientific datasets in common file formats and make graphs and maps.
GDI	Geographic Data Infrastructure
H2020	Horizon 2020
INSPIRE	Infrastructure for Spatial Information in Europe
IMDIS	International Conference on Marine Data and Information Systems
KPI	Key Performance Indicator
NetCDF	Network Common Data Form
OPeNDAP	Open-source Project for a Network Data Access Protocol
PIDoc	Product Information Document
WP	Work Package

