

Sextant
End-User Manual for
High Resolution
composite DTMs
(HR-cDTMs)
management v1.2

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1. Sextant contribution to EMODnet Bathymetry

The EMODnet Bathymetry portal (<http://www.EMODnet-bathymetry.eu>) provides a range of options for freely browsing and downloading new Digital Terrain Models (DTM) for a large part of the European seas.

The portal includes metadata discovery services by adopting the EU SeaDataNet (SDN) CDI standard, that gives clear information about the background survey data sets used for the DTMs, their access restrictions, originators and distributors.

By adopting a similar approach, **Sextant**, a Web GIS portal and data infrastructure developed by Ifremer for the management and the distribution of spatial data, gives information about background products (resulting of previous processing, mainly DTMs) used as complementary contribution to the DTM distributed on the EMODnet bathymetry portal.

Sextant uses :

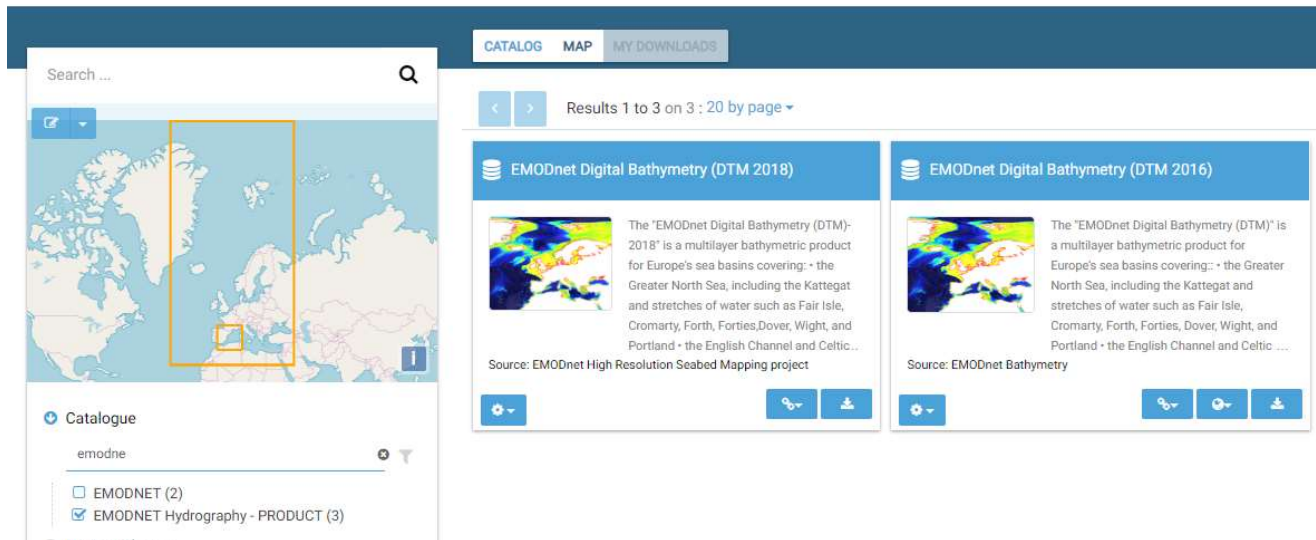
- ✎ Geonetwork to set-up the Catalogue Service for the Web and the Open Geospatial Consortium (OGC) and ISO TC211 standards.
- ✎ the Seadatanet Marine Profile for ISO19139 together with the European Directory of Marine Organisations (EDMO), the European Directory of Marine Environmental Research Projects (EDMERP) and the SeaDataNet Common Vocabularies NVS2.0 (<http://www.seadatanet.org/>) for consistent descriptions of products (DTMs) with the EU SeaDataNet Common Data Index for survey data.

Sextant API has not been integrated in EMODnet website for the PRODUCT catalogue because access to the HR-DTMs (both metadata and download service) is given from the EMODnet viewer.

2. Sextant catalogue functionalities

2.1. Access

All HR-cDTMs descriptions provided by partners can be viewed on Sextant portal: https://sextant.ifremer.fr/eng/Data/Catalogue#/search?fast=index&content_type=json&from=1&to=20&sortBy=changeDate&groupPublished=EMODNET_HYDROGRAPHY_PRODUCT

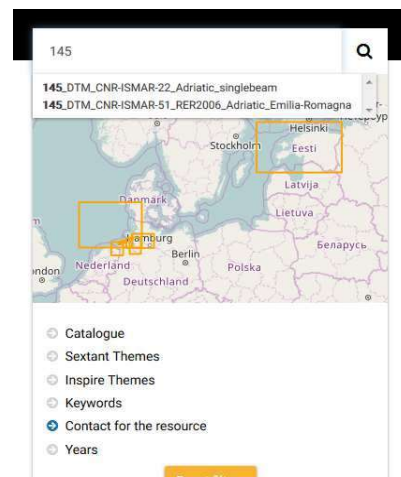


2.2. Filter criterias

2.2.1 Free Search

A free text search is carried out on all text fields of the metadata sets. The search tool is based on auto completion and suggests a list of words existing in the metadata sets as far as you enter 3 characters.

First, write your text and then click on the magnifying glass to display the result.

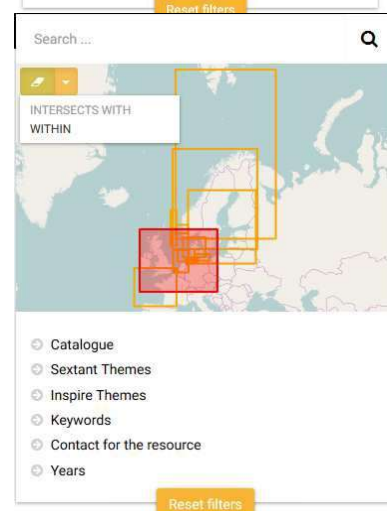


2.2.2 Geographic area

A search by geographical extent is carried out by choosing either the products strictly inside the selected area or the products intersecting with it.

First, click on the pen and draw your geographical area. Then, click on the arrow beside and select the type of spatial search "intersects with" or "within" mode.

You can switch to one or the other type of spatial

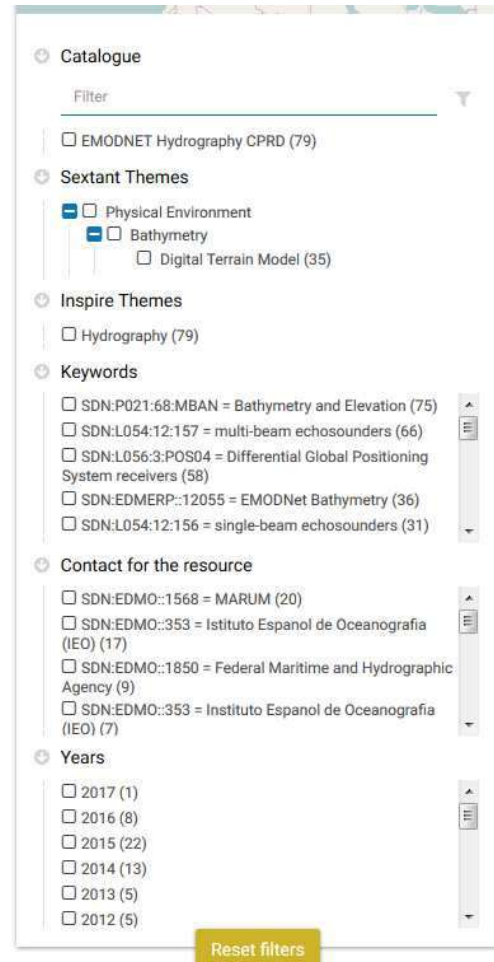


area as you like.

2.2.3 Predefined content

Each selected filter automatically updates the results display and also updates the other available filters.

- Catalogue
- Sextant Themes
- Inspire Themes
- Keywords
- Contact for the resource
- Years



Note: there is a “Reset Filters” button allowing to reset all the criteria and to start a new selection

2.3. Metadata display

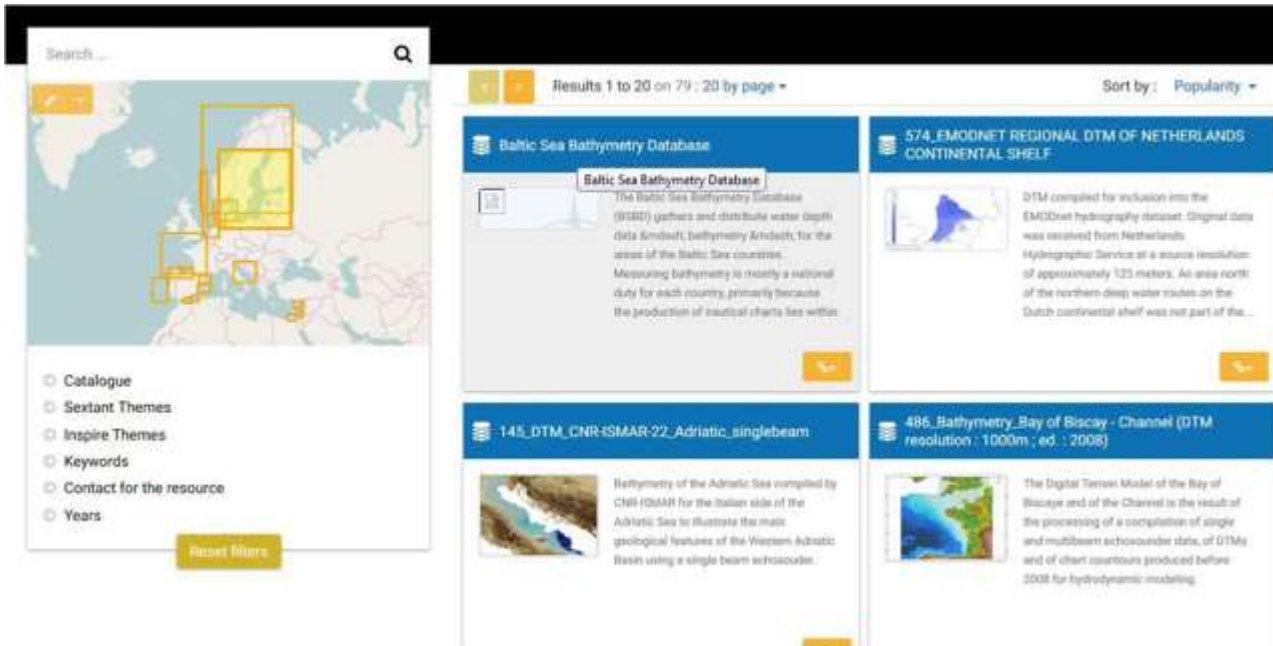
2.3.1 Results and sorting

The number of results after applying your filters appears on the top left of the display. By default, the first 20 results are displayed but you can choose to display 50 or 100 entries per page.

It is possible to organize the results by “Title” (alphabetic order), “Popularity” (number of consultation of the entry) and “Modified” (last updated entries appear first).

The list of metadata sets is displayed with an optional thumbnail in the right window while their bounding boxes are displayed on the map of the left window.

To locate a data set move the mouse to the metadata set entry. The corresponding bounding box is highlighted on the map:



2.3.2 View

To display metadata, click on the title of the metadata set. Metadata are displayed according to the EMODnet bathymetry template (see chapter “Managing spatial data using Sextant” for metadata definitions and conventions).

Note the file identifier at the top of the metadata information which is generated automatically from metadata edited by the partner using the SeaDataNet syntax : “SDN_CPRD_EDMO-Id-of-holding-data-center_local-product-Id”.

This identifier contains the EDMO_Id of the holding data center and the local_ID of the product used as source data for the EMODnet DTM. These Ids are recorded in the CDI layer of the EMODnet DTM. This allow to generate the URL for viewing the corresponding metadataset.

3. Guidelines for editing a new HR-cDTM entry

Before creating new metadata, read the EMODnet HRSM specifications documents which contain instructions for filling some of the metadata : "Methodology and guidelines for processing original input data into DTMs" and "Completing metadata elements for the generation of the Quality Index for the EMODnet DTM"

3.1. Registration

To register, each partner needs an external account. If you don't have any, then contact the Sextant team: sextant@ifremer.fr.

3.2. Vocabulary

Common vocabulary lists and organization identification

Lists implemented in the EMODnet bathymetry template use the SeaDataNet Common Vocabularies (<http://www.seadatanet.org/>).

Organization are identified using the European Directory of Marine Organizations (EDMO) maintained by Seadatanet. Organization name and identifier can be queried on the SDN portal at:

<http://www.seadatanet.org/Metadata/EDMO>

File identifier

The file identifier at the top of the metadata information of the form is generated automatically using a combination of metadata edited by the partner. The syntax (derived from SeaDataNet practices) is:

SDN_CPRD_EDMO-Id_short-name-of-dataset

Note that the short name of dataset is the identifier at the holding data centre and must be unique. This is a component of the file identifier of the PRODUCT catalogue. The unicity of the entry is guaranteed by an automatic combination with the EDMO id.

It is requested to rename the DTM file attached to your metadata entry as **EDMO-Id_short-name-of-dataset.dtm**

The EDMO_Id of the holding data center and the short name of dataset of the product used as source data for the EMODnet DTM are also recorded in the "Identifier" layer of the EMODnet DTM (see EMODnet hydrography specifications). This allows viewing services of the EMODnet hydrography portal and of the 3D viewer of the Ifremer Globe software to generate the URL to access the metadata set of the PRODUCT catalogue.

Data set name

This is the title of the data set that will appear in the catalog

Abstract

Partners are strongly encouraged to complete carefully the ABSTRACT / SHORT SUMMARY with a valuable description of the HR-cDTM. Please note it in the "description of processed data sources"

field the associated CDIs.

Other fields

Mandatory fields have been defined not only in function of the ISO and Inspire standards and Directive but also in function of the requirement of the projects.

For example, someone may consider useless to force providers to fill Min and Max depth field but it is a requirement to allow an automatic scaling of the colours when viewing DTM. Other fields are not mandatory because it depends on the dataset but they are all strongly recommended to allow data processing by the end users.

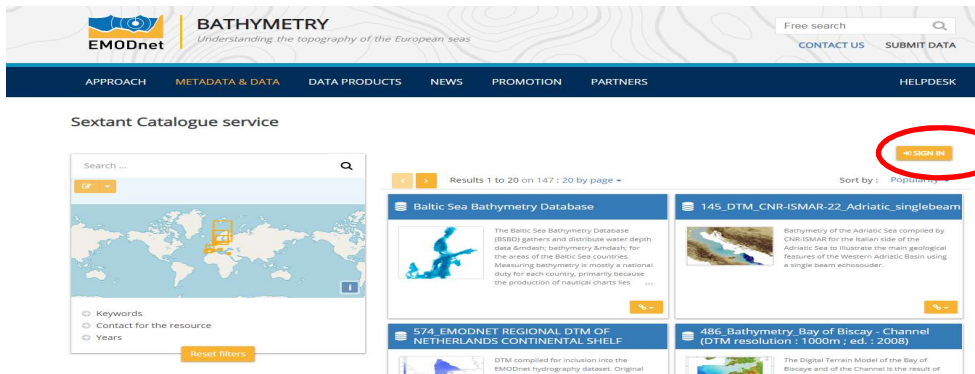
3.3. Log in instructions

Log in function is available through EMODnet API or from Sextant catalogue

3.3.1 In EMODnet API

Access the API: <http://www.emodnet-bathymetry.eu/metadata-amp-data/composite-dtms-catalogue-service#/search?from=1&to=20>

And sign in with your sextant credentials:



The “Administration” functionality appears. See chapter 3.4 for next steps.

3.3.2 In sextant catalogue

Access the portal: <https://sextant.ifremer.fr/eng/Data/Catalogue#/search?from=1&to=20>

And sign in with your sextant credentials:



The “Administration” functionality appears:

3.4. Detailed instructions

To create a new metadata set, a dedicated metadata template has been designed for the purpose of EMODnet projects. To use it, follow the instructions below.

Select "New metadata" in the menu “Administration”. A window appears:

- As Template, select "Template for EMODnet Bathymetry metadata"
- As "In", select the appropriate catalogue "EMODnet hydrography - **PRODUCT**" catalogue
- And then "Create".



SEXTANT disconnects you automatically if you are inactive. Save regularly what you have edited (every 15 mns).

Most of the fields are user friendly and don't need specific explanation. In the next steps, attention will be paid to specific/text fields. Explanations are given by thematic tabs.

3.4.1. What

It is **strongly recommended** to start filling the “Dataset name” and “Short name of dataset” to avoid Sextant to save your entry under a default name. Use the “Save metadata” button and continue. **The short data set name is the identifier at the holding data centre and must be unique for this reason. Also, this is a component of the file identifier of the CPRD catalogue.**

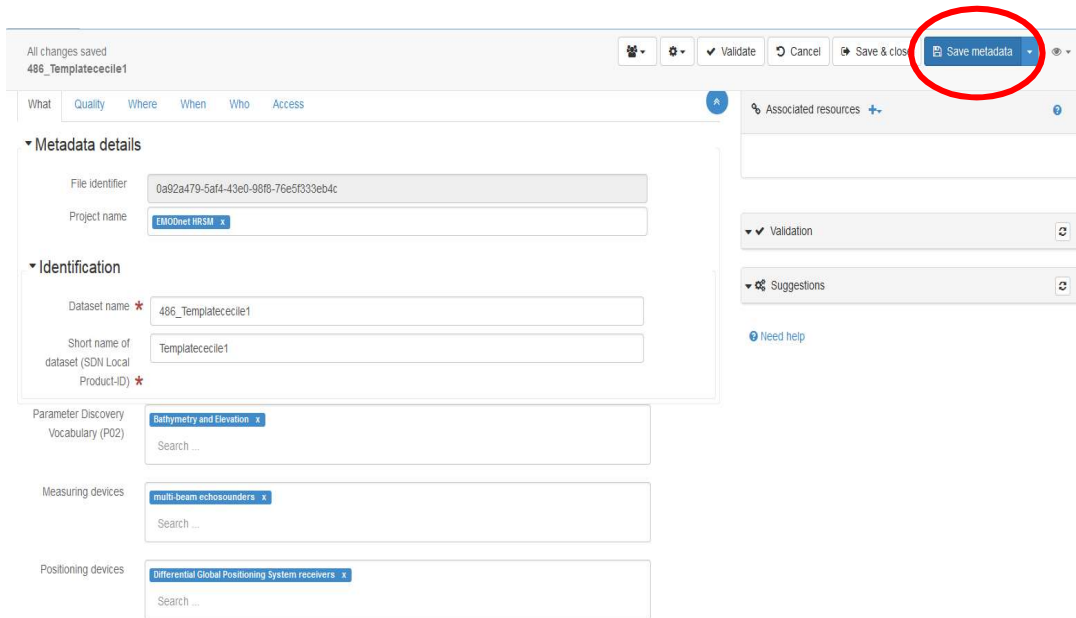
File identifier: is generated automatically using a combination of metadata edited by the partner. The syntax is: “SDN_CPRD_EDMO-Id_local-product-Id”

Project name: by default set as EMODnet HRSM2. This field corresponds to the EDMERP SDN list.

Dataset name: title of the data set that will appear when viewing the catalog.

Short name of dataset (or Local Product-ID): Local identifier of the bathymetric grid (according to local rules of Data center) – this local identifier must be no longer than 50 characters, this constraints comes from the length of the string used to keep track of the source of data in the DTM NetCDF format). **This is a component of the file identifier.**

Parameter Discovery/Measure devices/Positioning devices: metadata are given by default but you can also delete them and/or add others by clicking on “Search” (auto completion search).



The screenshot shows the metadata editor interface. At the top, there is a toolbar with buttons for 'Validate', 'Cancel', 'Save & close', and 'Save metadata' (which is circled in red). Below the toolbar, there are tabs for 'What', 'Quality', 'Where', 'When', 'Who', and 'Access'. The main content area is divided into several sections:

- Metadata details:** Includes 'File identifier' (0a92a479-5af4-43e0-98f8-76e5f333eb4c) and 'Project name' (EMODnet HRSM).
- Identification:** Includes 'Dataset name' (486_Templatececil1), 'Short name of dataset (SDN Local Product-ID)' (Templatececil1), and 'Parameter Discovery Vocabulary (P02)' (Bathymetry and Elevation).
- Measuring devices:** Includes 'multi-beam echosounders'.
- Positioning devices:** Includes 'Differential Global Positioning System receivers'.

Each section has a search field and a dropdown menu. There are also 'Associated resources', 'Validation', and 'Suggestions' sections on the right side.

▼ Geometry

Spatial representation type

Number of columns *

Number of lines *

Pixel origin position *

Pixel size *

Maximum scale of use *

▼ Abstract

Dataset description abstract *

Description of processed data sources

Description of data processing

Geometry: fill in the information, and use lists or “Recommended” values when proposed.

Pixel size: Select “Arc minute” entry in the Recommended values or write “Arc minute” in the text field close to the value field.

To fill the value, please refer to decimal value in the following table:

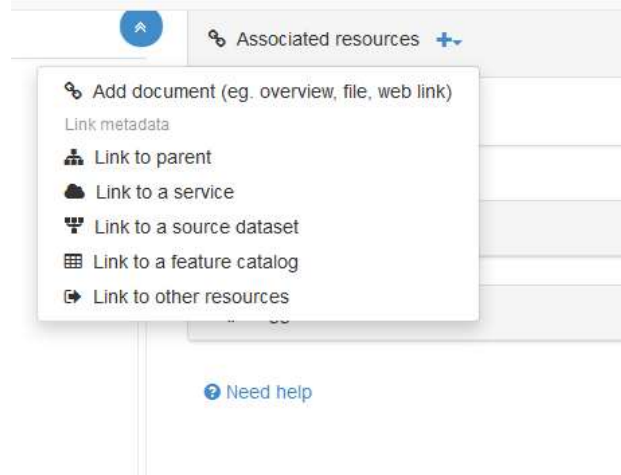
Grid size	Arc minute
1/512	0,00195313
1/256	0,00390625
1/128	0,0078125
1/64	0,015625
1/32	0,03125
1/16	0,0625

Dataset description abstract: write down a summary about the dataset (cruise/purpose/context description, specific characteristics, valuable details...)

Description of processed data sources: indicate the data sources and **write down the corresponding CDIs.**

Description of data processing: write “EMODnet processing methodology using Globe software”

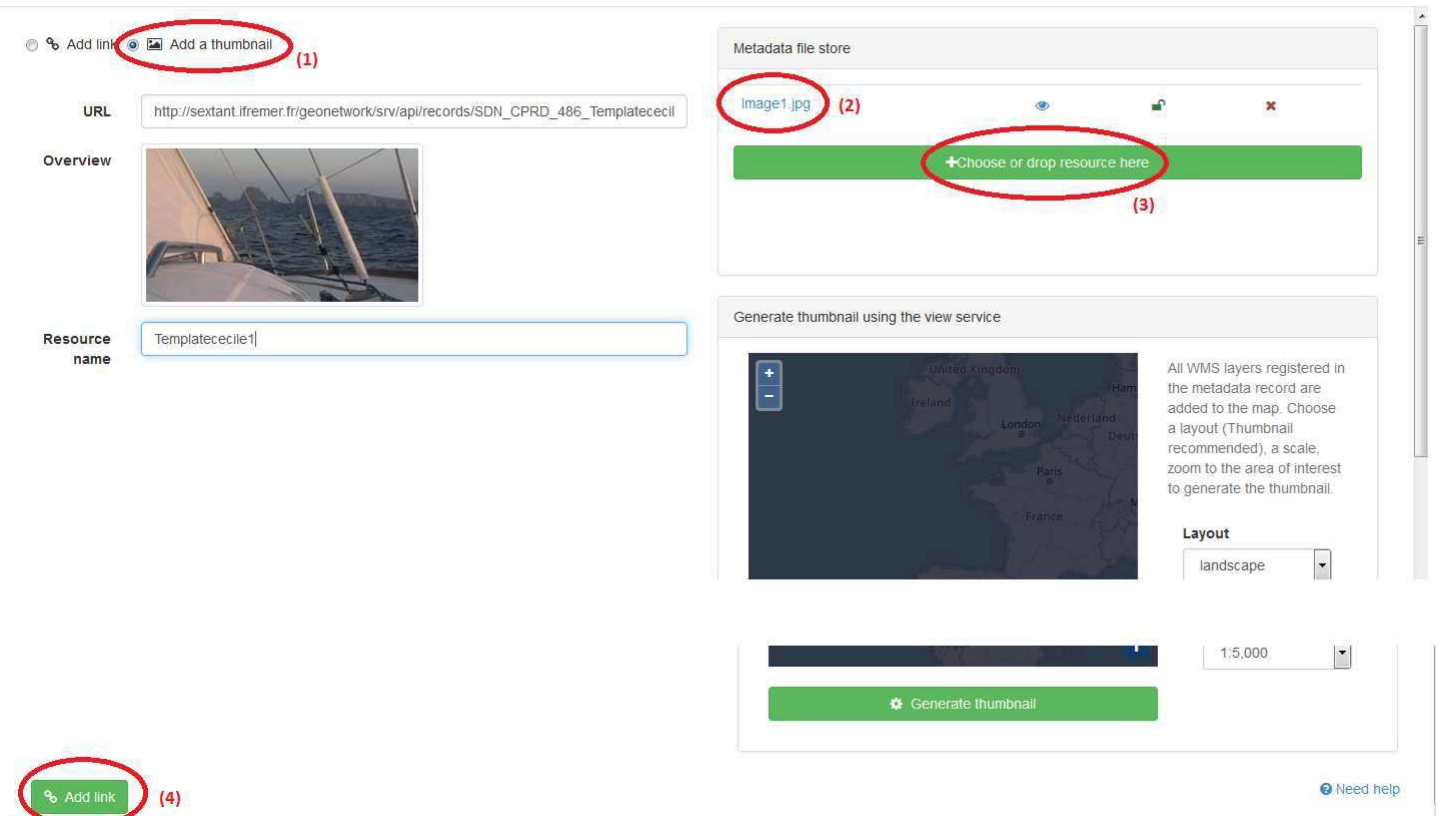
3.4.2. Associated resources (tab “What” upper right corner) – thumbnail and online resources



- It is recommended to attach a thumbnail to illustrate your HR-cDTM in the catalogue. Click on the add button of the “**Associated resources**” field and select “**Link an online document**”.

Click on “Add a thumbnail” (1), select the thumbnail with the “Choose or drop resource here” tool (2) and click on your thumbnail in the “metadata file store” to update the URL (3). Click at the very bottom of the page to “add the link” (4).

Link an online resource to the current metadata



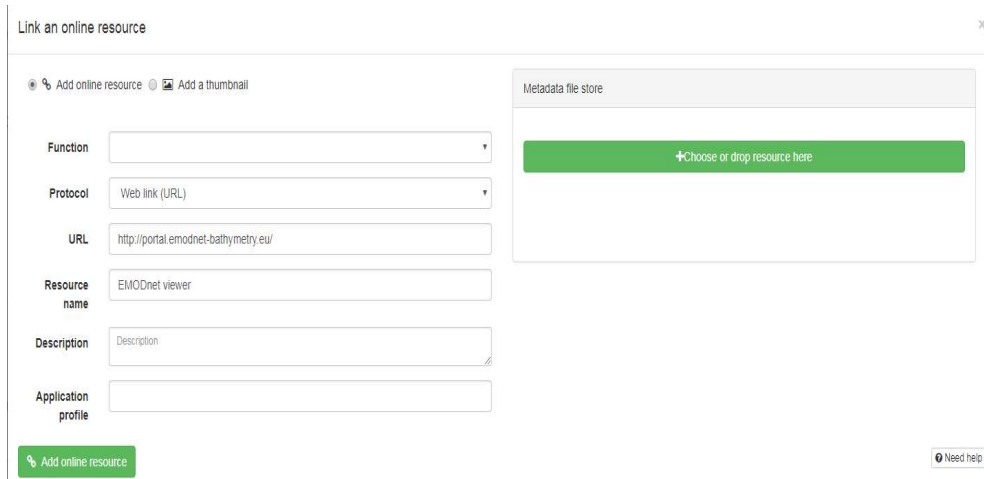
- Click on the add button of the “**Associated resources**” field and select “**Link an online document**” and enter the followings:

Protocol: Web link (URL)

URL: <http://portal.emodnet-bathymetry.eu/>

Resource name: EMDOnet viewer

And click on “Add online resource”.



3.4.3 Quality

What Quality Where When Who Access

Accuracy / Calibration

Hor. accuracy

Measure description: Depends on the source of data : of the order of 0.05 minute to 1 minute

Value: []

Evaluation method description: Rough estimate from accuracies of maps and of positioning systems of the surveys

Vert. accuracy

Measure description: Usually better than the GEBCO version available at the time of the creation of the DTM

Evaluation method description: Visual comparison together with information on the source data

Shoal bias

Shoal bias:

Details: Offset of 2 m

Suitability

Suitability, Expected type of users / uses and limitations: Not for navigation

Horizontal accuracy: fill if appropriate

Vertical accuracy: fill if appropriate

Shoal bias: fill if appropriate

Suitability: precise the type of use that can be made of the datasets (example: not suitable for navigation)

Quality Indicators

Horizontal Quality Indicator: 2 - Between 50 m and 20 m

Vertical Quality Indicator: 2 - MBES low frequency (lower than 100kHz) (similar than 1+2%)

Purpose Quality Indicator:

- 0 - Unknown
- 1 - Transit and/or opportunity
- 2 - Bathymetric/morphologic survey
- 3 - Hydrographic survey or compatible with hydrographic standards

Quality Indicators: please refer to the following document that describes the Quality Index proposed in the framework of the HRSM project: "Completing metadata elements for the generation of the Quality Index for the EMODnet DTM".

Click on "search" to make appear the appropriate list.

3.4.4. Where

What Quality Where When Who Access

▼ Geographic bounding box

Continents ▾ Choose a region Draw region

Continents
Countries
Dependency
SeaVoX salt and fresh water body gazetteer


of Biscay

53.59945790020

-15.8203125

1.7578125

40.78941230883



The **Geographic Bounding Box** can be created in 3 different ways:

- By drawing your own area: click on “Draw region”, select the area and the coordinates will automatically be updated
- By entering the coordinates (decimal degrees) manually in the appropriate fields
- By selecting an area in the international SeaVox list

Min. depth in meters
(>0 below Sea Level) *

Max. depth in meters
(>0 below Sea Level) *

Projection

Version or custom projection details

Ref. system

Projection





- WGS 84
- ETRS89-GRS80 ETRS89
- ETRS89-LAEA ETRS89 / LAEA Europe
- WGS 84 / World Mercator
- WGS 84 / World Mercator (custom)

Fill in the information, and use lists values when proposed.

Projection: select WGS84 in « Add coordinate system » according to EMODnet methodology

Vertical Datum: LAT by default but you can “search” another entry (L11 SDN list).

3.4.5. When

Creation date	<input type="text" value="mm/dd/yyyy"/>	
Revision date	<input type="text" value="mm/dd/yyyy"/>	
Temporal extent*	Begin	
	<input type="text" value="mm/dd/yyyy"/>	
	End	
	<input type="text" value="mm/dd/yyyy"/>	
Measurement frequency	<input type="text" value="Value"/>	<input type="text" value="Unit"/>
	<input type="text" value="Recommended values"/>	

Fill in the date information manually or using the calendar by clicking on the arrow. As explained in the "Completing metadata elements for the generation of the Quality Index for the EMODnet DTM" document, the `QI_age` will be calculated from the age of the survey. The data providers have to make sure this section is properly filled, with particular care on the Start date value.

Creation date is the date of production of the HR-cDTM

Temporal extent covers the period of datasets used in the HR-cDTM.

Measurement frequency can be used in case of periodic acquisition of datasets.

3.4.6. Who

What	Quality	Where	When	Who	Access
Originator				<input type="text" value="siser"/>	<input type="text"/>
Data Holding Center				IFREMER / IDM/SISMER	<input type="text"/>
Collating Centre = Metadata author				IFREMER / ISI-INGENIERIE DES SYSTEMES D'INFORMATION	<input type="text"/>

The **Originator**, **Data Holding Center** and **Collating Center** contacts are filtered on the EDMO_id list. **The data holding center contact is a component of the file identifier.**

Enter the name of your institute or department and corresponding entries will appear (then click on the corresponding “+” button). If not, click on the binocular, and write in “search for a contact” field (1) or use the proposed filters on the left of the screen - check number of pages (2). Once you have found the correct entry, click on the “+” button at the bottom left corner (3).

Once you selected the correct contact, Organisation name, Email and EDMO id are automatically filled in.



The screenshot shows a search directory interface. At the top, there is a search bar with the text 'ifremer' entered, marked with a red circle and the number '1'. Below the search bar, there are several filters on the left side, including 'Contact for the resource' and 'Groups'. The main area displays a list of 68 records, with the entry 'IFREMER / IDM/SISMER' highlighted in blue. At the bottom of the list, there is a pagination control showing '<< 21 - 30 on 68 >>', marked with a red circle and the number '2'. A red circle and the number '3' are placed over a '+' button at the bottom left of the interface.

3.4.7. Access

Distributor

Data formats* **Format**

Version

Transfer size (in MB) *

Click on “Add distributor” to enter the **Distributor** contact details (also filtered on EDMO id). And fill in the other information using “Recommended values” when possible.

Version and **Transfer size** are optional.

▼ Intellectual property

Use limitation

Access constraints

Use constraints

Other legal constraints

Enter the following entries using the proposed lists

Use limitation: for example “Not for navigation”

Access constraints: set as “**unrestricted**”

Use constraints: set as “copyright”

Other constraints: write “**EMODnet Bathymetry consortium (2020), EMODnet Digital High Resolution DTM**”

3.5 Save your metadata

Your sextant template is now complete, you can “**save and close**” the template.

Your sextant entry can be viewed on the sextant “EMODnet Hydrography – PRODUCT” catalogue:

https://sextant.ifremer.fr/eng/Data/Catalogue#/search?fast=index&_content_type=json&from=1&to=20&sortBy=changeDate&_groupPublished=EMODNET_HYDROGRAPHY_PRODUCT.

(Note that you can also access directly your description with this URL: <https://sextant.ifremer.fr/eng/Data/Catalogue#/metadata/FileIdentifier>)

3.6 Submit your metadata for validation

A workflow status has been implemented in the PRODUCT catalogue to prevent any inconsistency with EMODnet rules when updating or creating a metadata. Each creation or update will have to be validated by a sextant administrator.

To submit your metadata:

- 1- click on the Wheel tool>Update record status



- 2- select the "Submitted" status.

The sextant catalogue administrator will receive a notification by email and will validate and publish your sextant entry. **These short steps have to be done for each new entry and each updated entry.**

4. Guidelines for updating an existing HR-cDTM entry

If you need to update any of your description, select your sextant entry on the sextant “EMODnet Hydrography – PRODUCT” catalogue:

https://sextant.ifremer.fr/eng/Data/Catalogue#/search?fast=index&_content_type=json&from=1&to=20&sortBy=changeDate&_groupPublished=EMODNET_HYDROGRAPHY_PRODUCT

and click on the wheel tool on the upper right hand corner and select edit.



Once updated, do not forget to submit your entry through the sextant workflow – see chapter 3.6.



5. Sextant helpdesk

If any problem when using Sextant, you can contact the Sextant team sextant@ifremer.fr.

Your question will be routed toward the appropriate person.