

IMPLEMENTATION OF THE SHARED ENVIRONMENTAL INFORMATION SYSTEM  
(SEIS) PRINCIPLES AND PRACTICES IN THE ENP SOUTH REGION – SEIS  
SUPPORT MECHANISM (ENI SEIS II SOUTH)

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## Spatial Data Infrastructure and Reporting system User guideline

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European Environment Agency



# Index

<b>INTRODUCTION</b>	<b>1</b>
<b>SPATIAL DATA INFRASTRUCTURE GUIDE</b>	<b>1</b>
<b>InfoMapNode common user</b>	<b>2</b>
Navigate Documents	3
Navigate Layers	4
Access Layers Metadata and Details	4
CREATE A MAP USING LAYER	5
Navigate Maps	7
Map metadata and details	8
<b>InfoMapNode authenticated user</b>	<b>9</b>
Permissions and Rights	9
Upload Documents	10
Upload Layers	11
Metadata management	13
Style a Layers and Create Rules	14
Modify a Layer's data	17
Create and remove data in a layer	18
Remove and replace layers, maps and document	18
<b>REPORTING DATA FLOW SYSTEM GUIDE</b>	<b>20</b>
<b>Obtaining permission to deliver in IDC</b>	<b>20</b>
<b>Data submission process</b>	<b>20</b>
Completing your delivery	23
Procedure to collect data template	23

# IMPLEMENTATION OF THE SHARED ENVIRONMENTAL INFORMATION SYSTEM (SEIS) PRINCIPLES AND PRACTICES IN THE ENP SOUTH REGION – SEIS SUPPORT MECHANISM (ENI SEIS II SOUTH)

## INTRODUCTION

The scope of this document is to show to the user how work the Spatial Data Infrastructure (SDI) and the data flow reporting system of InfoMap System that is set-up to ENI SEIS South II project.

Here in the first section will be described the general functionality of **InfoMapNode** SDI in order to understand how a user can navigate the data and metadata, but also how an accredited user can upload and modify data and metadata in order to support the specific data flow or data collection campaign.

The second section is more dedicated to show how a reporter user can upload its data flow package in the reporting System of INFO/RAC. The reporting system represents the framework where the Mediterranean countries can follow specific data reporting protocol in order to supply Barcelona Convention and some connected project.

## SPATIAL DATA INFRASTRUCTURE GUIDE

The InfoMapNode represents the entry point to InfoMAP Spatial Data and Metadata catalogue, and as better described in the SDI Architecture document is the front-end part to access and use all the SDI components. InfoMapNode is the open source geoportal for sharing a different level of authentication the geospatial data and maps and to expose all the metadata that are relevant in the Mediterranean Area, with a specific focus on Barcelona Convention.

In this section you can find a description of the different part of InfoMapNode platform, how you can navigate or use or download data and metadata, how an authenticated user can upload and modify its data and service, create metadata and create specific geographic layer or composite maps.

The main functionality of InfoMapNode application are:

- Upload, manage and share geospatial a no-spatial data;
- Create and modify metadata;
- Create and share interactive maps;
- Collaborate and interact with other users or group of users.



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## INFOMAPNODE COMMON USER

The InfoMapNode homepage (figure 1) is reached by a common browser at <http://infomapnode.info-rac.org> and since from this page a user can easily access to the main part of contents: **Data (Layers and Documents)**, **Maps**, **Involved** and **Search**. If are available, the user can select from the top right side or bottom part of page the language from the list.

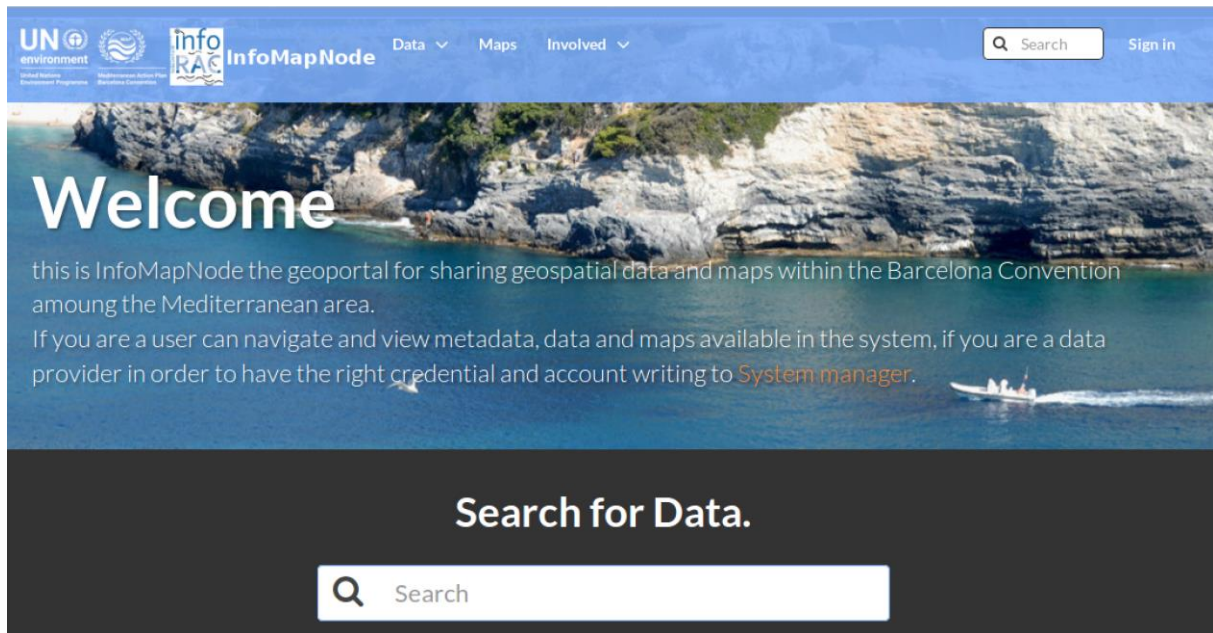


Figure 1. The InfoMapNode home-page, top part.

There are also specific relevant cluster categories of data in order to facilitate the users to navigate specific topic data and metadata (figure 2):

- Biodiversity
- Boundary
- Ocean
- Pollutant
- Water

From the home page you can explore data with their metadata:

- Data:
  - Documents
  - Layers
- Maps

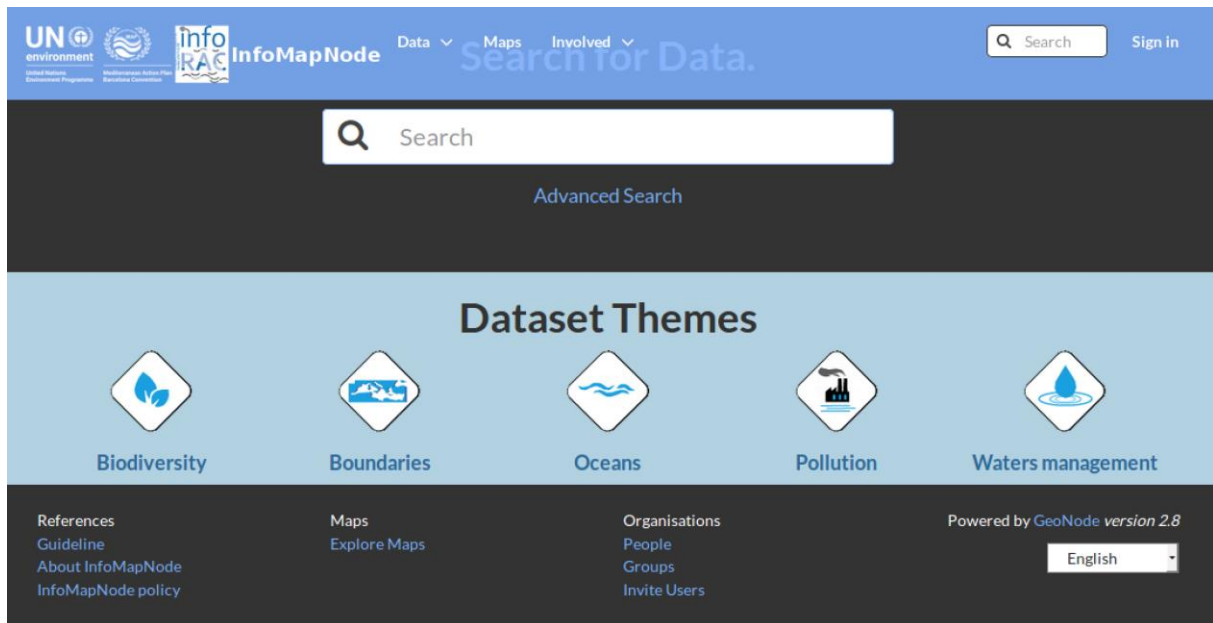


Figure 2. the lower part of home-page, where cluster data classes are shown.

## NAVIGATE DOCUMENTS

InfoMapNode allows users to navigate documents in different format, these are related to descriptive documents (i.e. paper and guideline), technical documents, website and applications or tables that can link to existing layers or maps in order to connect additional relevant information. The permanent link **Documents** (under Data section) takes you to the explore **Documents interface** (figure 3) where all existing documents in the system can be found.

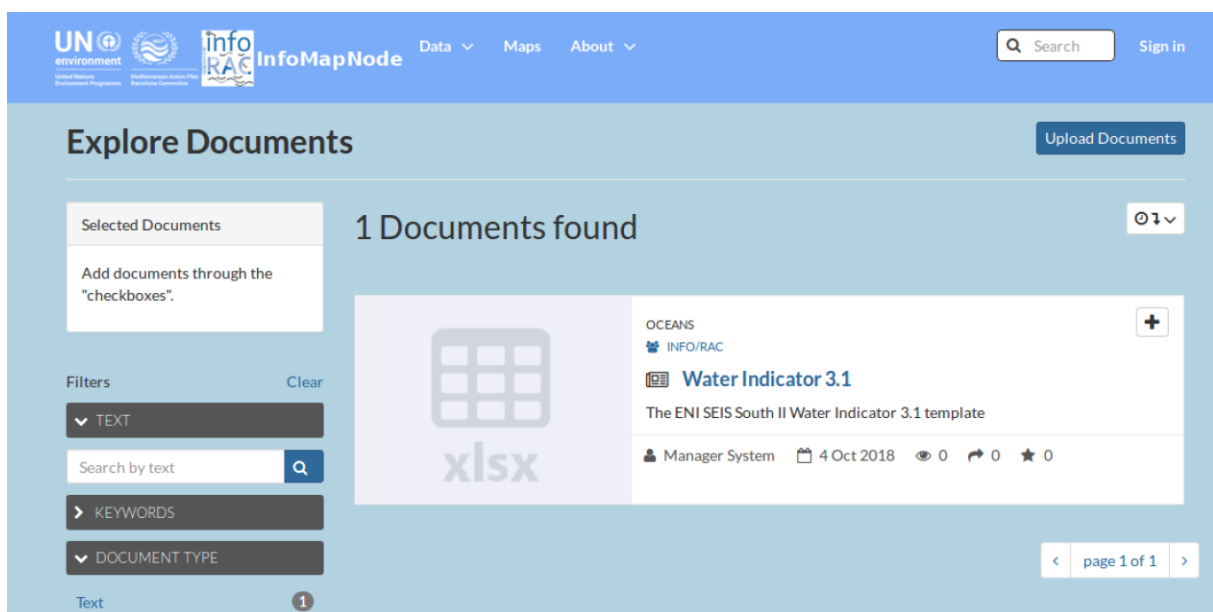


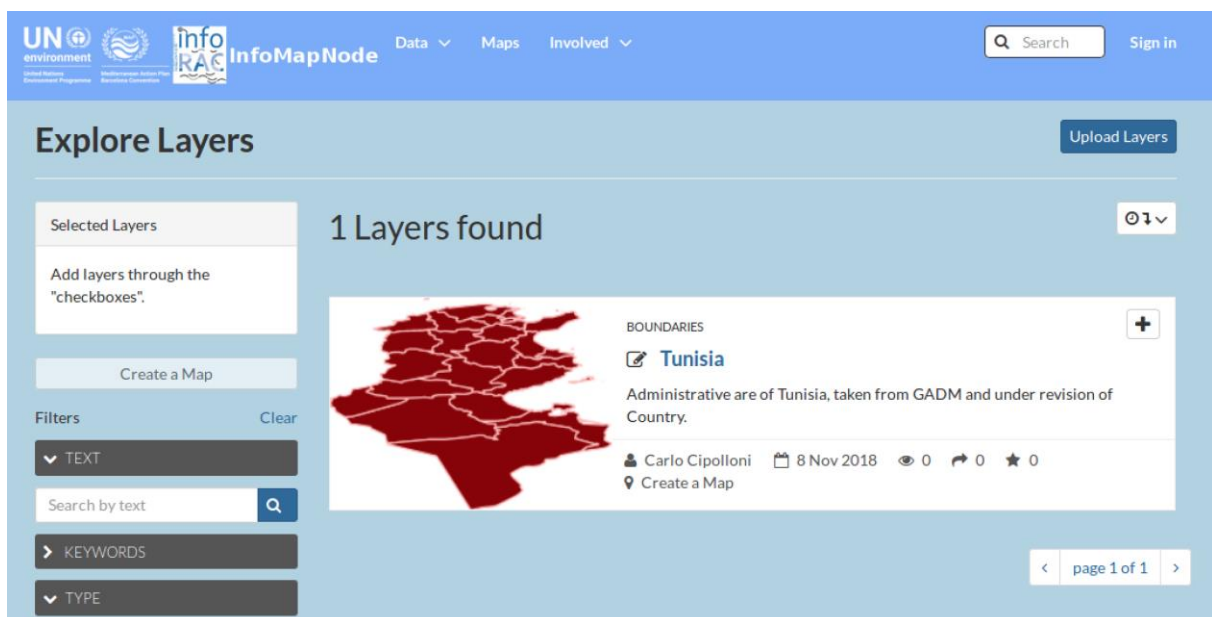
Figure 3. The documents section exploration, an example on how look like the research using a ENI SEIS H2020 indicators template.

## NAVIGATE LAYERS

To find the layers stored in InfoMapNode you just need to click on **Layers link** in the Data menu in the top bar or on the bottom part of web page, but also you can use the most relevant cluster categories:

Specific layers can be founded also by typing in the **Search-field** (e.g. a Boundaries) at the top of the homepage.

Following either of these methods to access layers, a list of results will appear (Figure 4) sorted according to when the data was shared (Most recent and Less recent) as well as alphabetically (A-Z and Z-A) or by order of importance (Most Popular and Relevance). The results can be filter according to Categories, Date and Keywords by using the left-side panel.



The screenshot shows the 'Explore Layers' interface on the InfoMapNode website. At the top, there are logos for UN environment, InfoMapNode, and navigation links for Data, Maps, and Involved. A search bar and 'Sign in' button are also present. The main heading is 'Explore Layers' with an 'Upload Layers' button. On the left, there is a 'Selected Layers' section and a 'Filters' panel with dropdown menus for TEXT, KEYWORDS, and TYPE. The main content area displays '1 Layers found' with a map of Tunisia showing administrative boundaries. The layer details include the title 'BOUNDARIES Tunisia', a description 'Administrative are of Tunisia, taken from GADM and under revision of Country.', the creator 'Carlo Cipolloni', the date '8 Nov 2018', and statistics for views (0), shares (0), and stars (0). A 'Create a Map' button is also visible.

*Figure 4. Explore layer page, on the left side there are the parameters to filter the request.*

## ACCESS LAYERS METADATA AND DETAILS

After that a user have performed the searching on layer, if it clicks on the title of the layer can visualize the layer and access more detailed information. The interface (Figure 5) is very similar to the map interface, including the navigation toolbar and information about the owner.



*Figure 5. layer or document metadata detail information.*

There is an additional tab in the tab section below the map for navigating more detail:

- **More Info** to access to the details of the metadata;
- **Attributes** to browse all the associated attributes with the layer.

In the same data view, on the right side of page, you have also the visible **Legend** after a **Style** has been associated with the layer under the Maps using this Layer.

It is possible to quickly navigate to the maps where the layer is being applied and by using **“Create a map”** the current layer will automatically appear in a map for continuous map creation. It is possible to extract the data of a vector layer in different file formats (KML, GeoJson, Excel, CSV or Zipped Shapefile) as well as the data of a raster layer (GeoTIFF, ArcGrid, KML, PNG or JPEG), by using the Orange button **“Download Layer”** at the top Center. This is useful in case you would like to send data or need to use data offline with other GIS software such as QGIS or ArcGIS.

## CREATE A MAP USING LAYER

The platform allows you to easily create a map using layers already saved into the platform. You can choose between two simple procedures to create a map this way:

- Find the layer you would like to use for the map either through a **“Search”** or by clicking on **“Layers”**, and then use the blue button **“Create a map”** in (Figure 6) the layer containing (i.e. ). Your chosen layer will automatically appear in a **new map** and as an overlay in the side panel.



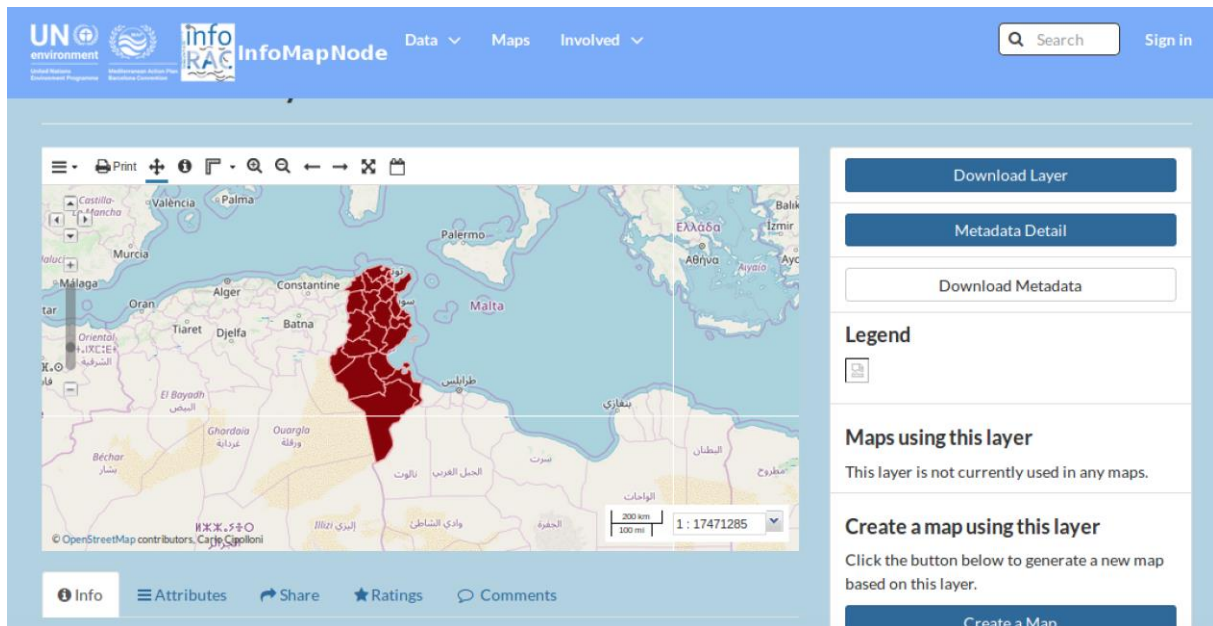


Figure 6. Map created from the layer list, also in this case some extra information area available in bottom part of map.

- You can also use the permanent link “**Maps**” and click on the blue button “**Create a New Map**”. No layer will appear automatically, instead you have to choose layer by clicking the button “**Add Layers -> Add layers**” (Figure 7). Ensure that GeoServer WMS link is selected in the drop-down box at the top of the panel, then select your layers and click “**Add Layers**” at the bottom (Figure 7). When you have added all your selected layers click “**Done**” and your layer will appear in the map and as an overlay in the side panel.

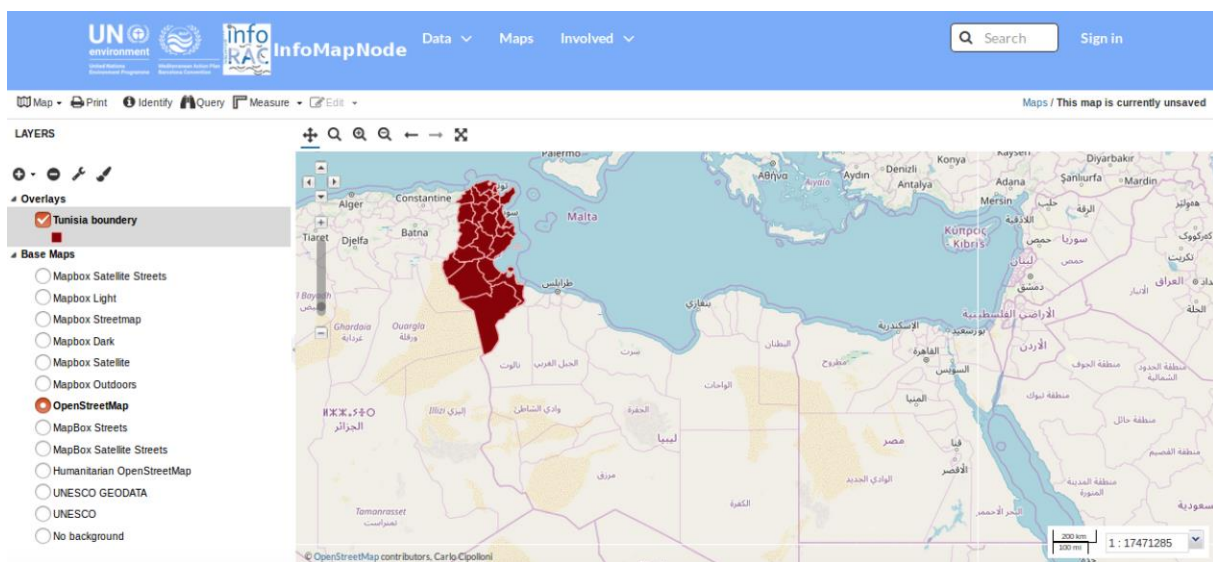


Figure 7. Map compositor – the user can decide basemap and manipulate map also add other layer available in the system or as web map service (WMS) on the intranet.

- Another layer displaying the location of warehouses has been added using the **Add Layer** function. As you can see in the top-right corner this map is not saved, and unless you **sign in** with a user account you will not be able to save it on InfoMapNode SDI. However, you can save your map as a pdf file on your computer by using the **Print** button in the toolbar for map editing.
- By clicking “**Print**”, a pop-up window will appear where you can set the zoom level, the paper-size and the resolution of the map. You can define a title for your map and provide additional



information regarding the data included in the map. By clicking the **Print** button your map will be saved in your file system to be printed at your convenience (Figure 9).

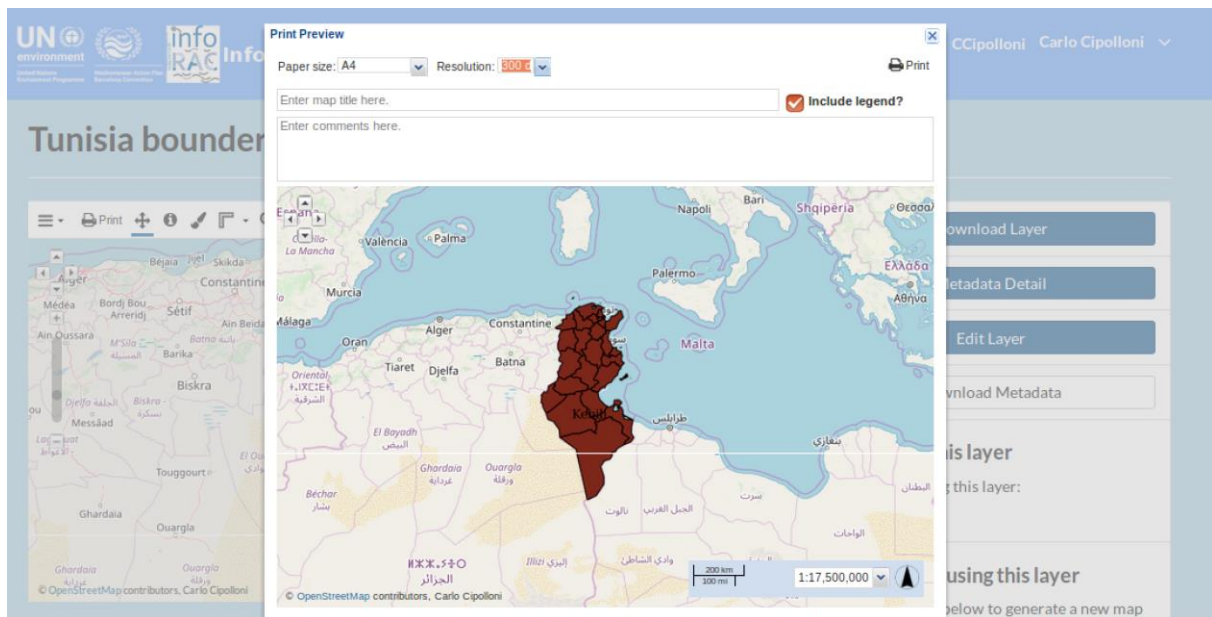


Figure 8. The print pop-up window for export in pdf the maps.

## NAVIGATE MAPS

To access maps stored in InfoMapNode you just need to click on “**Maps link**” in the top bar or on the bottom part of home page.

Specific maps can be founded also by typing in the “**Search-field**” (e.g. Biodiversity Map) at the top of the homepage.

Following either of these methods to access maps, a list of results will appear (Figure 10) sorted according to when the data was shared (Most recent and Less recent) as well as alphabetically (A-Z and Z-A) or by order of importance (Most Popular and Relevance). The results can be filter according to Categories, Date and Keywords by using the left-side panel.

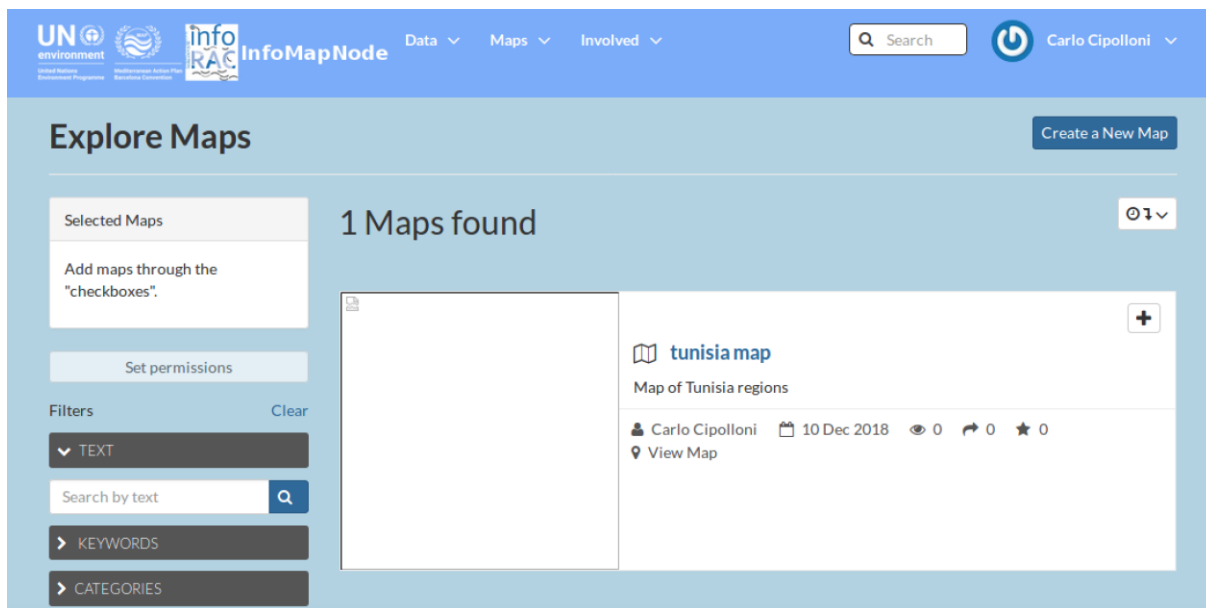


Figure 9. Explore Maps page, when a map has published it will be available in the searching section.

## MAP METADATA AND DETAILS

In the same way of layers, searching in the Maps section, it can have a list of maps available and clicking on the title of these resource it can visualize and access all detailed information about any map, enter the Map View interface (Figure 11).

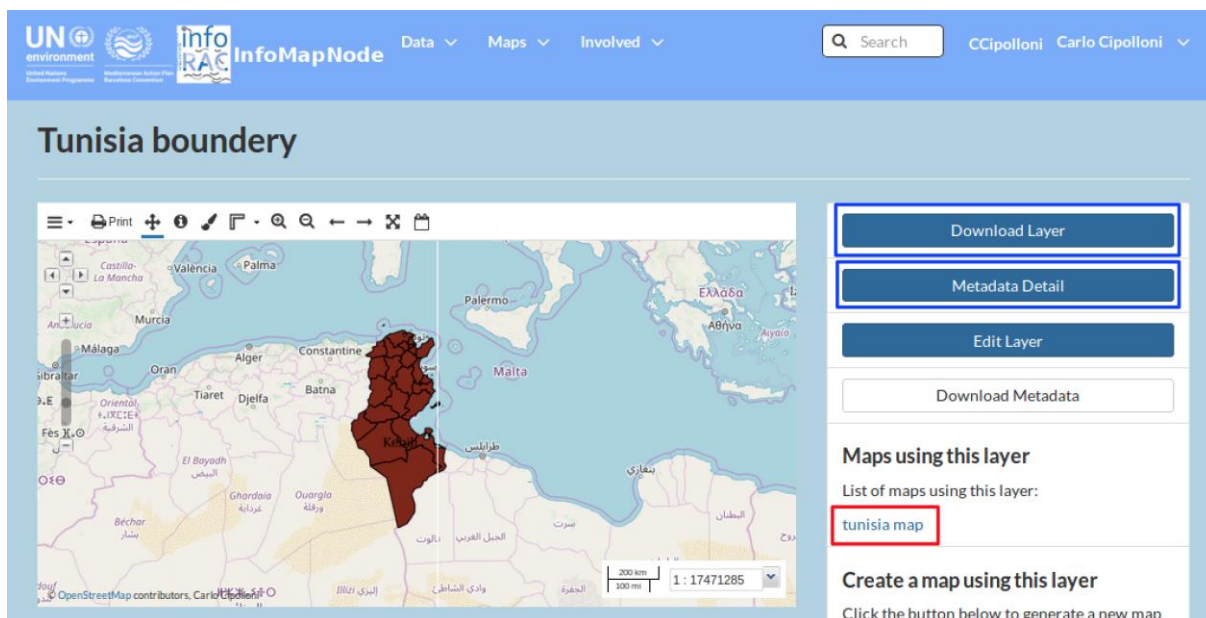


Figure 10. Maps overview, on the right side in blue square are highlighted the download layer (if you have the right) and metadata detail buttons, in order to explore more information.

It is then possible to pan the map by holding down the mouse button and moving the cursor, or by using the arrows and zoom tools on the left side of the map.

In the **Map View interface**, there is also a tab section below the map where you can **view** more Info about the map such as all the metadata, **share** the map through social media, **use** the Ratings and **leave** Comments.

On the right side of Map Layers, there is a list of the data layers used for composing the map (Figure 10 - red square).

At the top right of the page, use “**Download Map**” to extract all the data layers used for composing the map and save it on your computer if they are available (figure 12 – blu square).

By clicking “**View Map**” in the Map View interface a larger version of the map will appear in the Map Composer interface, as well as tools for changing the map and a list of layers used for that specific map.

## INFOMAPNODE AUTHENTICATED USER

If you are a user with specific credential provided by the INFO/RAC Manager you have the right to login in the platform in order to view restricted data and metadata, upload documents, layer and publish specific maps. In this part of the manual we can provide instruction how works the platform for this type of user.

First to provide information on how an authenticated user can contribute is needed to introduce the permission and right system of the platform.

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## PERMISSIONS AND RIGHTS

**Permissions** determine who can **view, download, edit** and **manage layers, maps** and **documents**. It is important to understand the differences between these settings since neglecting specifying permissions can result in giving unintentional access to layers/maps. The following settings are available:

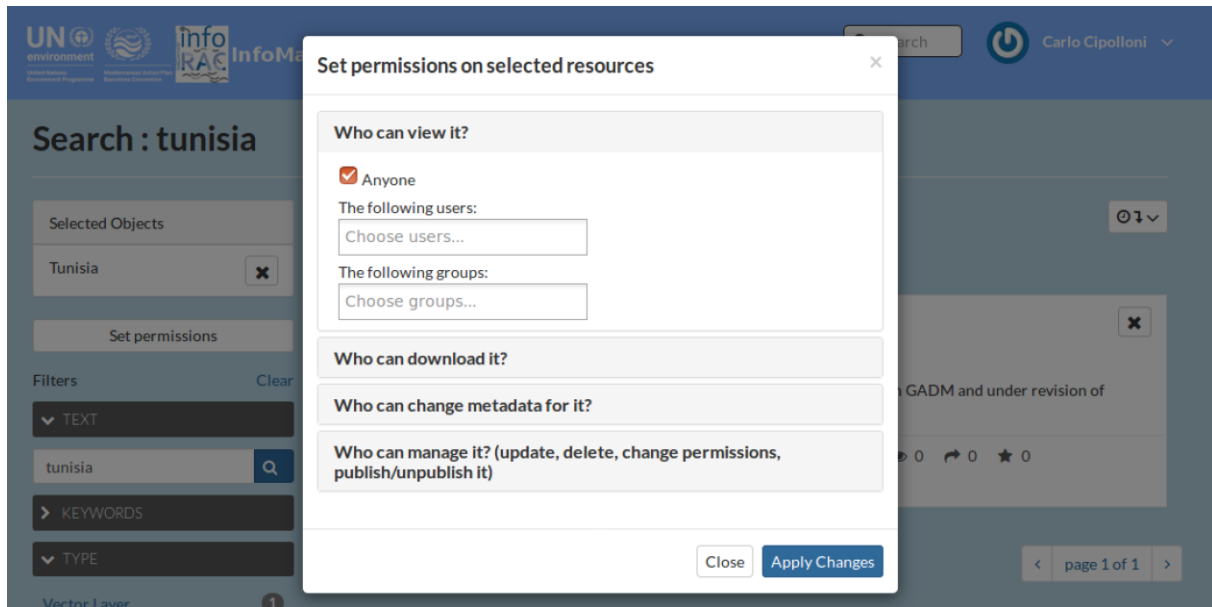
1. Who can view and download this Layer/Map/Data?

- **Anyone:** allows anyone to access the data, including unregistered users.
- **Any registered users:** only users with an linfoMAP account can access data.
- **Only users who can edit:** limits access to users specified in below setting. Who can edit this data?
- **Any registered users:** allows any user to edit, replace or remove your data.
- **Only the following users:** limits editing rights to the users you specify (in addition to the owner of the layer/map).

2. Who can manage and edit this Layer/Map/Data?

- Limits managing permissions to specified users. They become the only users able to set the permissions of the layer/map. The user uploading a layer is by default the owner of that layer with full managing permissions.

To ensure correct permissions are selected, adjust them before uploading new layers, creating maps or uploading documents (Figure 14). You can change these settings later in the Layer View, Map View and Document View interfaces, by using the red Edit Layer/Edit Map/Edit Document button and Edit (Map) Permissions.



*Figure 11. permission window, the authenticated user after upload a document, layer or produce a map can decide the permission granularity for the different level (view, download, metadata edit and data edit).*

## UPLOAD DOCUMENTS

In the platform, after login in the system, using your credential as reporter, focal point or project partners it is possible to upload your Document related to particular Layer or any general document to the system (Figure 15):

In the Upload Document interface the user can upload the document in this way:

- Choose File and select the files from your file system. The files will appear right to Choose File.
- After that on click Upload Button you can upload the File.

Link Documents To A Layer Or Map: during the upload time user can link the Document to related Layer or map published in the platform (Figure 15 – red highlight).

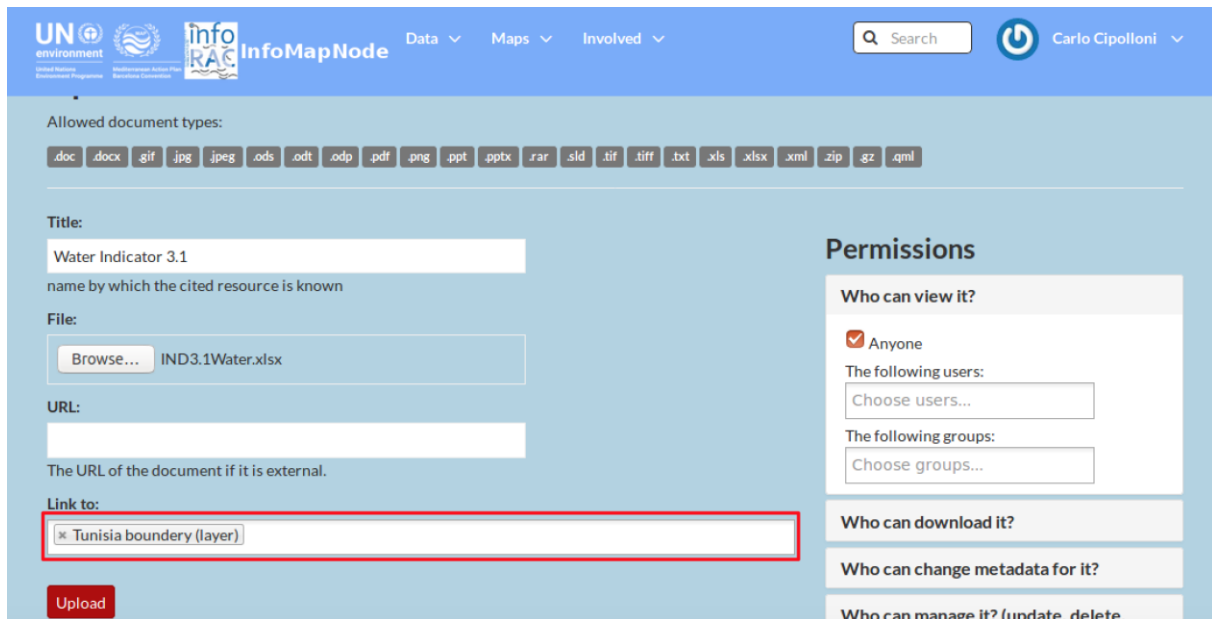


Figure 12. Document upload page, during this phase the user can link some data service, as well as define the permissions.

## UPLOAD LAYERS

In InfoMapNode authentication side, it is possible also to upload your **Layer** to the system, allowing you to create **raster** and **vector** layers that can be shared or used to create maps.

First click on “**Layer**” button on the Data Menu, then by clicking Blue color “**Upload Layers**” button, after that user can upload file in two way:

- drag-and-drop your files onto the gray area;
- Browse and select the files from your file system.

The files will appear below the drag-and-drop area, and the system will automatically specify the file format as Shape files or GeoTIFF (Figure 13). In case a required file is missing (for shape files) you will be requested to add the file before you can proceed uploading.

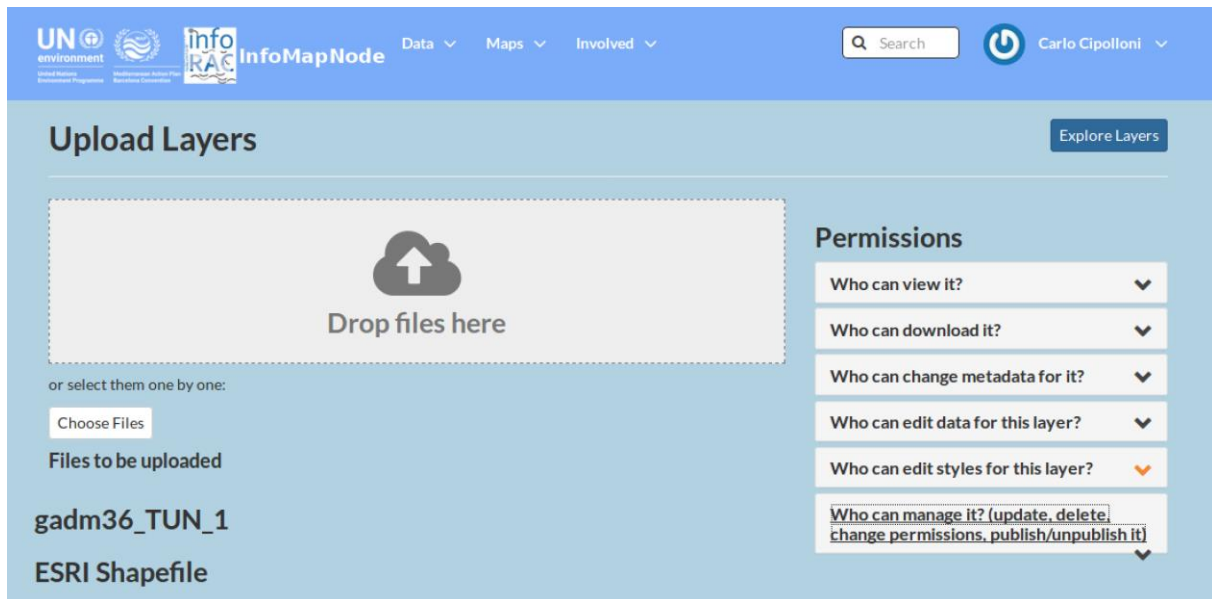


Figure 13. Upload layer page to upload a spatial dataset, during this phase the user can define the permissions.

On the Explore Layers interface by using Upload Layers, user can upload the Layer. Before starting the upload, the **Permissions** of the layer needs to be specified on **the right side of the gray drag-and-drop area** (see previous section for details on permissions). By clicking on **“Upload Files”** the process of uploading the files will start.

After a successful upload, five options on how to continue managing the data will appear (Figure 14):

Layer Info: Allows you to access the Layer View interface from which you can proceed to edit the layer, including changing Permissions for your layer after upload.

Edit Metadata: Takes you to an interface where detailed information on the layer should be provided. In the section below, this function will be explained in more detail.

Upload Metadata: Allows you to upload an existing xml file of metadata associated to the layer.

Upload SLD: Allows user to upload an existing style file in order to associate a specific legend to the layer.

Manage Styles: Allows user to select a predefined appearance for your layer amongst the styles already created. This complex function should be reserved for administrators or very advanced users.



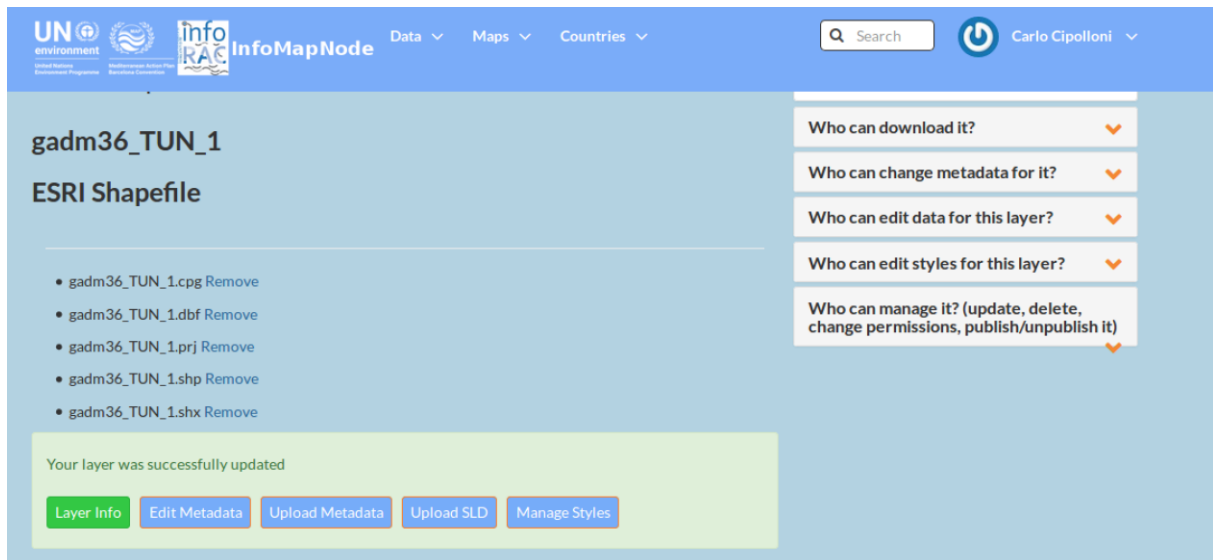


Figure 14. After upload dataset there are some functionality available to manage layer info, metadata and data style representation.

## METADATA MANAGEMENT

By providing additional information about the layer or document after it has been uploaded, you are able to specify the data and make these more accessible to other users.

Providing metadata thereby helps to identify and search layers and documents and aims to increase the overall user experience of the platform.

After a layer/document has been uploaded, or if you are in the Layer View interface, you can use **Edit Metadata** (figure 18) to start providing more information about your layer. Some fields are automatically filled in, but most are left empty for you to provide information (Figure 19).

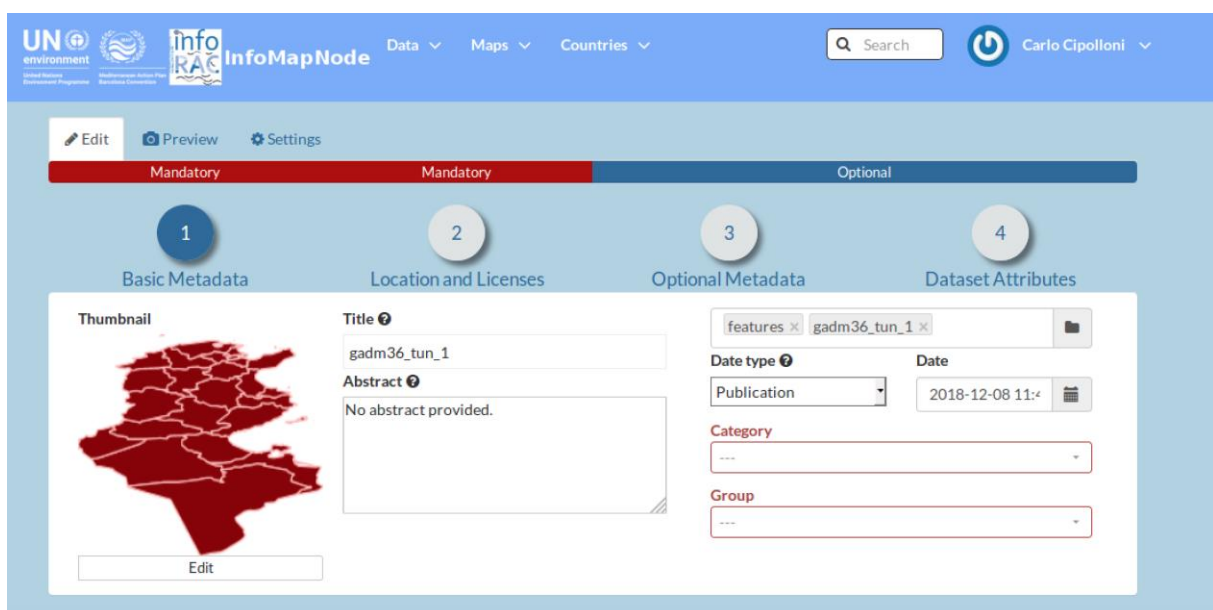


Figure 15. Metadata editor, there are some tabs to manage different information.

Below are a few comments on different types of metadata that will greatly enhance the quality of your layer and help contextualize it for other users:

- **Title:** Provide an explanatory name for your layer. The name should not follow the naming conventions for data files but instead correctly reflect main aspects of the data. Start the title with a geographical specification (country, region, or “Global”).
- **Abstract:** Provide a brief description for your layer. This text will appear together with your layer e.g. in the search results.
- **Keywords region:** Select one or more countries that the layer represents.
- **Keywords:** Specify keywords for your layer to appear in search results.
- **Supplemental information:** Specify what the attributes represent by giving a brief description of each attribute. This information is the only explanation other users will have to understand the attribute short names and therefore it is critical that a description is provided. The supplemental information will appear under your layer in the Layer View interface when you click Show/Hide.
- **Attributes:** Provide further descriptions of all the attribute short names or change the display order of the attributes.

When the metadata standard and mandatory elements are filled you can click “**Update**” at the bottom to save and enter the Layer/Document View interface.

## STYLE A LAYERS AND CREATE RULES

It is quite difficult to style a layer and create rules. It is helpful for advance level user as if **Admin** to display certain Data attributes of a layer it is possible to modify the appearance of the layer, i.e. style the layer, in a variety of ways. This may include control over the colors of lines (e.g. roads) or areas (e.g. regions), as well as the display of labels (e.g. names of cities). It is also possible to use rules to support complex symbolization schemes based on database and scale conditions.

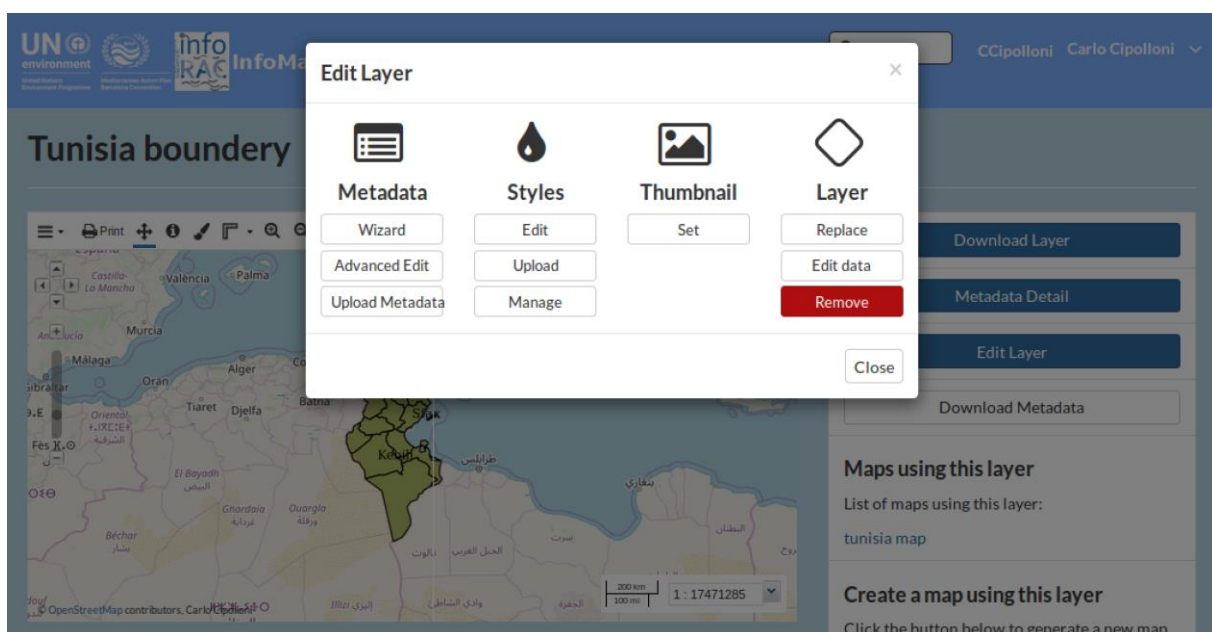


Figure 16. default mode with different tools for editing styles.

Below are a few different ways to begin editing a style in InfoMapNode:

- Directly after uploading a data layer by clicking on “**Layer Info**” to view the layer and then using the red button “**Edit Layer**” and “**Edit Styles**”. (Figure 16);
- In the **Layer View** interface by using the blue button “**Edit Layer**” and “**Edit Style**”, or directly on the **Layer Styles** palette symbol (Figure 17);
- In the **Map Composer** interface by using the **palette symbol**.

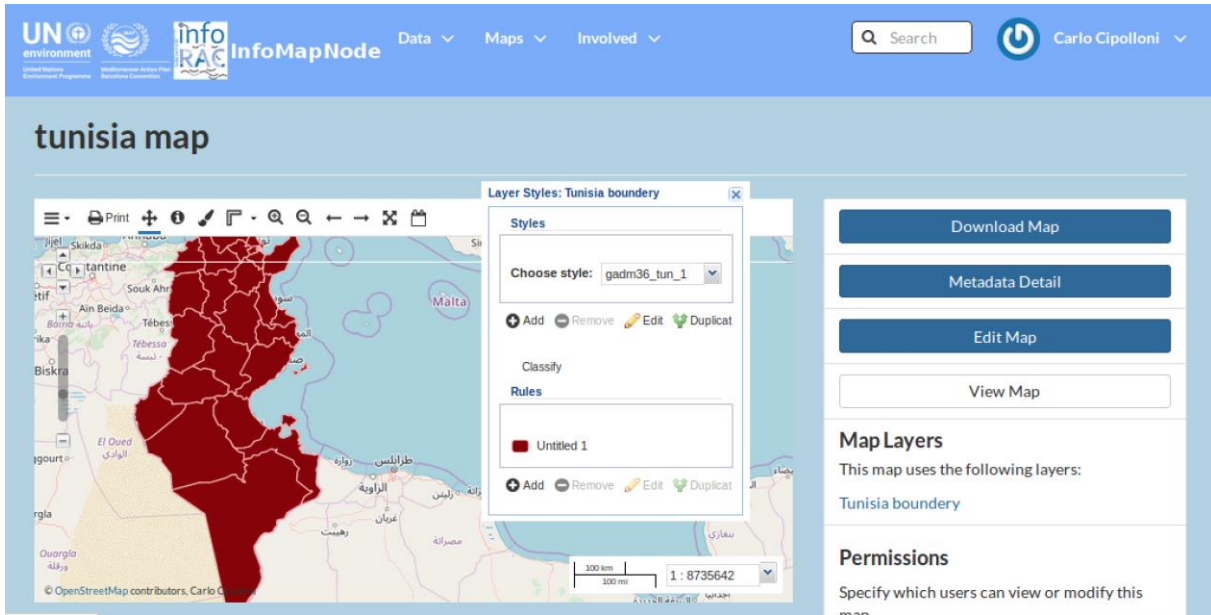


Figure 17. Layer style pop-up window to set-up the representation rules.

Following any of the above procedures, a pop-up window will allow you to choose Style and set Rules (Figure 18). Here you can Add, Remove, Duplicate or Edit rules.

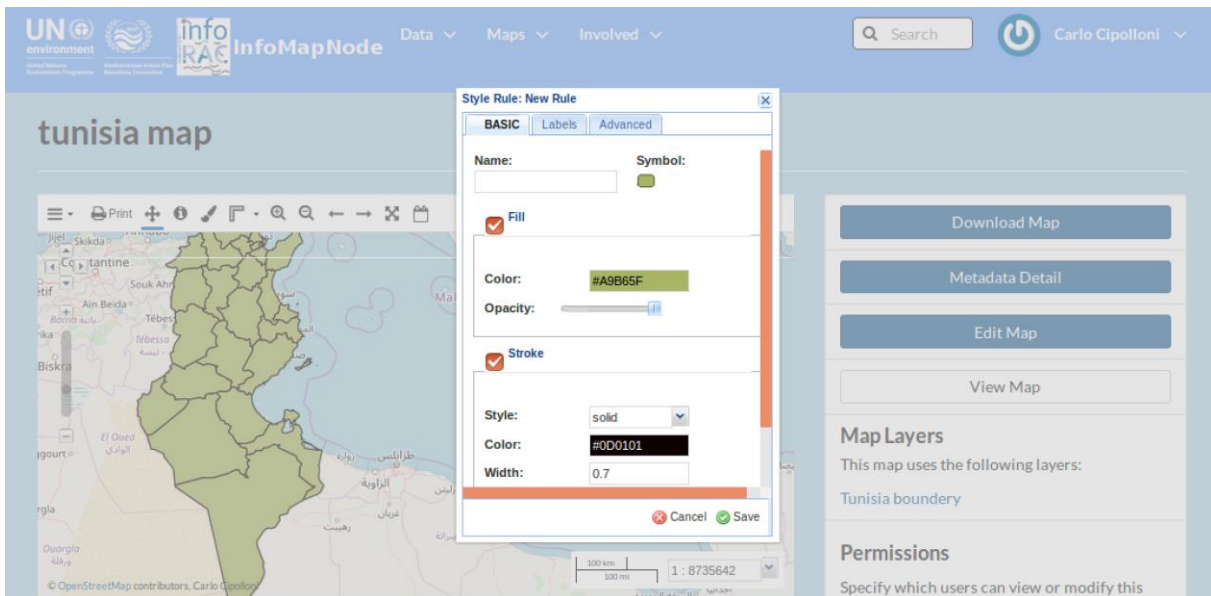


Figure 18. Some example how manage and modify the style of data.

To create a color scheme for the rule select it and use the **Edit symbol**. Another pop-up window will appear where you find three tabs called

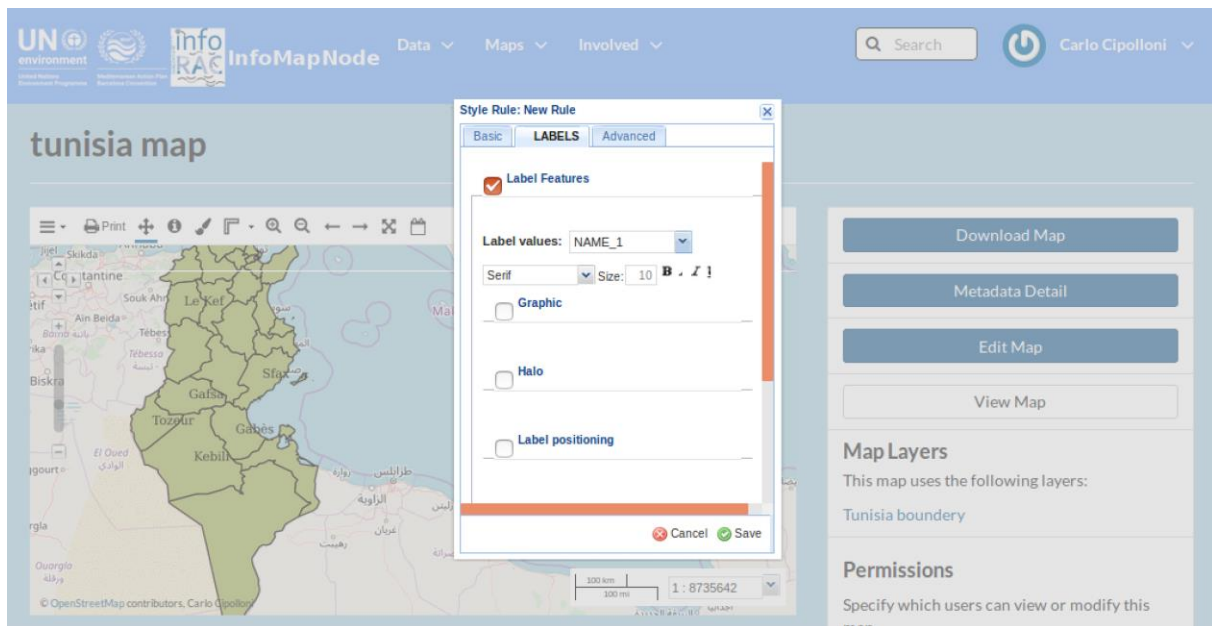
- a. Basic
- b. Labels and
- c. Advanced

That contains options for defining the rule. Aspects of the rule that you set under one of the tabs are cumulative for the entire rule. This means that you can create a rule by setting the color in the Basic tab and then a database condition to control the display of that color in the Advanced tab.

In the **Basic tab** it is possible to change the following styling options:

- Name of the rule
- Symbol to represent a feature and its size and rotation
- Color and opacity (transparency) of a feature
- Style, color, width and opacity of the line of the feature.

Figure 18 shows how the default style of the Basic tab can be modified changing the rules of representation of symbols, like color and stroke.



*Figure 19. Label tab of style editor window to manage and modify some information in the representation.*

In the **Labels tab** it is possible to do the following:

- Select a field to use as content for your labels;
- Choose a font type, size and style for the Label;
- Choose the color for the Label as well as the opacity;
- Choose a halo (background color) including color, size, and opacity.

The user must know what the short name of a particular attribute represent in order to set the label values. the **Label Feature** box (figure 19) has been ticked and the Label values specified to “Name\_1”. In the example below, this short name represents the names of the locations of the warehouses that need to be displayed in the layer.

In the **Advanced tab** it is possible to do the following:

- **Limit** the visualization of what has been defined in the Basic and Label tabs in terms of one or more database conditions. It is also possible to set multiple groups of conditions.
- **Limit** the visualization of what has been defined in the Basic and Label tabs in terms of minimum and maximum scale display.

In order to limit the conditions of how the values are displayed the user must know what the name of a particular attribute represents. Moreover, the range of values that exists for that attribute also has to be known in order to create a meaningful display of the data (which will be visible in a legend).

**Multiple rules** in the same layer can be used to create a visual distinction between different values or ranges of values. The different rules and the associated color schemes will be represented in a **legend** for an appealing visual reference. Use the Add symbol to create new rules, or Duplicate existing rules before editing.

## MODIFY A LAYER'S DATA

Depending on permissions that user has, it is possible to edit data directly in a vector layer by modifying existing features. The layer needing editing has to be:

- Selected in the left-side panel in the Map Composer interface
- Before the Edit and Modify buttons can be selected. You can then click on a specific point, line or polygon feature in the map and a pop-up window with all attribute values will appear.
- After clicking Edit, all points defining the shape of the feature will become visible in the map.

In the example below the point that needs modification is highlighted in light blue (Figure 20)

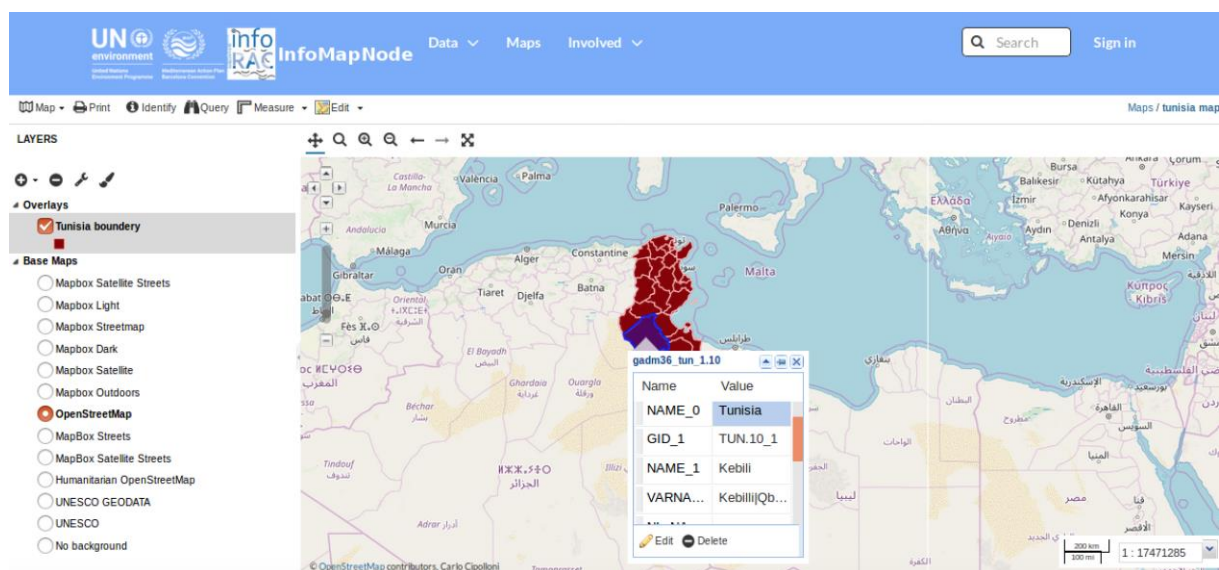


Figure 20. Map composer view with Editor window to modify and manage dataset content.



Since a feature only has one geographic reference simply drag-and-drop the symbol to the new location.

- The attribute values in the pop-up window needs editing before clicking “**Save**”.

## CREATE AND REMOVE DATA IN A LAYER

To generate new data directly from the layer, the user can:

- 1) select the layer in the left-side panel in **the Map Composer interface**;
- 2) Use the “**Edit**” and “**Create**” button. (Figure 21)
- 3) If you wish to generate a point on the map **simply double-click** on the location and a feature window will appear with no associated values.
- 4) The attribute values needs to be provided before clicking Save.

To generate data in the shape of lines or polygons to symbolize e.g. roads or flood-areas, click once at the starting location and double-click at the endpoint. A pop-up window will appear with empty fields for you to provide the attribute values.

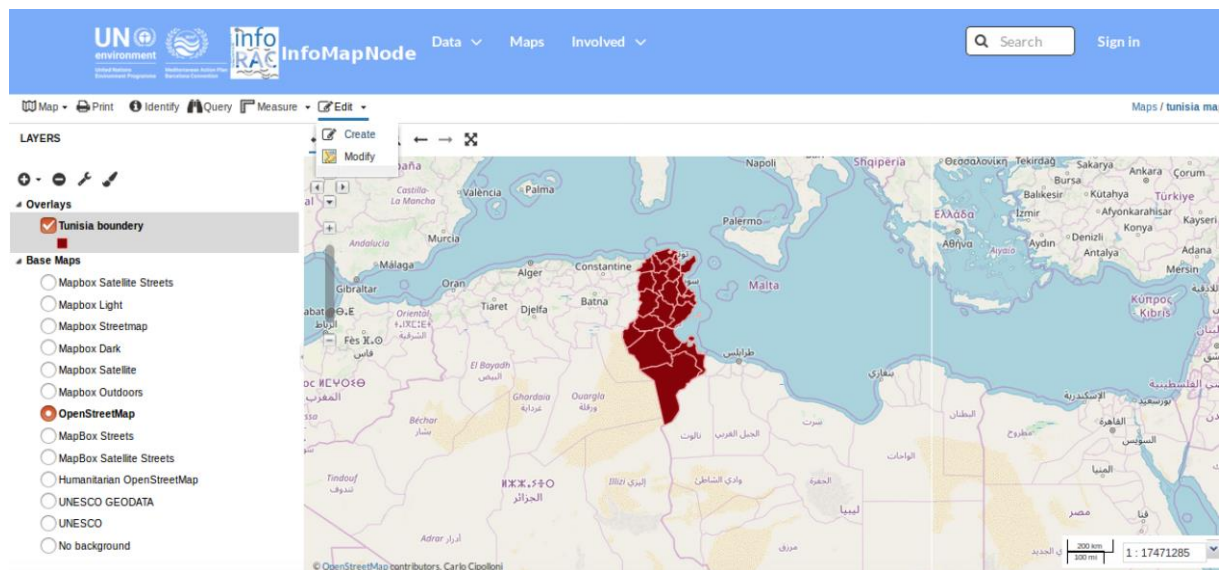


Figure 21. Map composer management of editor or map manipulation.

To remove existing data, or newly generated data, you can use:

- 1) “**Edit**” and “**Modify**” buttons in the toolbar and select the feature.
- 2) “**Delete**” option can be used to remove the feature completely from the layer after you confirm your choice.

## REMOVE AND REPLACE LAYERS, MAPS AND DOCUMENT

With an appropriate permissions, it is possible to **remove** or **replace data, maps** or **documents** by simply clicking on the selected item and using

- The blue **Edit (Layer/Map/Document)** button.



A Popup box allows the user to **remove/replace** layers and documents, and

- To remove maps (Figure 22). When replacing a layer the user has to upload another set of data containing the same attribute structure as the old one.
- When removing a layer/map/document the user will be asked to confirm the selection before final removal is completed.

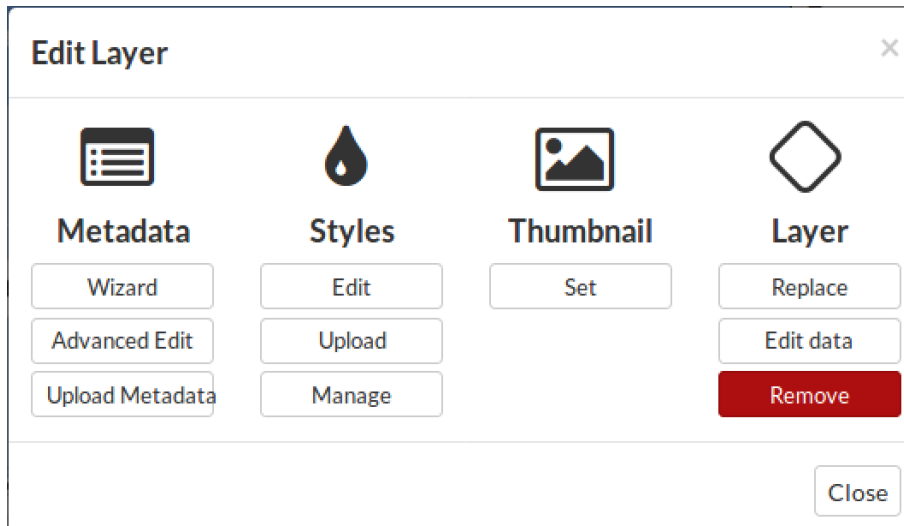


Figure 22. Remove and replace layer.

## REPORTING DATA FLOW SYSTEM GUIDE

In this part of document will be presented the Data Centre InfoMAP component and how a authenticated user can manage a data flow related to a specific reporting procedure.

### OBTAINING PERMISSION TO DELIVER IN IDC

In order to use and manage the data flow call in the 1<sup>st</sup> time users need to contact INFO/RAC Manager (info@info-rac.org) for the right to upload official national data required under the ENI SEIS South II project.

Normally all the nominated persons have already received their credential by email to enter with a single sign on system. They granted immediately if you already hold a relevant Data Centre role: Data flow PCPs and NRCs for the three topic of data indicators. Otherwise the request will be checked with the ENI SEIS II South national focal point for your country;

New users will receive an InfoMAP username and password in automatic way;

### DATA SUBMISSION PROCESS

Member States are encouraged to create one envelope for their annual delivery in IDC under this data flow.

- All files relating to the annual delivery should be uploaded into this envelope. Additional envelopes should only be used for subsequent submissions of revised information.
- A recommended convention for naming and describing files in the IDC envelope is given in this document.
- A step by step guide on creating the IDC envelope and uploading the files is also provided in this document.
- The countries will deliver all the data flows into the InfoMAP Data Repository in the Data Centre <https://idc.info-rac.org> as XML or Table template files.

The date of delivery recognised by INFO/RAC is the date of 'effective release' of envelope(s).

'Effective release' means an uploaded file which has passed the InfoMAP Data Centre Repository automatic blocking QA checks.

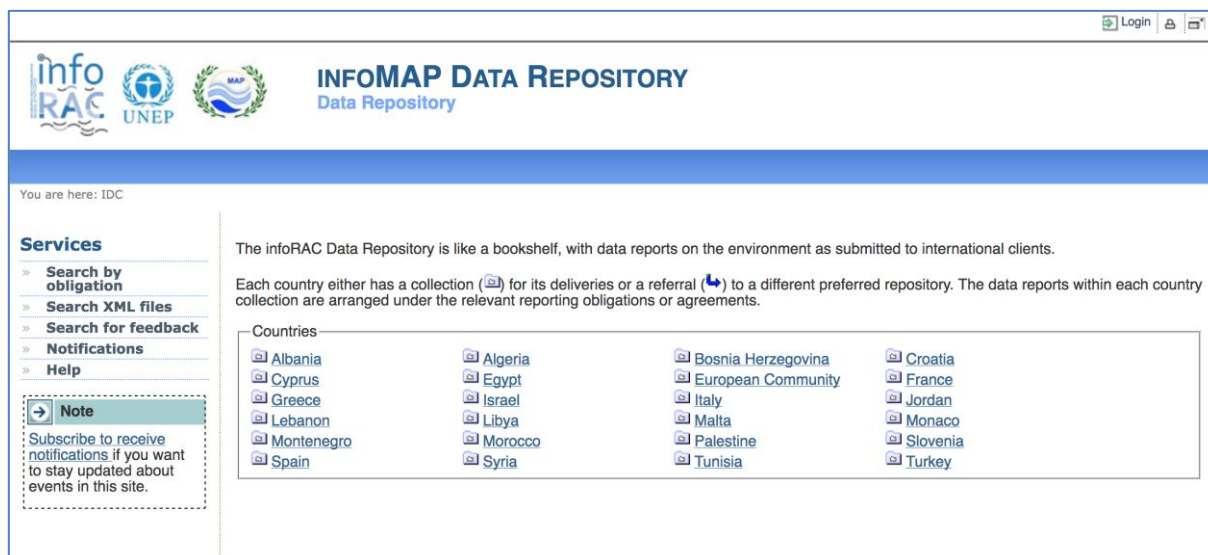


Figure 23. InfoMAP Data Centre repository.

Navigate to the Central Data Repository (IDC – figure 23) at: <http://idc.info-rac.org> and reporter can proceed in the delivery actions:

- after that log-in with your credential as reporter by clicking on the “**Login**” button on the left side of the screen;
- Select your country;
- Select from the repository the obligation directory of H2020 Indicators (figure 24 and 25) and then the specific data flow (Water, Industrial Emission, Waste).
- Choose the button “**New envelope**” on the right of your screen.

A helpful envelope title is useful for IDC users. An example would be: “Reporting on ENI SEIS II South H2020 Data flow indicators on water”.

The field “**Relating to which year**” refers to the dates of the exceedances not the date of your delivery.

Use the “**Add button**” at the bottom of the screen to create the envelope.

Open the envelope and activate task on the right of your screen, this means that the envelope is now reserved for your use.

Nobody else can upload files to this envelope while it is reserved for you.

You can modify this later if you need to handover the uploading task to another person.

Uploading a single file or a zip file which should not be unpacked

Browse on your own system to select the file to upload.

The Id field allows you to assign a new file name in IDC to the file being uploaded. The file will have the keep the name from your system if you leave the Id field empty.

You can use the Id field to allocate the file name according to the recommended naming convention described earlier in this guidance document. Remember to include the file type extension (.xls or .zip) because the id must be unique.

The Title field allows you to assign a description in IDC for the file in addition to the name.

You can use the title to allocate descriptions according to the recommended description convention outlined earlier in this guidance document.

Click on the **“Add button”** to upload the file into the envelope.

Mark the **“Restricted from public view”** check box if the file should not be visible to the public in IDC.

Restricting files is not normal Reporting system practice so there should be a good reason for taking this step

Users see the file with:

- the recommended name
- the additional description

Only authorised users will be able to see your file before you complete your delivery by releasing the envelope.

The file can be opened by clicking on the central icon, which is outlined in red on the diagram.

To edit the recommended name, use the checkbox and the rename option.

To edit the additional description, click on the file name.

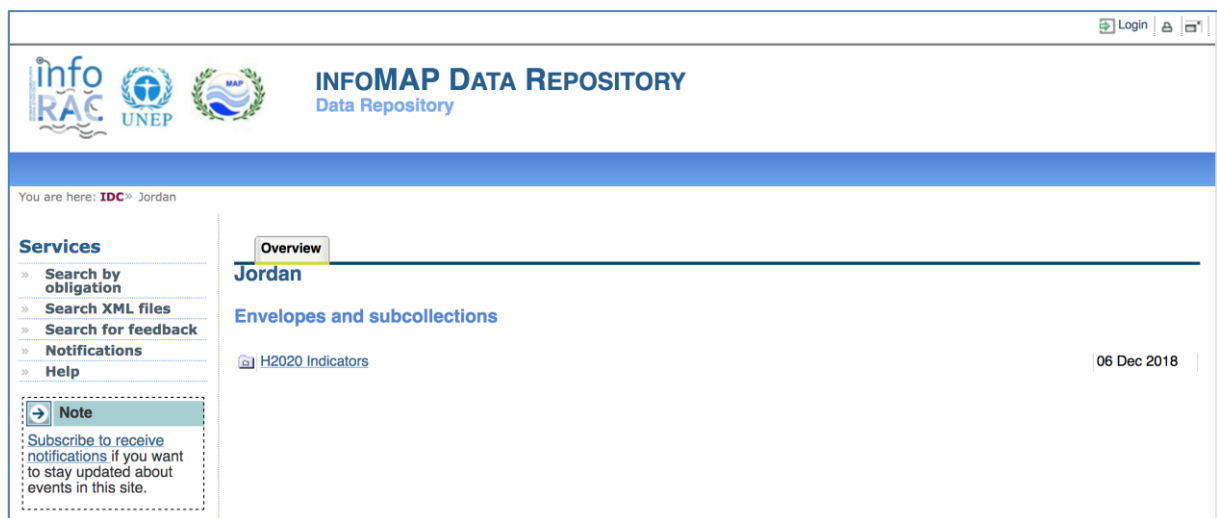


Figure 24. H2020 indicator data flow repository in each ENI SEIS participant country.

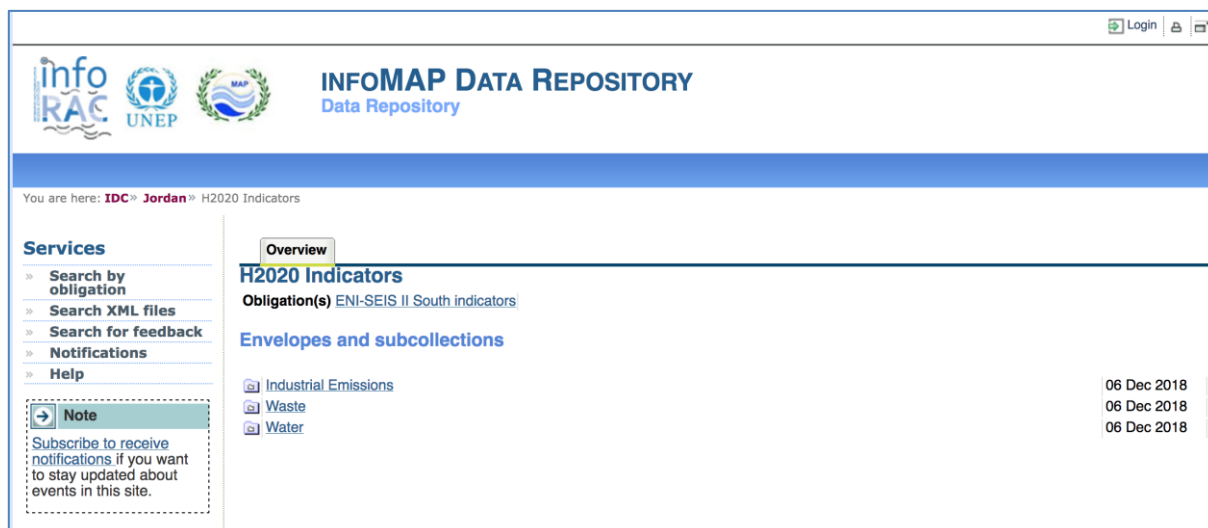


Figure 25. Different Indicators data flow repository within H2020 data flow.

## COMPLETING YOUR DELIVERY

Click on the **“Release envelope”** button on the right of your screen only when you are satisfied all necessary files are in the envelope. The envelope is considered as read for official submission when it is **“released”**. At this point the term **“Draft”** is removed.

The envelope contents cannot be modified when the envelope has been released.

## PROCEDURE TO COLLECT DATA TEMPLATE

The process to submit the requested information is very simple:

- 1) Download the template provided for tabular data;
- 2) Fill in the template in your personal computer;
- 3) Upload the filled in template into the InfoMAP Reporting system using delivery folder under (figure 24) H2020 Indicator (the delivery is different for the three different data flow: water, industrial emission and waste – figure 25);
- 4) Download the template provided for spatial data; Upload the requested spatial data as separate files or in a ZIP file and upload these on the InfoMapNode platform;
- 5) Complete the task (=equivalent to submit the information).