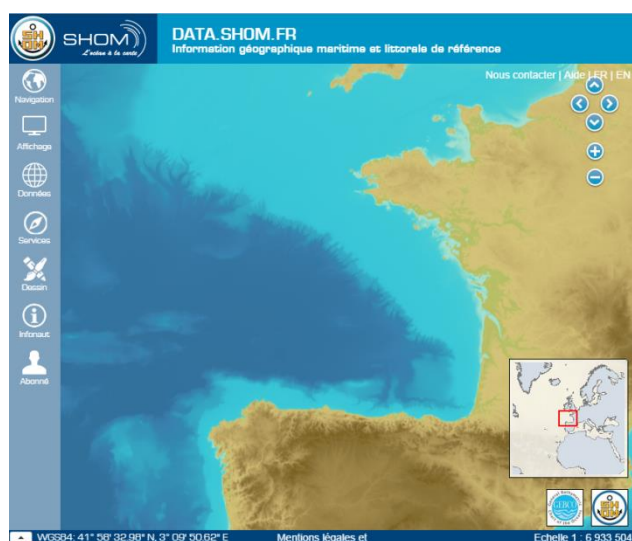
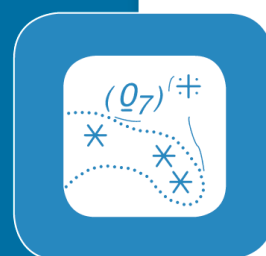


data.shom.fr



Help document

16/10/2019

www.shom.fr

data.shom.fr

Service hydrographique et océanographique de la marine

13 rue du Chatellier - CS 92803
29228 BREST CEDEX 2 - France

Sommaire

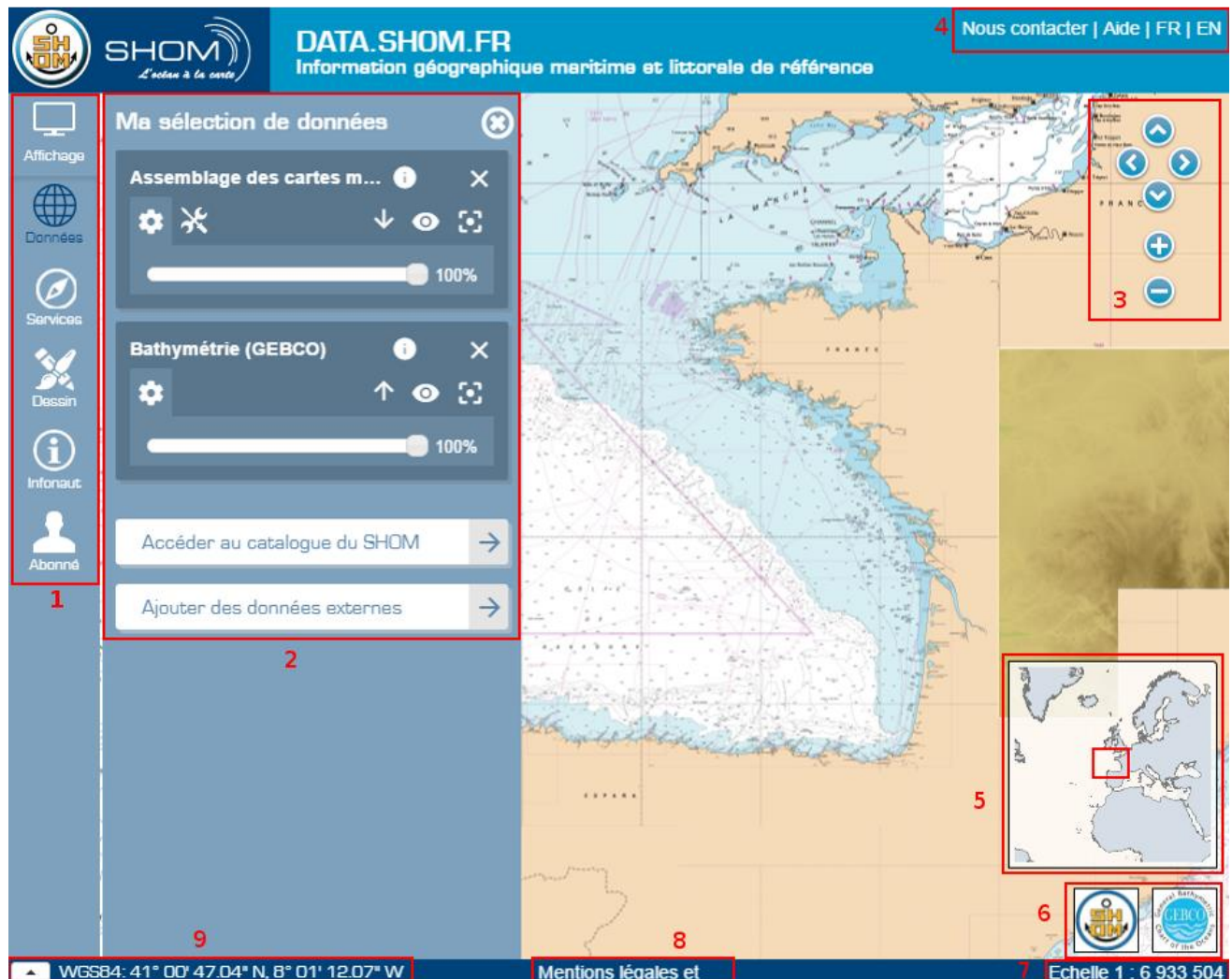
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In the event of a problem, if you cannot find the solution in this document, contact Shom at the following address: data-support@shom.fr

1 Interface

1.1 General Interface



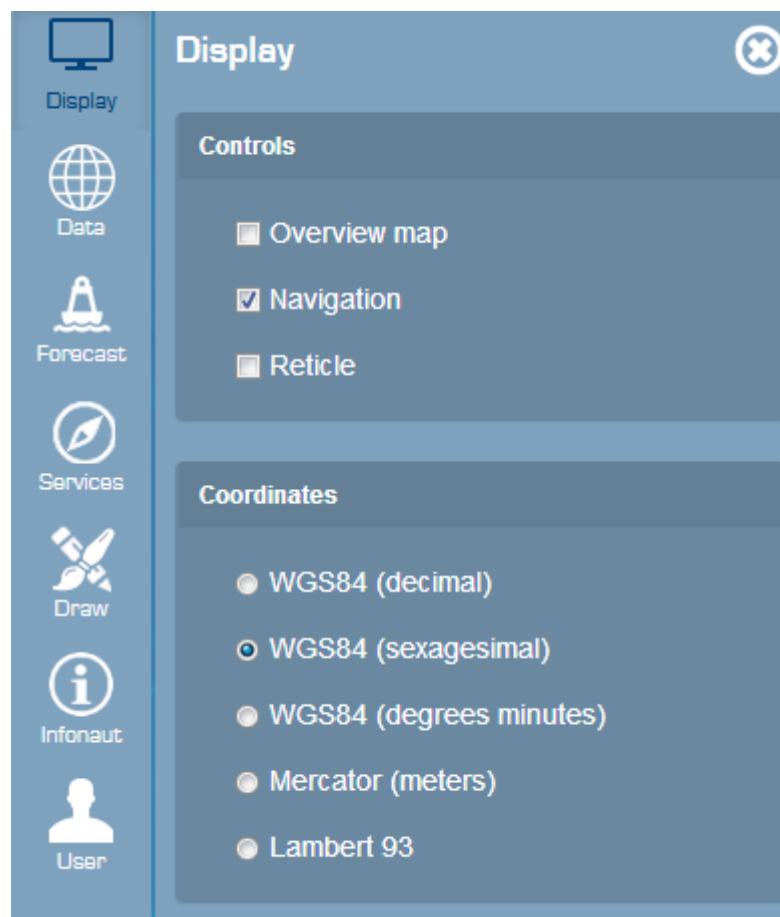
- **Side menu (label 1):** provides access to the portal's various features (save display settings, identification, add layers from other portals, drawing tools, infonaut, etc.).
- **Data tab (label 2):** Liste et gestion des données affichées (ordre, transparence...); accès au catalogue de données ; accès à l'ajout de données externes.
- **Navigation bar (label 3):** used to browse and zoom the map.
- **Button and link bars (label 4):** links to the contact form and to this help file, along with language buttons to switch back and forth between the French and English versions of the portal.
- **Overview map (label 5):** miniature map providing an overview if the main map is zoomed in, or if all layers have been disabled, and allowing low-precision movement around the map.
- **Coordinates system (label 9):** a drop-down menu allows you to change the coordinates

display system, and the cursor coordinates are shown immediately after this.

- **Legal notices (label 8):** link to the site's legal notices.
- **Logos of the creators of the layers displayed on the map (label 6):** each logo links to the creator's website (e.g. www.shom.fr for the Shom logo).
- **Map scale (label 7):** approximate map viewing scale.

1.2 Side menu

1.2.1 Display menu



This menu shows/hides the navigation elements on the right-hand side of the map, along with the overview map and the graticule. It can also be used to change the mouse coordinates display system.

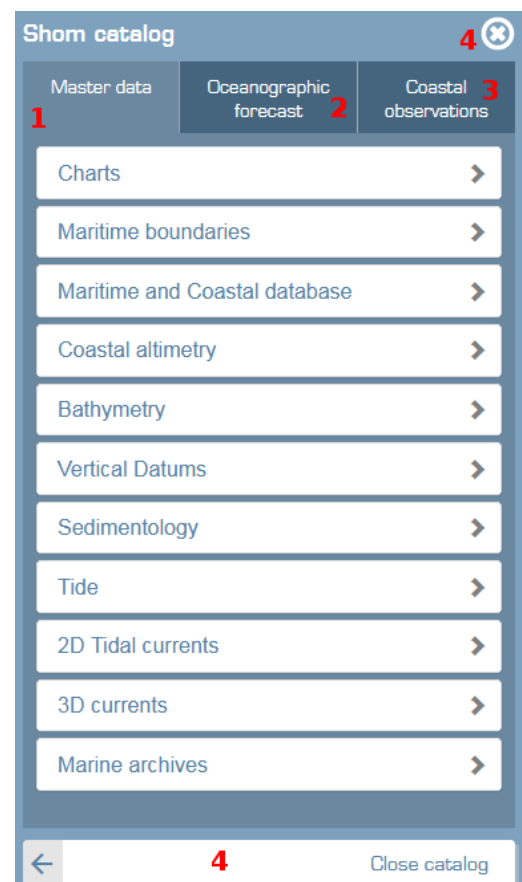
1.2.2 Data menu










- **Data access (label 1):** used to add data layers (see following image) from our catalogue, or from those available on other portals via WEB services (e.g. WMS GéoBretagne feed: <https://geobretagne.fr/geoserver/ref/wms>) or kml files. Close the catalogue to return to data selection.

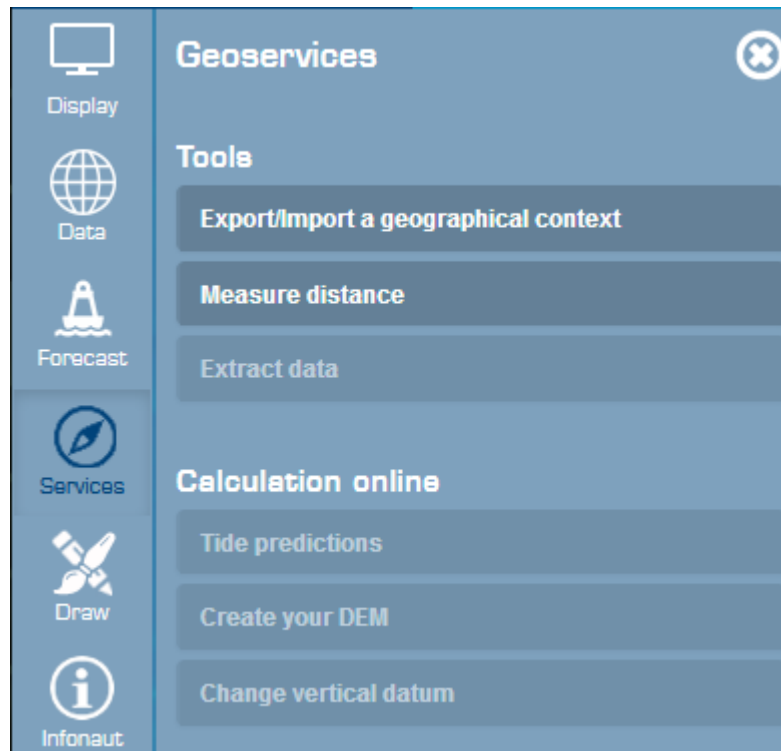
When you access the Shom catalogue, you can opt to show the reference data (1), oceanographic forecasts (2) or coastal observations (3).

To return to your data selection, click on the cross in the top right-hand corner, or on the close catalogue button (4).



- The upper part "**My data selection**" (**label 2**) lists the data layers currently displayed, this is the layer manager.
- To access the detailed information (**description** and **legend**) of a layer, click on the information button  (**label 3**).
- You can **delete** a layer from your selection by clicking on the cross  (**label 4**) facing the label name.
- Layer actions and tools are spread across several categories. Parameters (**label 5**) represented by the gear icon  and actions represented by the tools icon  (**label 6**). You can expand/collapse these elements by clicking on the corresponding icon. In the parameters, you can change the layer's opacity. The Actions tab provides buttons for downloading the data and querying the layer objects (these features are not available for all layers).
- You can change the **order in which the layers are shown** with the arrows  (**label 7**).
- If you do not wish to delete a layer, but simply to make it invisible, you can **hide** it by clicking on the eye icon  (**label 8**). It remains crossed out as long as the layer is hidden. To show it once more, click on the eye icon again.
- By clicking on the zoom to button  (**label 9**), the map scale changes to show the entire layer.

1.2.3 Services menu

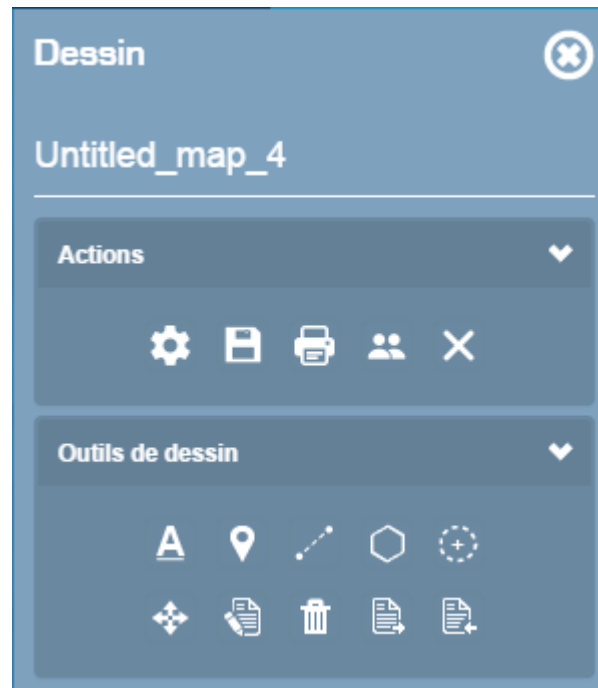


This menu provides access to various tools and services:

- **“Export/Import a geographical context”** function: saves or loads a file containing the configuration of the data displayed on-screen (loaded layers, transparency, display order, geographical extent).
- **“Measure distance”** function: measures the distance between points along a line.
- **“Extract data”** function: saves the data contained within a selection rectangle to a predefined format.
- **“Tide predictions”** service: provides access to tide prediction services for professionals.
- **“Create your DEM”** service: provides access to the on-the-fly DEM creation service.
- **“Change vertical datum”** service: provides access to vertical reference change services for professionals.

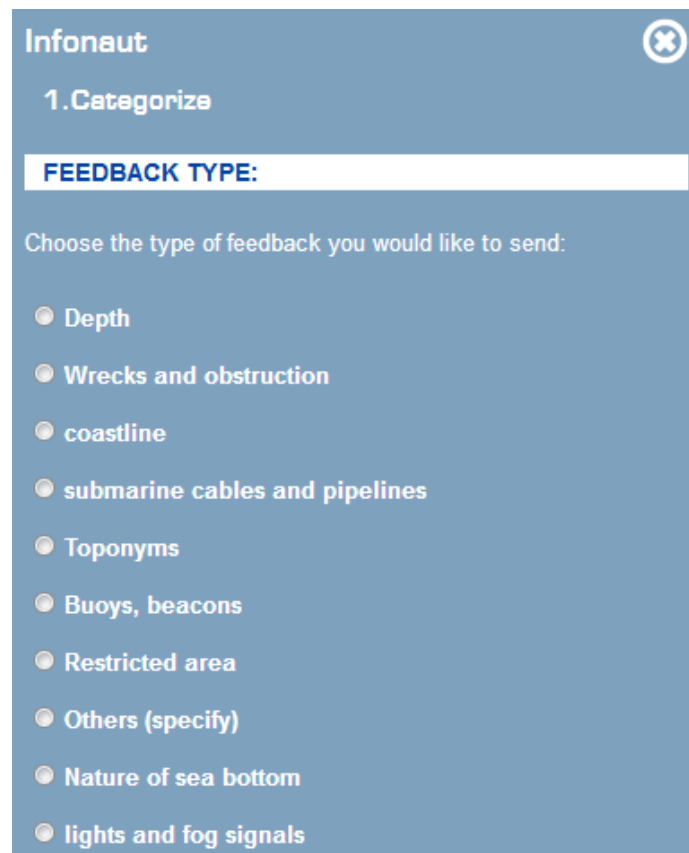
Note: these last three services are only available to authenticated subscribers.

1.2.4 Draw menu



This menu provides access to drawing and chat features. These features are detailed in chapter **Erreur ! Source du renvoi introuvable. Erreur ! Source du renvoi introuvable..**

1.2.5 Infonaut menu



This menu provides options for reporting nautical information not shown on the maps. This service is more extensively described in chapter **Erreur ! Source du renvoi introuvable. Erreur ! Source du**

nvoi introuvable..

1.2.6 User menu

The image displays two screenshots of the 'User' menu interface. The left screenshot shows the 'Log-in to access services' section with fields for 'Access key', 'Login', and 'Password', a 'Forgot password?' link, and a 'Log in' button. The right screenshot shows the 'My account' section with 'Change password' and 'Logout' buttons. Below these is a list of menu items: '3D currents', 'Marine archives', and 'My layers', each with a right-pointing arrow.

This menu allows you to log in using your access key. Once logged in, if you have access to specific layers or services, these latter are no longer greyed out and your layers are available via the Shom catalogue, “Reference data” section, “My layers” category.

2 Basic functionalities

2.1 Moving around on the map and zooming in/out

You can move around on the map in several manners:

- With the mouse: grab the map with the mouse and drag in the desired direction. Use the mouse wheel to zoom in or out. You can also double-click to zoom in on a point.
- With the keyboard: use the arrows to move in the direction of the 4 cardinal points. The “+” and “-” keys zoom in and out respectively.
- With the navigation bar.

You can also draw the area to which you wish to zoom. For this, press and hold the “Shift” key and draw the extent with your mouse.

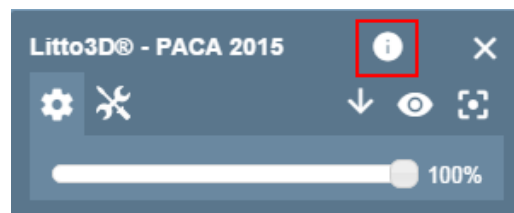
2.2 Add/remove data layer

From the Shom catalogue on the Data menu, you can open/close each data category by clicking on its name. To add a data layer to the map, click on its name. To remove it, click on its name once more.

Note: by default, the portal displays the GEBCO world bathymetry (in the “Bathymetry” category of the catalogue).



2.3 Accessing a layer's legend and metadata



The Shom data are associated with standardized metadata sheets. To access these informations, click on the information button. A window is displayed displaying some information derived from the metadata. To access the complete sheet, click on the “Access metadata...” link at the bottom of the window.

Some layers have a legend. If this is the case, the legend is also displayed in this window. If the legend cannot be displayed (e.g. 1D structure *Symbols, abbreviations and terms used on nautical charts*), a link to the file is proposed.

2.4 Downloading data

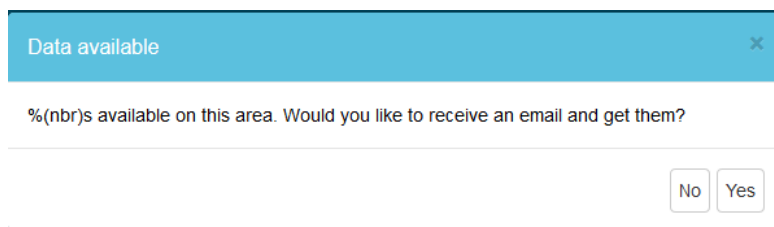
For most data layers, the source data for the associated product can be downloaded in their original format (TIFF, Shapefile or other).

Important: with the exception of layers associated with free data, you must be subscribed and logged in to access the data.

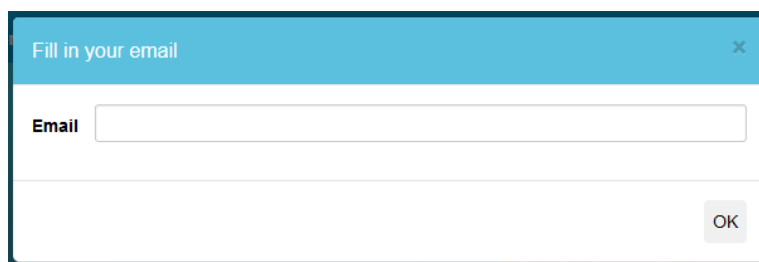
To download the data associated with a data layer, add this layer to the map. Its name then appears in the layer manager, along with the icons described in [chapter 1.2.2](#). Click on the Actions icon to access the download button.



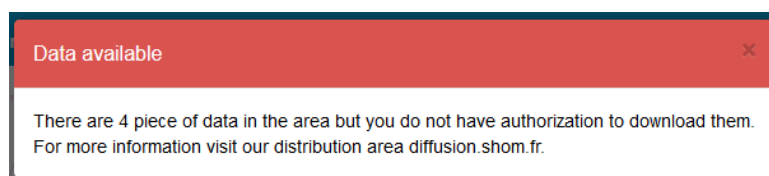
You are then asked to specify your area of interest. For this, click on the map to define an initial corner of the area, then click again to specify the opposite corner. Important: you can still move around if, instead of clicking, you “grab” the map and drag it to move. Once you have drawn the area, a message indicating the number of download units for the layer in this area is displayed.



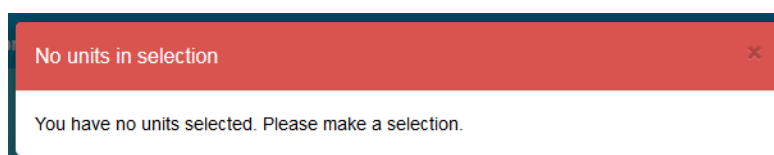
If this latter contains more than 50 download units, an error message invites you to reduce the size of the area such that it does not exceed 50 download units. If you are not logged in and if the data are available free of charge, before confirming you must provide an email address to which a download link will be sent.



Note that the email message may take a certain amount of time to arrive. If the data are provided on a paid access basis and if you have not subscribed, a message informs you that you must be logged in to download and invites you to contact Shom if you wish to take out a subscription. Most data.shom.fr data are available from our market place :[Espace de diffusion](#).



If a message indicating that there are no data is displayed, try drawing a larger area to increase the chances of intersecting a datum.



By default, once you have confirmed your download you leave download mode.

Note: Downloaded files are in 7z format (a utility capable of unzipping this file format, such as 7-zip, must be installed on your computer in order to open the data). For some large-volume data, the compressed files are automatically split up: the downloaded files then have the extensions .7z001, .7z002, etc., depending on the number of files. To open the data, you must first download all of the archive's component parts, then unzip the first file (with the extension .7z001). All of the file parts are then unzipped (no need to individually unzip the .7z002 and subsequent files).

2.5 Logging in

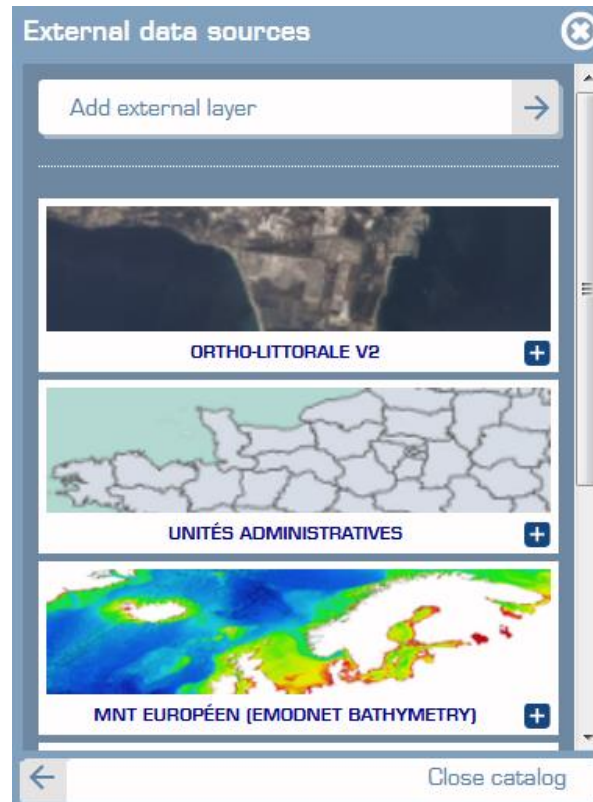
If you have subscribed to specific services, you will have an access key and you can enter this key into the portal to use the supplementary features to which you have subscribed. To log in, click on

the “User” menu and enter your key, login and password.

If login is successful, you will see a list of layers for which you possess specific privileges associated with your subscriptions. Add them to the map by clicking on them.

2.6 Adding external data

You can add data not available in the data.shom.fr catalogue. You can either add predefined external layers, call your own feeds, or you can import KML files.



2.6.1 Using predefined external layers

Some WMS feeds have been pre-registered and are available without needing to enter their address. From the Data menu, click on “Add external layers”. The External data sources menu offers a few external data layers. If you hover the mouse cursor over a layer, a more detailed description is displayed and by clicking on the “+” next to the layer name, this latter is added to the data catalogue. As these are not Shom data, you cannot download the data, nor access the metadata.

Note 1: considering that this is a WMS feed, display may take longer than for other catalogue data. Display time is generally determined by vendor service performance. Moreover, Shom is not liable for any display problems with these data layers.

Note 2: some layers only contain data for specific areas and from a given scale. These data may disappear as you zoom in/out; you must return to the previous zoom level for the data to reappear.

2.6.2 Importing your own feeds or KML files

From the External data sources menu, click on “Add external layer”. You can thus add data layers in KML format, or from WMS or WMTS feeds (**label 1**).

Add data from external source ✕

Type **1**

URL * **2**

Version **3**

Login

4 Password

Layer *

For OGC feeds, enter the service URL (**label 2**). Do not forget to specify the version (label 2). Enter your login credentials (**label 4**) for private access feeds.

Click on OK and the list of data layers available on this server is displayed. Important, to be viewable, the coordinate systems of the data layers must be viewable in Google pseudo Mercator mode (EPSG :3857).

You can for example add the geolittoral feed, which allows you to view Ortholittorale v2: <http://geolittoral.din.developpement-durable.gouv.fr/wxs>

For KML type data, enter the URL of the file (or its path if the file is stored locally on your computer). Also enter a name in the “Name” field. This is the name that will be displayed in the data catalogue, then click on the “Add” button, which is now enabled.

Add data from external source ✕

Type

Name *

Source

File * No file selected.

2.7 Importing/exporting a context (saving display settings)

2.7.1 Context per URL

The context per URL takes into account the following elements:

- map extent ;
- zoom level ;

- all catalogue layers added to the map;
- transparency and display order of each layer.

Context per URL means that by simply copying and pasting the URL displayed in your browser, you can share your view with any other user. Similarly, you can save it to your bookmarks to return to it at a later date.

Example of a URL containing a slightly transparent assembly of nautical charts with maritime delimitations:

```
https://data.shom.fr/donnees#001=eyJjIjpbNzlwMzQyLjU1NDU1OTUwMSw1MjQyOTY4LjY0NDEzNjgxXSwieil6Nywicil6MCwibCI6W3sidHlwZSI6IldNVF
MiLCJpZGVudGlmaWVyljoiREVMtUFSX1BZUI9QTkdFV0xEXzM4NTdfV01UUyIsIm9wYWNpdHkiOiJEsInZpc2liaWxpdiHkiOiRydWV9LHsidHlwZSI6IldNVFMi
LCJpZGVudGlmaWVyljoiUkFTVEVSX01BUKlORV8zODU3X1dNVFMIJCvcGFjaXR5IjowLjYsInZpc2liaWxpdiHkiOiRydWV9LHsidHlwZSI6IldNVFMIJCJpZGVud
GlmaWVyljoiRkRDX0dFQkNPX1BZUI1QTkdfMzg1N19XTVRTIiwib3BhY2I0eSI6MSwidmlzaWJpbGl0eSI6ZmFsc2V9XX0=
```

2.7.2 Context per file

This context also allows you to take into account WMTS or WMS external layers.

To save a map context, go to the “Services” menu and click on “Export/Import a geographical context”. Click on “Export context”, you will be asked to save the file to your computer.

To load an existing context, click on “Import context” and select your file. If the file is valid, the map will load.

2.8 Displaying the grid

To display the graticule, from the “Display” menu, check the “Reticle” box. Click again to hide the graticule (the box is unchecked).

2.9 Measuring distances on the map

You can measure the distance between points along a polyline. For this, go to the “Services” menu, click on “Measure distance”, then on “Start”. Click on the map to place the points. Once you have positioned the second point, the measured distance is displayed in nautical miles and in km. As you place additional points, the distance is recalculated and the sum of the lengths of each segment is displayed.

To end the measurement, double-click on the last point, the line drawn and length will remain displayed. To measure a new distance, click once more on the map to draw a new measurement line.

Click on “Stop” to exit the menu.

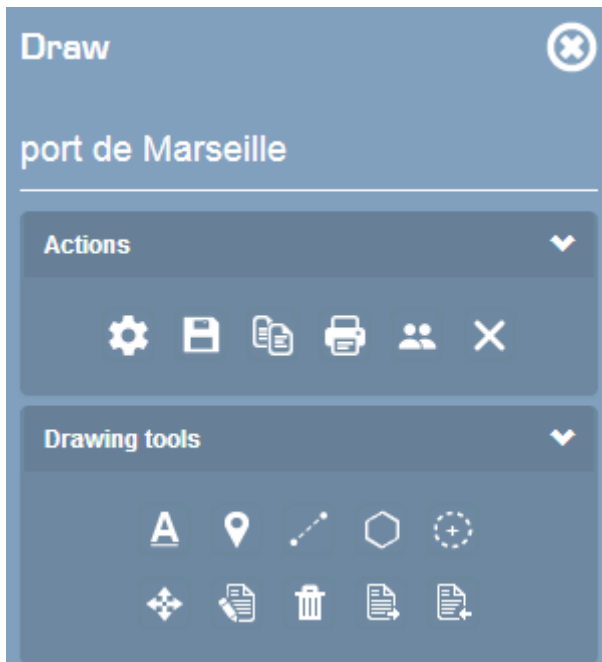
Note: the calculation method used is the Vincenty algorithm, which measures the distance between 2 points at the surface of a spheroid. This algorithm gives more precise results than the great circle route, which assumes that the Earth is spherical.

3 Drawing and chat tools

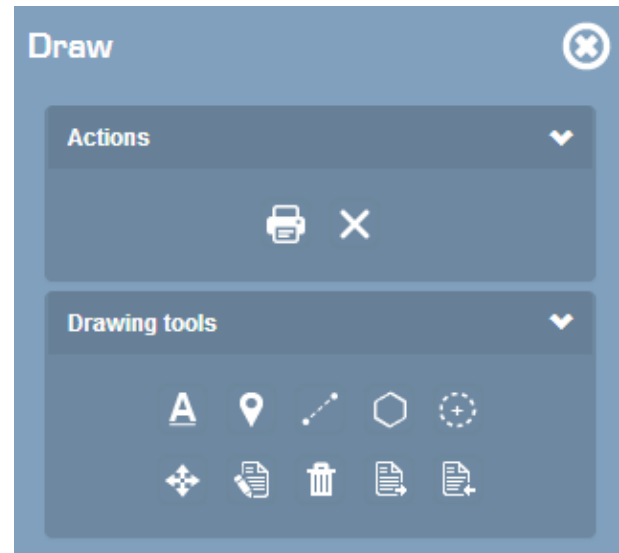
The drawing menu is available with or without subscription. The free subscription allows you to save your maps. You can subscribe via our [Espace de diffusion](#). After having ordered your subscription, your newly created access key is available in your personal space, in the “Mes abonnements” section.

From the Draw menu, you can create various shapes and use several tools from the Actions, Drawing tools and Edit menus (when a shape is selected). The Actions menu offers additional features when you are logged into your account.

Logged in



Not logged in



[Properties of the map](#)



[Save the map](#)



[Print the map \(PDF\)](#)



[Collaborative work](#)



[Close the map](#)



[Add a label](#)



[Add a point](#)



[Draw a path](#)



[Draw a polygon](#)



[Draw a circle](#)



[Move an object](#)



[Edit an object geometry](#)



[Delete objects](#)



[Export in KML](#)



[Import a KML file](#)

3.1 Actions menu

3.1.1 Properties of the map

The “Properties” button is used to change the title and description of your map.

3.1.2 Save the map

Saves the map along with any changes. The maps are saved to your key. Saving a map saves the view (footprint and layers displayed) and any drawn objects as they appear on-screen.

3.1.3 Enregistrer sous

The Save as function saves the map under a different name, giving it a new title and description. Cela peut être utile pour avoir plusieurs versions d’une carte ou pour enregistrer sur sa clé une carte sur laquelle nous sommes plusieurs à travailler (voir Travailler à plusieurs).

This can be useful if you need multiple versions of a given map, or to save to your own key a map worked on by several individuals (see Collaborative work).

3.1.4 Print the map

This feature formats the map on screen as a PDF file containing:

- the layers displayed as the map background,
- the drawings,
- the map scale,
- the source citation,
- the map legend (if objects have been added),
- the map title (if specified),
- the map description (if specified).
- the grid (if the option is enabled).

La carte peut ainsi être enregistrée une fois finalisée ou imprimée. Après avoir cliqué sur le bouton « Imprimer », une fenêtre s'ouvre pour choisir l'orientation.

Once finalized, the map can then be saved or printed. After clicking on the "Print" button, a window appears to let you choose the page orientation (portrait or landscape).

3.1.5 Collaborative work

This button takes you to the Collaborative editing menu. This is a map-related chat service allowing a subscriber to invite up to 3 individuals to view and co-edit a map. Once saved, any changes made can be viewed in real-time by all participants and can be commented via a chat window.

This feature is covered in paragraph 3.3.

3.1.6 Close the map

This button exits the current map without leaving the Draw menu. If you are logged in, it takes you to your maps list, or else to the New map button.

3.2 Drawing tools menu

To add a shape (polygon, path, circle, text) to the map, select the type of shape, then position the points. There are 2 possible methods, depending on the type of shape:

- click directly on the map for all shapes,
- enter the coordinates of each point for lines and polygons, using the “Input coordinates” button that appears in the “Geometry” sub-menu.

To add another shape of the same type, click once more on the shape button before positioning it.

Once the object has been placed, you can change some of its properties via the “Edit” sub-menu that appears when you click on the object.

3.2.1 Label: add text directly on the map

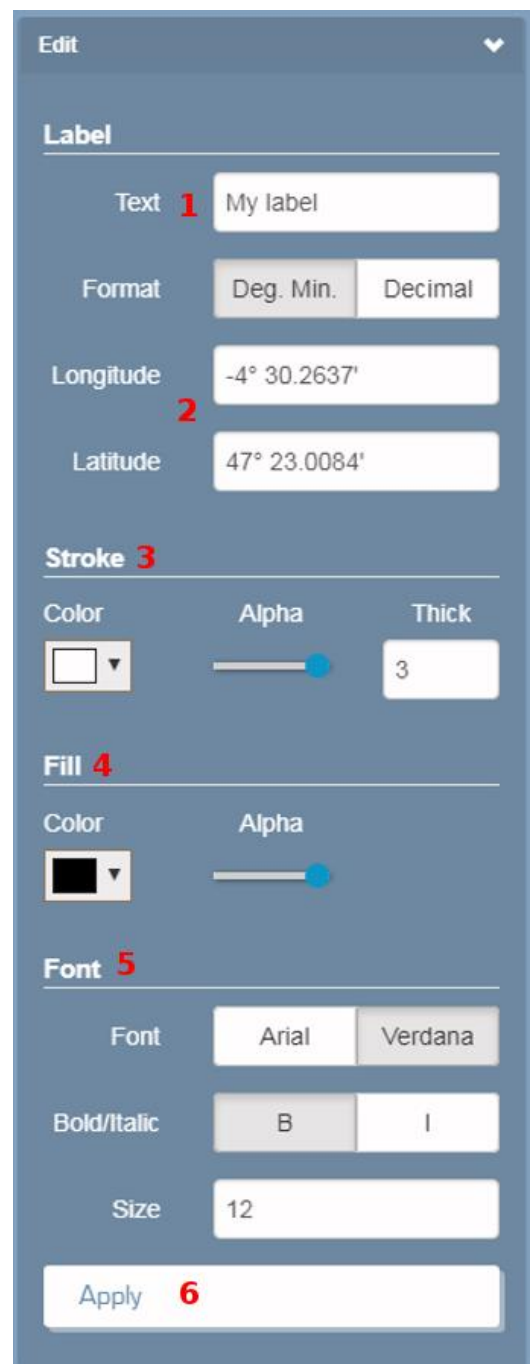
Once you have clicked on the map to position the label, “My label” is displayed, centred on the point where you clicked.

To edit the text displayed on the map, click on the label; the Edit menu is displayed below the Drawing tools menu. Edit the text (**label 1**).

You can also change the position of the label by directly entering its coordinates (**label 2**).

You can change the stroke or halo (**label 3**), fill colour (**label 4**) and the style of font (**label 5**) of your text.

To view your changes, click on Apply (**label 6**).



Edit

Label

Text **1** My label

Format Deg. Min. Decimal

Longitude **2** -4° 30.2637'

Latitude 47° 23.0084'

Stroke 3

Color Alpha Thick

Fill 4

Color Alpha

Font 5

Font Arial Verdana

Bold/Italic B I

Size 12

Apply **6**



3.2.2



Point : add a point object to the map

Once you have selected the “point” shape, position the object by clicking on the map. The object is displayed. The object is represented by a green dot.

The object’s coordinates can then be changed by entering them into the “Edit” sub-menu displayed (**label 1**). Click on “Apply” to reposition the point.

You can apply a colour to the point (**label 2**) or an icon (**label 3**) selected from a library of objects predefined by Shom. If you select the icon, a new “Choose” button is displayed below, instead of the Fill menu (**label 4**).

Finally, do not forget to click on “Apply” (**label 5**) to view your changes on the map.

3.2.3



Path : add a complex line comprised of multiple segments

You can use the “path” object in two ways: either by positioning the various points by successively clicking the map, or by manually entering the coordinates of each point.

With the first method, simply click as many times as there are points, then double-click on the last point to complete the path.

With the second method, after clicking on the “Input coordinates” button, a new window is displayed for adding as many points as required by entering their coordinates. A drop-down menu allows you to select the input format: decimal or sexagesimal. Once you have defined all of the points, click on “Create geometry” to view the figure on the map.

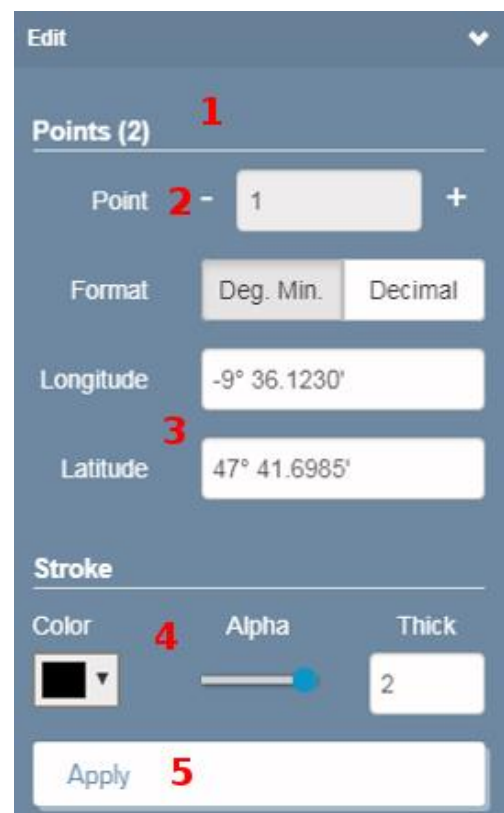
In both cases, once complete, the figure remains active and you can edit the coordinates via the “Edit” menu.

The number in parentheses at the end of the path (**label 1**) indicates the total number of points on your path.

To edit the coordinates of a point (**label 3**), you can browse between the various points by clicking on the - and + buttons on either side of the point number (**label 2**).

You can change the colour, opacity and thickness of the path line (**label 4**).

Finally, do not forget to click on “Apply” (**label 5**) to view your changes on the map.



3.2.4 Polygon : add a polygon



The screenshot shows the 'Edit' panel for a polygon. At the top, 'Points (5)' is labeled with a red '1'. Below it, 'Point 2' is labeled with a red '2', followed by a minus sign, a text box containing '1', and a plus sign. The 'Format' section has 'Deg. Min.' and 'Decimal' buttons. The 'Longitude' field contains '-9° 16.3477'' and the 'Latitude' field contains '49° 22.0840'', with a red '3' next to the latitude field. The 'Stroke' section has 'Color' (black), 'Alpha' (slider), and 'Thick' (text box with '2'), with a red '4' next to the Alpha slider. The 'Fill' section has 'Color' (blue) and 'Alpha' (slider), with a red '5' next to the Alpha slider. At the bottom is an 'Apply' button labeled with a red '6'.

You can use the “polygon” object in one of two ways: either by positioning the various points by successively clicking the map, or by manually entering the coordinates of each point in the same manner as for a path.

The number in parentheses at the end of the path (**label 1**) indicates the total number of points in your polygon.

To edit the coordinates of a point (**label 3**), you can browse between the various points by clicking on the - and + buttons on either side of the point number (**label 2**).

You can change the colour, opacity and thickness of the polygon contour (**label 4**).

You can change the colour and opacity of the polygon fill (**label 5**).

Finally, do not forget to click on “Apply” (**label 6**) to view your changes on the map.

3.2.5 Circle : add a circle

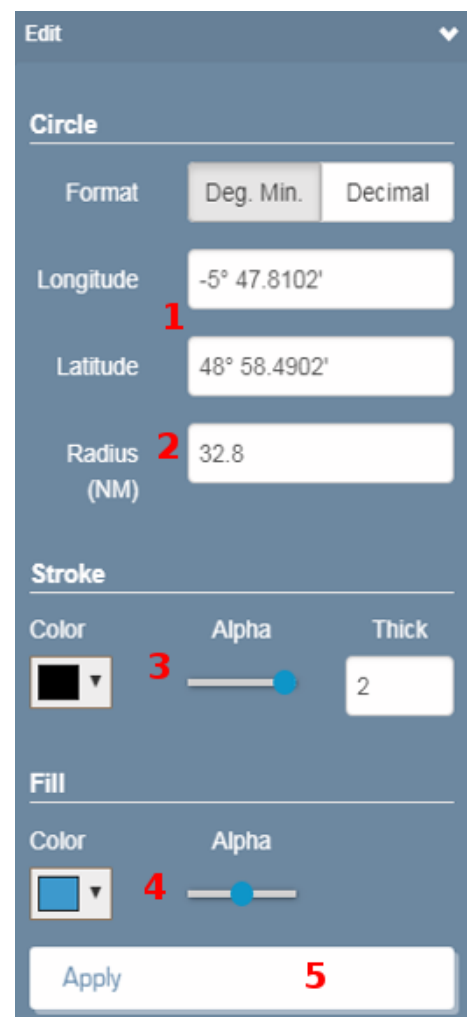
After selecting the “circle” shape, position the object by clicking on the map where the circle’s centre should be, then drag you mouse to enlarge the circle.

Once you have created your object, you can change the position of the centre (**label 1**) and the length of the radius (**label 2**).

You can change the colour, opacity and thickness of the circle contour (**label 3**).

You can change the colour and opacity of the circle fill (**label 4**).

Finally, do not forget to click on “Apply” (**label 5**) to view your changes on the map.



The screenshot shows the 'Edit' panel for a circle. The 'Format' section has 'Deg. Min.' and 'Decimal' buttons. The 'Longitude' field contains '-5° 47.8102'' and the 'Latitude' field contains '48° 58.4902'', with a red '1' next to the latitude field. The 'Radius (NM)' field contains '32.8', with a red '2' next to it. The 'Stroke' section has 'Color' (black), 'Alpha' (slider), and 'Thick' (text box with '2'), with a red '3' next to the Alpha slider. The 'Fill' section has 'Color' (blue) and 'Alpha' (slider), with a red '4' next to the Alpha slider. At the bottom is an 'Apply' button labeled with a red '5'.

3.2.6 Move an object

This function is used to manually move an object: select the object by left-clicking and hold to drag it to the desired position, then release the mouse.

3.2.7 Edit an object's geometry

This function opens the “Edit” sub-menu to edit the coordinates of the selected object's points (except for label objects, in which case this tool allows you to edit the text). You can move each points of these objects, either by clicking on one of the object's points and dragging it with the mouse, or by selecting the number of the point to move in the “Points” menu (the active point is highlighted by a red dot), then by entering this point's new coordinates, then applying the changes.

3.2.8 Delete objects

This function deletes an object drawn onto the map.

Important: Delete mode remains active until you re-click on the icon. Remember to click on the icon once you have deleted the desired objects.

3.2.9 Export in KML

Once your drawing layer is complete, you can export it in KML format. It can then be opened in another application (e.g. Google Earth, QGIS, etc.), shared with other individuals, or reloaded into data.shom.fr at a later date.

Note that only drawn objects are exported.

3.2.10 Import a KML file

This function allows you to import an existing KML file as a drawing layer, to subsequently edit it using the drawing tools. If this KML file does not come from data.shom.fr however, it may not be accepted or the parameters applied (colour, etc.) may not match the original image. As a general rule, if your KML file uses of resources external to the file, it will not be correctly read by the service.

3.2.11 Adding objects to the legend

Once an object has been added to the drawing layer, it can then be added to the legend. For this, **right-click** on the object and select “Add this object to legend”. A line is thus added to the legend, showing the symbol used for the object. You can change the legend label by clicking on “Legend text” displayed by default.

3.3 Collaborative work

Map-related chat service allowing a subscriber to invite up to 3 persons to view and co-edit a map. Once saved, any changes made can be viewed in real-time by all participants and can be commented via a chat window.

3.3.1 Starting a session as session administrator

To start a session, you must possess a free subscription key. If you don't have one, you can subscribe via our [Distribution space](#). After having ordered your subscription, your newly created access key is available in the distribution space, in the My subscriptions section.

Once logged in, go to the Draw menu and click on "Collaborative work".

The session is started, the Collaborative editing menu expands and you can invite co-workers.

As soon as someone joins you, the chat window is enabled.



If you wish to work on an existing map, open it before starting the session.

3.3.2 Joining a session as a guest

To access the site as a guest, you must first have received an invitation email. This invitation, issued by noreply@data.shom.fr, contains a unique service access link which is valid for only 30 minutes and can be used once only. If one of these criteria is not met, a message is displayed informing you that the invitation has expired.

If the link is still valid, a window is displayed in which you can enter your alias, along with your user name and password if you possess a subscription key. You thus do not need to be a subscriber to take part in a chat session as a guest, but if you do log in, you will have access to the same map saving features.

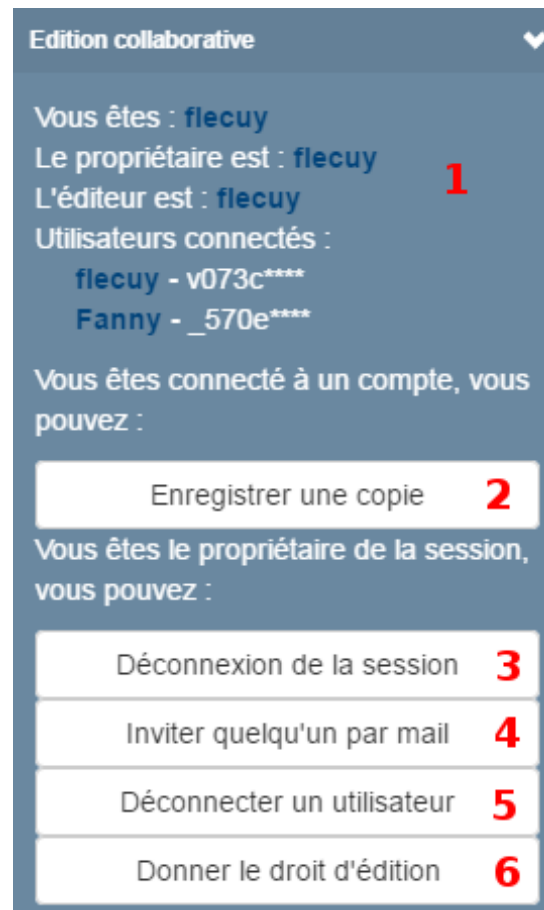
3.3.3 Using the service

The drawing tools are only available to individuals with editing rights. The Collaborative chat window allow you to chat (writing) with the other participants.

The Collaborative editing menu displays an overview of roles (**label 1**):

- recap of the alias you selected when logging in,
- the owner is the person who initiated the session and who therefore possesses all administration rights,
- the editor is the person who currently possesses editing rights for the drawing layer (only one person at a time),
- list of aliases of session participants.

Each user joining the session by logging into his/her account can, at any time, save a copy of the map on his/her own key (**label 2**).



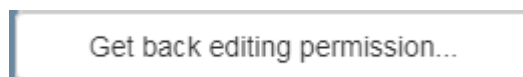
3.3.4 Managing a session

En tant que propriétaire il décide également de qui a le droit de modifier la carte (**label 6**). Une fois que les droits d'édition sont donnés à un autre participant le propriétaire a alors un bouton qui lui permet de reprendre les droits d'édition.

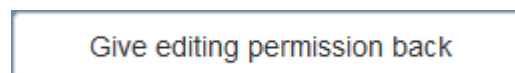
The session owner is the administrator. This latter thus possesses all management rights.

He/she can thus invite users by email (**label 4**), or decide to disconnect a user (**label 5**).

As the owner, he/she also decides who is allowed to edit the map (**label 6**). Once editing rights have been passed onto another participant, the owner then has a button allowing him/her to take over editing rights once more.



Similarly, the user with editing rights has a button enabling him/her to relinquish these rights to the owner once he/she has finished editing.



Important: remember to **save** these changes to ensure that all participants can see them. Any changes not saved by the guest are lost.

3.3.5 Liste of features available to all

All participants can:

- use the chat window to write a message and read those written by the other participants,
 - be assigned editing rights to use the drawing features,
 - once the drawing layer editor, edit this layer and save their changes. Only once these changes have been saved will the other participants see them on the map, whether they involve the drawing layer, the legend, or the catalogue layers displayed,
 - return the editing rights to the session administrator once they have finished making changes,
 - print the map in PDF format,
- log out of the session (**label 3**). If the administrator logs out, all participants are automatically logged out.

4 Reporting nautical information

4.1 Presentation of the Infonaut service

To enable users of the sea to report information to be included in our databases and products, Shom has implemented the “**Infonaut**” data feedback service. This service allows you to precisely locate, on the Shom map background, any changes you may have observed.

The Infonaut map is updated weekly, with corrections made by the notices to mariners (<https://gan.shom.fr>).

Note that nautical information constitutes information considered to be necessary or simply useful to mariners for ensuring their own safety and that of other users of the sea. **They may be urgent and vital, in which case they must be submitted to the area’s nautical information coordinator (see [Shom website](#)), who continuously monitors this information and possesses the appropriate dissemination means.** This is not the case of the information feedback service provided by Shom.

By using **Infonaut**, you agree to conform to the [general terms of use](#) of this service.

Shom has identified the following feedback topics:

- depth
- wrecks and obstructions
- nature of sea bed
- submarine cables and pipelines
- toponyms
- lights and fog signals
- buoys, beacons
- restricted areas
- coastline
- others (specify)

Site and feedback etiquette:

When entering feedback, you must provide as much detail as possible in the “description” field. It is also preferable to specify whether you have photos or files that could help with processing. Shom will then contact you at the email address you gave online. You must thus enter a valid and regularly checked email address as Shom may require further details.

The feedback reporting process can be broken down into 4 distinct steps, detailed in the following chapters.

4.2 Step 1: Choice of feedback type

The screenshot shows the DATA.SHOM.FR website interface. The top header includes the SHOM logo and navigation links. The left sidebar, titled 'Infonaut', contains a '1. Categorize' tab and a 'FEEDBACK TYPE:' section. Below this, a list of feedback types is provided, with 'Depth' selected. A red '2' is placed next to the 'Depth' option. Below the list, there is a 'Send a feedback' button with a red '4' next to it. A 'Disclaimer and terms of use' link is also visible. The main area displays a map of the English Channel with several green location markers. A popup window shows details for a specific feedback item, with a red '3' next to the 'Status' field. The popup contains the following information:

Created on	08/02/2017 12:57:46
Status	Validated
Contributor	plaisancier
Description	Bonjour, sur la carte 7146, de Penmarch a Trevignon, la Basse Devel et indiquée à 0,40m, alors que sur la carte de détail 6646, il est indiqué 0,90m asséchant

At the bottom of the map, a legend indicates the status of feedbacks: yellow for 'Waiting feedbacks', red for 'Rejected feedbacks', and green for 'Accepted feedbacks'. The bottom status bar shows coordinates, a legal notice link, and a scale of 1:6 933 504.

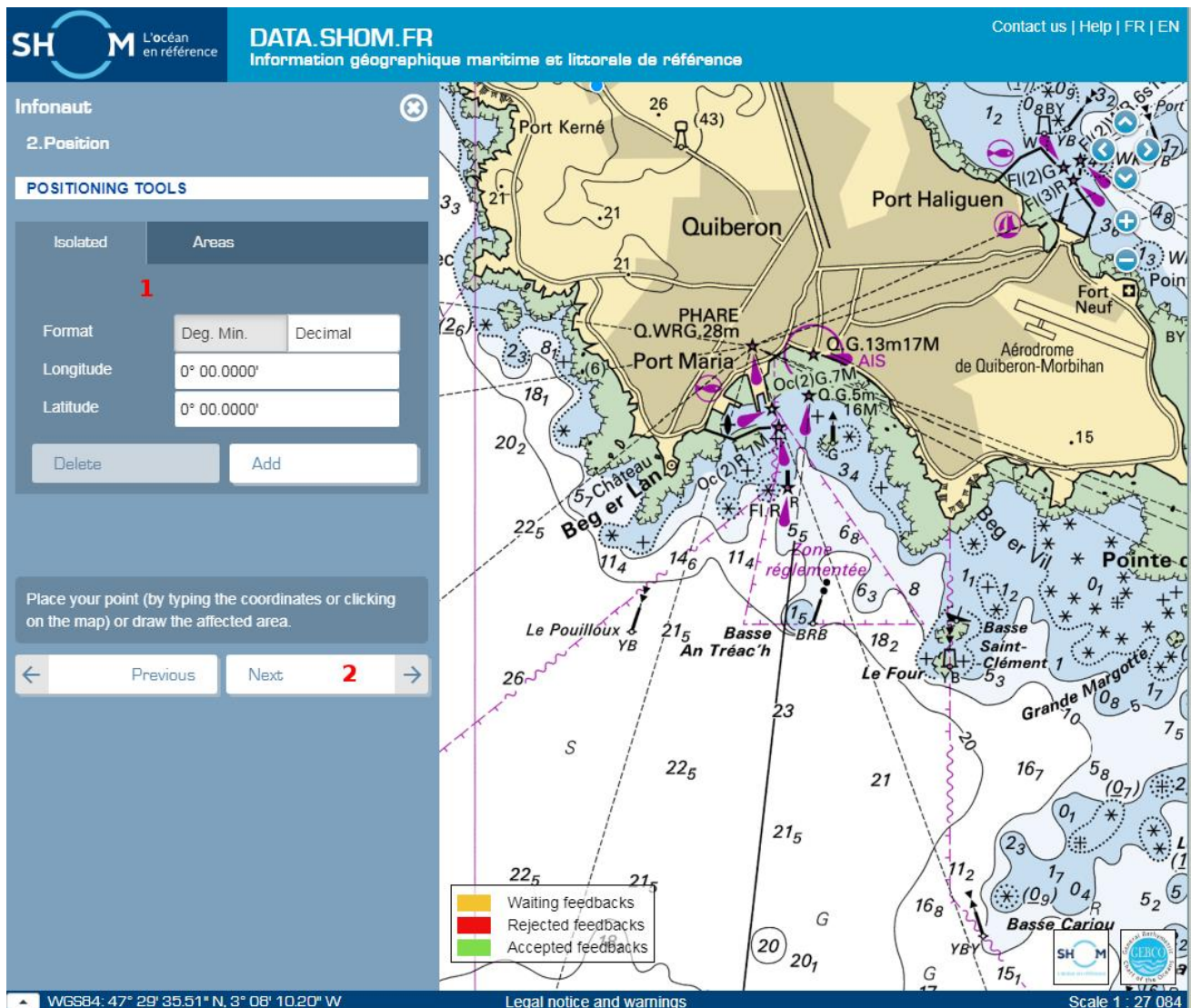
The current step is indicated by the tab title (**label 1**).

Select a feedback type from the list of predefined Shom types (**label 2**). These types correspond to the various Shom products on which you can provide feedback. The type “Others (specify)” should only be used if the feedback does not fall into any of the other categories. In this case, you must specify the exact type of feedback in the detailed description.

Once the type has been selected, the map displays any existing feedback in this category (**label 3**). You can view the feedback details by clicking on an item (**label 3**), or create your own by clicking on the “Send feedback” button (**label 4**).

Finally, the legal notices and general terms of Infonaut use are shown below (**label 5**).

4.3 Step 2 : Positioning



This step allows you to geolocate the feedback you wish to submit.

There are two ways of geolocating your feedback using the positioning tools (**label 1**):

- By placing **a point**: in this case, there can be only one point per feedback submitted. Clicking again after placing a point will move the point to the new position.
- By placing **one or more areas**: in this manner, you can define several areas for a given feedback by clicking on “Add an area” as many times as required. You can, at any time, edit or delete one of the existing areas by clicking on the corresponding button.

If you have placed a point and wish to change mode to draw an area, you must accept that the point placed will be deleted. In the same way, any areas defined will be lost when switching to a point.

Upon completion, click on the “Next” button.

4.4 Step 3 : Description

SHOM L'océan en référence

DATA.SHOM.FR
Information géographique maritime et littorale de référence

Contact us | Help | FR | EN

Infonaut

3. Describe

DESCRIPTION

1

CONTACT

Organism *

Name *

Mail address *

Phone

Address

Zip

Ville

* Required fields

☐ Remember for my upcoming feedbacks

← Previous Next →

WGS84: 47° 29' 33.63" N, 3° 08' 22.87" W

Legal notice and warnings

Scale 1 : 27 084

This step enables you to enter the details of your feedback, along with your contact details. The following fields are required:

- Feedback description (**label 1**): enter as much detail as possible in this field. Also specify whether you have additional files (photos, etc.). Shom may thus contact you to request these files if necessary.
- Name, Organisation and Email address (**label 2**): this address must be valid and regularly checked in order to be able to respond to a request for additional information by Shom.

4.5 Step 4: Send

Step 4 is confirming your feedback. The system also allows you to add another feedback if necessary:

- Same type: you are directly taken to step 2 to enter feedback concerning the same product
- Different type: you are taken to step 1 where you are invited to define the new feedback type

5 Oceanographic forecast

The “Oceanographic forecast” menu allows you to view, download and perform specific functions on oceanographic data.

5.1 Data selection



Data access is via the Oceanographic forecast tab (**label 1**) of the Shom catalogue in the Data menu ([see 1.2.2 Data menu](#)).

As for the other layers, expand the categories (**label 2**) and check the layers you wish to view (**label 3**).

To return to your data selection, either click on the gear icon after the name, or on the cross in the top right-hand corner (**label 4**).

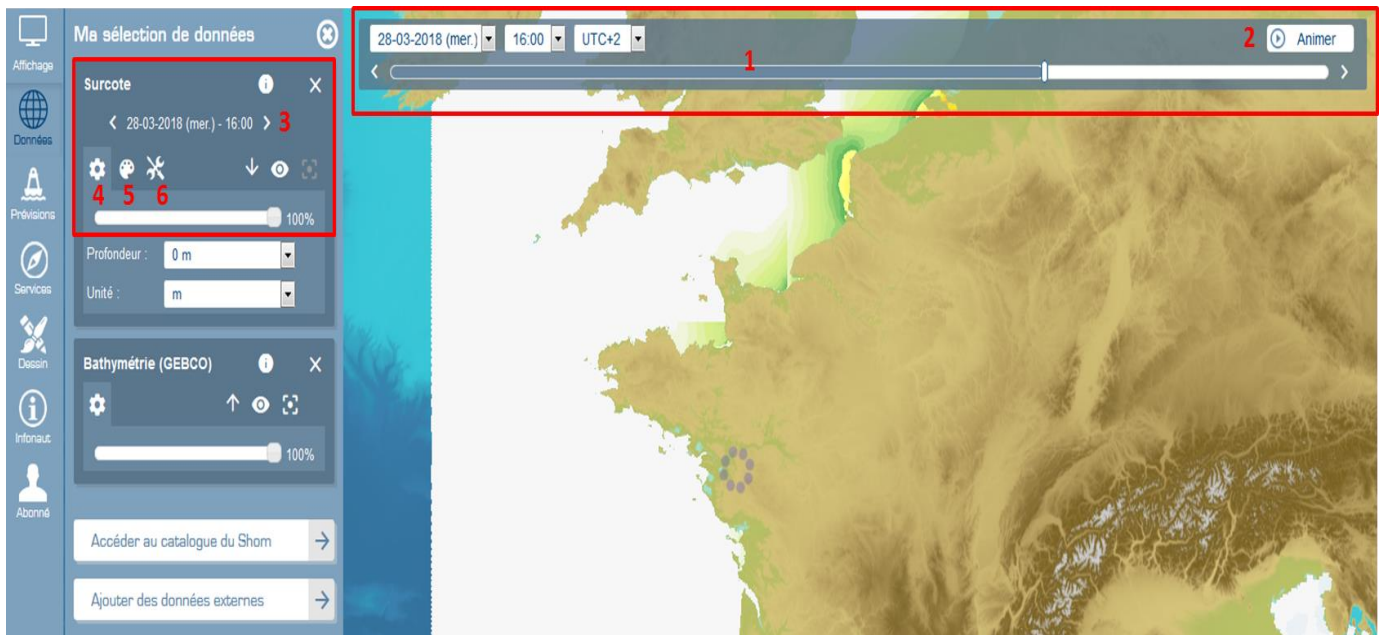
5.2 Oceanographic forecast layers menus

5.2.1 General interface

The general interface is the same as for the other layers, but it proposes two types of additional tools:

- Multi-layer tools:
 - the Timeline » (**label1**);
 - the Animate tool (**label 2**).
- These tools are specific to a given data layer:
 - selecting the timelines via the arrows (**label 3**) allows you to navigate between the times proposed by the model;
 - The Parameters tab (**label 4**) is used to adjust the depth and unit;
 - the Palette tool (**label 5**) allows you to change the colours used for this layer and to display the legend;
 - the Actions tab (**label 6**) provides download, transect and value on hover tools.

By default, the Parameters tab is expanded when a layer is displayed.



5.2.2 Timeline

The timeline allows you to navigate between the various dates and times available for the selected oceanographic layer(s).



Drop-down menus allow you to select the desired date (**label 1**), time (**label 2**) and time zone (**label 3**).

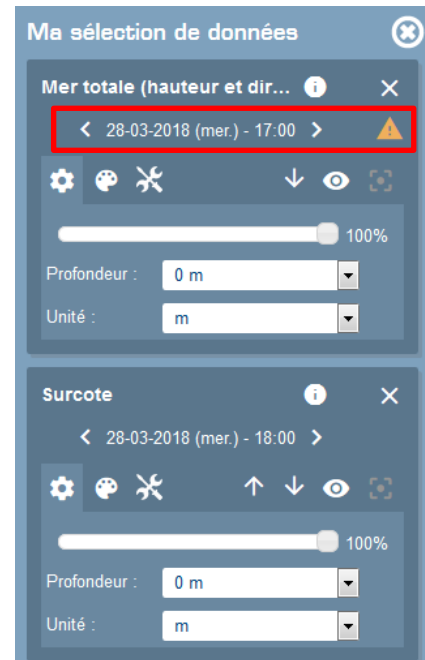
You can also browse through the time slots for a given day using the slider or arrows on either end of this latter (**label 4**).

General principles

- The timeline is initialized with the browser's time zone and set to the date closest to the browser's time.
- Only those dates and times matching timelines in the selected oceanographic layers can be selected.
- When a layer's term is changed in the layer manager (in the "My data selection" menu on the left), this changes the timeline date and hence potentially the terms of the other selected oceanographic layers.
- The slider time step adapts to the layers added in data selection. If a single term is available for the selected date, the slider is greyed out and disabled; the same applies to time selection.



- When selecting a time from the timeline, if this latter is not available for one of the enabled layers, the closest time step is selected and an icon is displayed along with the selection of the layer's time. A tooltip displayed when the mouse is hovered over this icon specifies that the term has been adjusted to the closest.

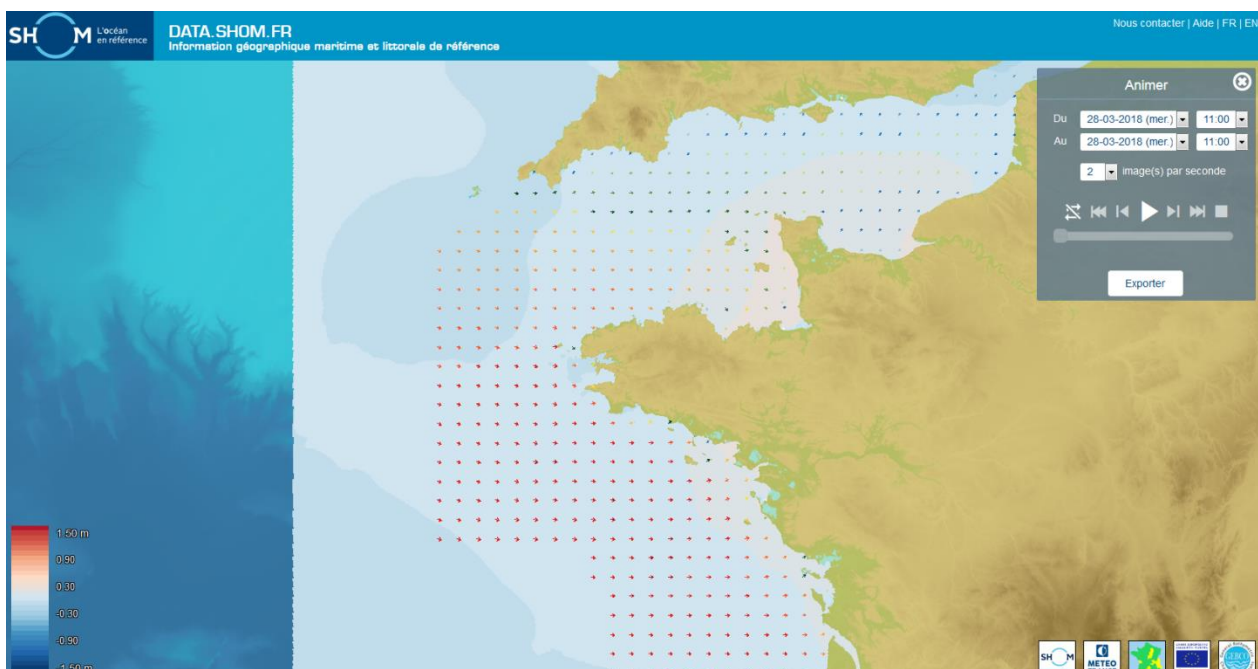


5.2.3 Animate

The “**Animate**” tool is available from the button in the top right-hand corner of the timeline and applies to the selected layers.



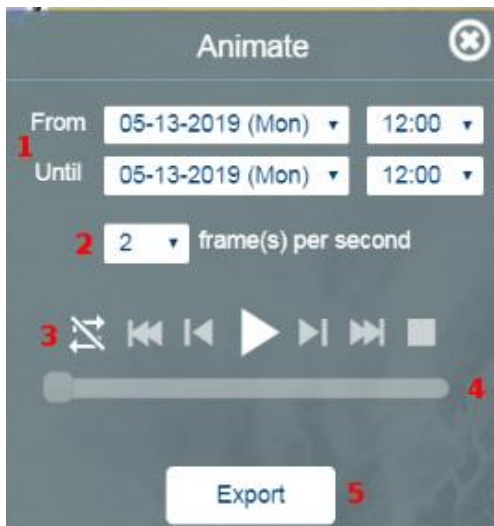
Animation reconfigures the window and displays a movable configuration box.




Important: The animation uses the TU selected in the timeline, along with the depth and palette of each of the layers. For each layer, the animation takes into account the auto palette if selected. The palette is thus regenerated when launching the animation in order to take into account the minimum and maximum of all terms to animate.

During the animation, the regions at least partially shown on the layers to animate are selected.






You must therefore carefully adjust all information to be displayed in the animation **before clicking the “Animate” button.**



You can select the date, start and end times (**label 1**), along with the animation speed by selecting the number of frames per second (**label 2**).

Once your animation is configured, click on the Start button  in the control area (**label 3**).

This control area also allows you to:

- pause the animation 
- move forward or backward frame by frame  
- completely stop the animation 
- enable/disable animation repeat mode. 

You can directly move around the animation by dragging the timeline scroller (**label 4**). The date and time matching the frame are displayed under the timeline scroller.

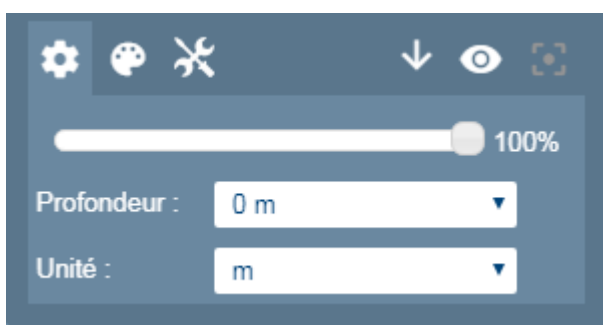
If you wish, you can export your animation in GIF format (**label 5**). **The GIF export** is performed for a single layer at a time, **in UTC0**. You can select the number of frames per second. Once ready, a window is displayed asking you whether you want to open or save your GIF.

To exit the animation, click on the cross in the top right-hand corner of the box (**label 6**).

Important: The loading time may be long if the data comprises numerous terms (typically, a fifteen-day hourly model can comprise 360 terms, but in this case the loading time will be very long). Loading time is even longer if there several layers to animate and if the geographical extent is large.

The same applies for exporting.

5.2.4 Parameters



Vous pouvez décider d'afficher la prévision dans un autre fuseau horaire.

If the displayed forecast is in 3D, you can select the depth.

5.2.5 Palette



Several colour palettes are available depending on the data (**label 1**). Each standard palette is associated with a colour palette and, possibly, with a style defining the shape of the symbol when the data is vector-based (force and direction). These standard palettes possess predefined lower and upper boundaries.

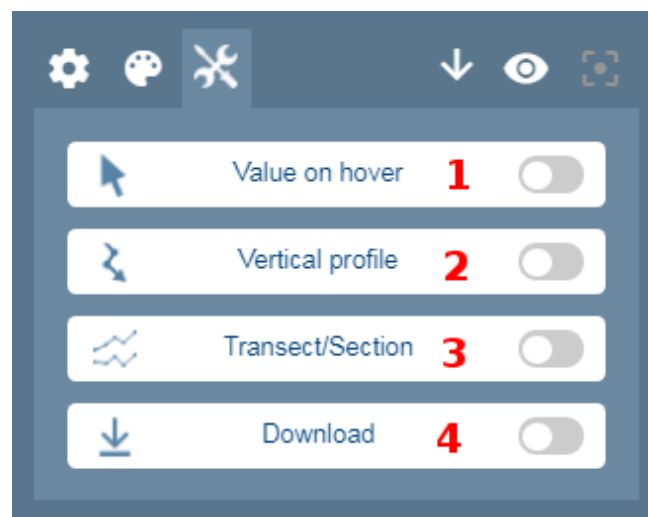
The automatic palette (label 2) is used to optimize the graphical representation according to the actual values of the region or regions in the display extent (geographical area and scale). Optimization involves estimating the lower and upper boundaries specific to the considered regions, depth and date. When the display extent falls within a single region, the boundaries are calculated for

the entire region.

Once the “AUTO” graphical representation has been selected, the user can select a standard palette from the drop-down menu. As long as he/she does not change palette, the user continues to use the “AUTO” graphical representation, even if he/she moves, and palette optimization is automatically recalculated.

This tab also contains the legend (**label 3**). To avoid the need to constantly return to data selection, you can opt to display it directly on the map (**label 3**). Only one legend can be shown at a time on the map.

5.2.6 Actions

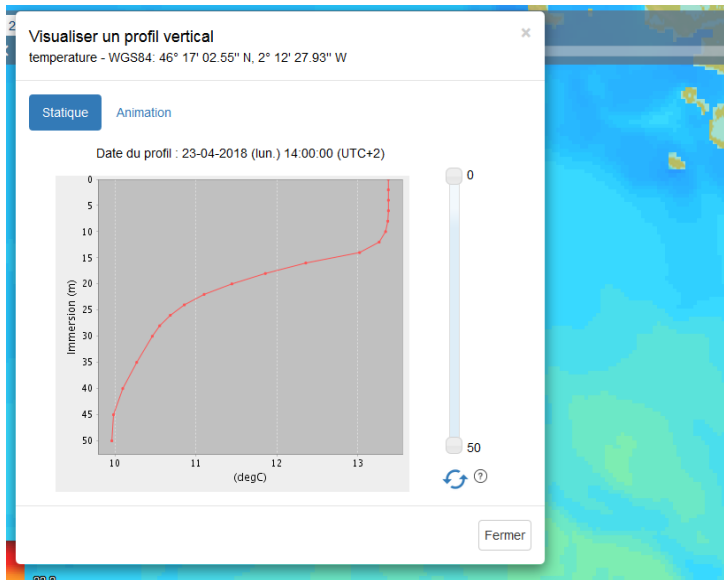


Value on hover (label 1) displays the value under the mouse cursor. This provides a greater degree of precision than the colour legend alone. You can view the exact value for the oceanographic region in question at the specified date and depth. For this click on the layer. A text window gives the actual value (with rounding error) near the cursor, with latitude and longitude in decimal degrees. Clicking generates a query which is sent by the browser that then awaits a response from the server.

If you do not click the text window is automatically refreshed as you move the mouse, giving the estimated value, also rounded. The estimation uses a 250-level quantification (index) between the

predefined lower and upper boundaries. Contrary to the exact value, the estimated value is based on an index preloaded into the browser, rendering display more fluid. In a heavy server load context, the hover value may be temporarily inoperative, whereas the datum image has been refreshed.

Vertical profile (label 2) produces a graph of the data according to various depths. This tool is thus available only for 3-dimensional data. The profile may be static or animated over a given time period.



To generate the vertical profile, click on the map.

The geographical coordinates of this point are displayed in the header, in the top left-hand corner, in degrees-minutes-seconds, next to the name of the observed data.

The depth boundaries can be adjusted using the scroller on the right of the graph. To update the graph after making changes, click on the two refresh arrows.

You can move the graph window by dragging it with the mouse. To close the profile, click on "Close" in the bottom right-hand corner of the window, or on the grey

cross icon in the top right-hand corner.

To **animate** your profile, click on the Animation tab in the top left-hand corner of the profile view window. You are then asked to configure the dates of your animation, along with the number of frames per second. Once configured, click to create the animation.

While the tool is active, the operator can click on another point of the layer to display the corresponding vertical profile.

Transect/Section (label 3) generates a graph of a cross-section of the data along a line (polygonal line). The transect may be static or animated over a given time period.

Use the mouse to draw the transect line. Click to create a point, then click to create the other points of your transect line. Double-click to finish the line and to generate the graph.

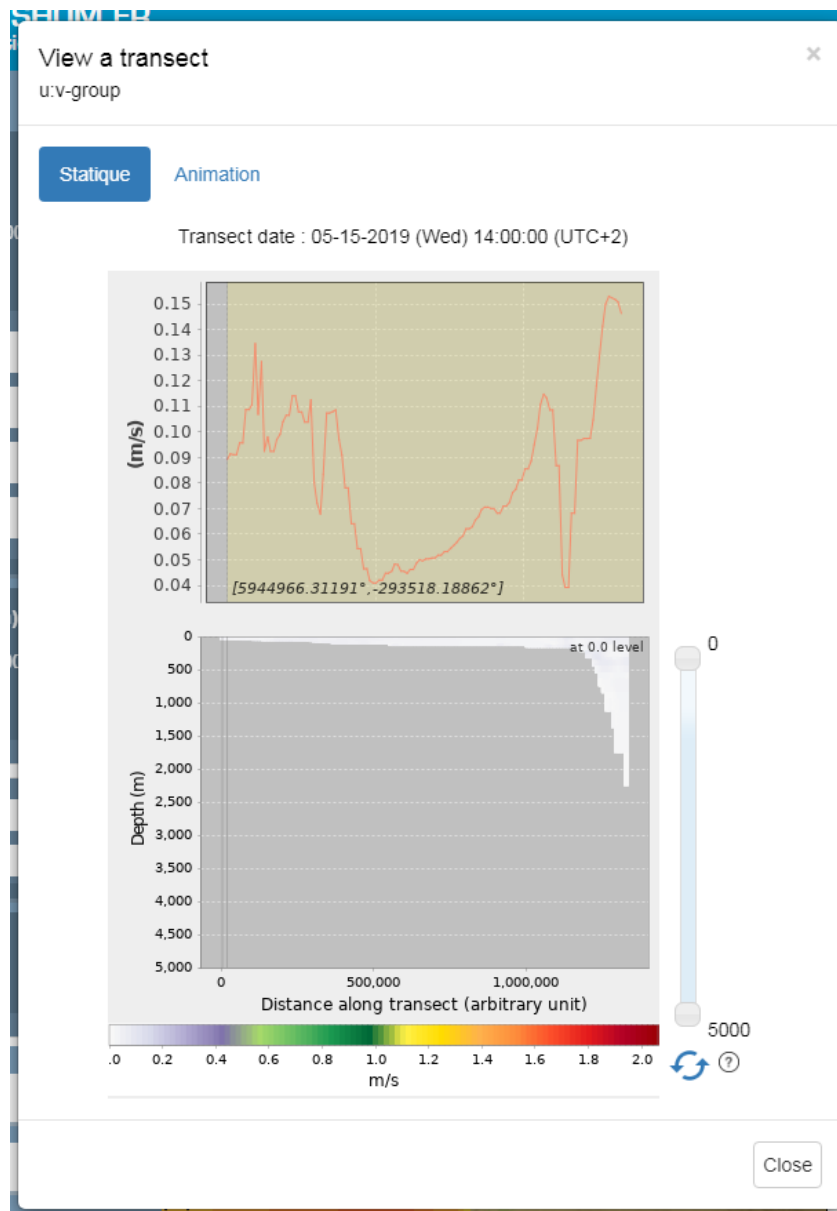


You can move the graph window by dragging it with the mouse. The line remains on the map. To close the graph, click on “Close” in the bottom right-hand corner of the window, or on the grey cross icon in the top right-hand corner.

To **animate** your transect, click on the Animation tab in the top left-hand corner of the profile view window. You are asked to configure the dates of your animation. Once configured, click to create the animation.

When the data is 3-dimensional, the window shows two graphs: the datum transect at the depth and date defined along the line at the top and the 2D cross-section for all depths at the bottom. The X axis is in an arbitrary unit in which each segment, from the start to the end of the polygonal line, is represented proportionally to the total length.

In the bottom part, the depth boundaries can be adjusted using the scroller to the right of the graph. To update the graph after making changes, click on the two refresh arrows.



As long as the transect/section function remains active, the operator can trace a new line and display the corresponding section (if a mistake is made when tracing the line, double-click, close the graph and repeat).

The section can only be performed within the extent of an oceanographic region. Consequently, to highlight this region's boundaries, the other regions become transparent once the first point of the line has been defined. If the first point is out of the area, an error message is displayed.

Exit the function by clicking once more on "Transect/Section" to toggle the green button back to grey.

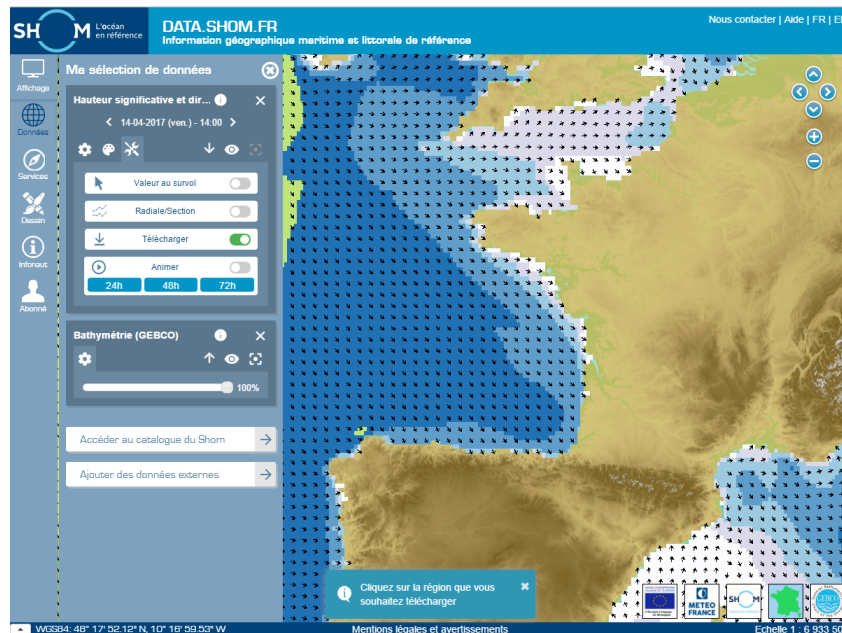
Download (label 3) Downloading is covered in [chapter 5.3](#).

5.3 Manual download

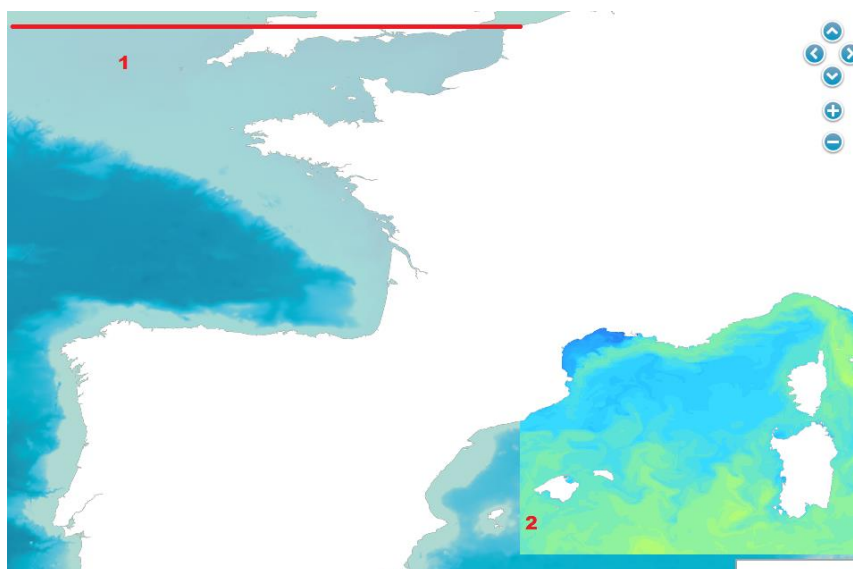
This function allows you to download the original file. This includes the data displayed on the portal, along with the data archived since 1 January 2016. This file is associated with the oceanographic region that must be selected.

5.3.1 Current data

This file is associated with the oceanographic region that must be selected and with the currently viewed date. Can only be downloaded one region and one date at a time. For example, to download tomorrow's data, first display tomorrow before initiating the download.



When you click on the download button, the regions become transparent and return to full opacity when the mouse hovers over them.



In the image above, the mouse is inside the Mediterranean oceanographic region (**label 2**), while the channel-gascogne region, which ends at the red line (**label 1**), is transparent.

Simply click on the region to start the download process.

The text window displayed gives details of the file about to be downloaded, in particular its size. Click on "OK" to start the download.

Download

Reference : VAGUES_MFWAM_R1000_EURAT01

Current data ▾

The file with the following metadatas will be download

Date : 2019-05-15

Format : GRIB

Size : 35158 Ko

[Click here if you want to script the download process for current data](#)

Download

Archived data ▸

Back

Once the .dl.zip file downloaded:

- Use the unzip command to unzip the downloaded .zip file;
- Use the gzip -d command to unzip the .gz files;
- If necessary, the .nc.dl (or .grib.dl) extension should simply be changed to .nc (or .grib).

5.3.2 Archived data

As for current data, to download archived data, you must first display the layer and select the oceanographic region. Only one region, for a single date, can be downloaded at one time.

Download

Reference : VAGUES_MFWAM_R1000_EURAT01

Current data ▸

Archived data ▾

You can download the archived data from any given date since the **01/01/2016**. You will receive a download link by Email as soon as the data is available.

Email :

Date : ▾

[Click here if you want to script the download process](#)

Download

Back

Enter your email address and the desired date, then click on Download. Download is asynchronous, you will receive a download link by e-mail once ready.

5.4 Automated download

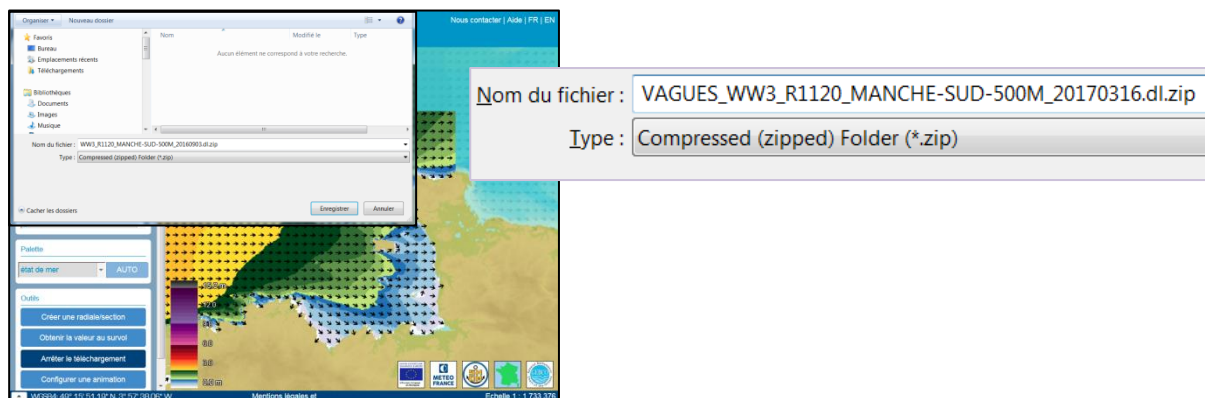
5.4.1 Current data

You can automate the download via the following URL

https://services.data.shom.fr/telechargement/oceano/THEMATIC_MODELNAME_RXXXX_AREA-NAME-XXXM_YYYYMMDD.dl/file/THEMATIC_MODELNAME_RXXXX_AREA-NAME-XXXM_YYYYMMDD.dl.zip

The file name **THEMATIC_MODELNAME_RXXXX_AREA-NAME-XXXM_YYYYMMDD** can be completed via the nomenclature (Cf. §5.9) but the simplest remains to manually download the file once to retrieve the exact file name. Subsequently, only the date **YYYYMMDD** needs to be changed.

Example : Manual download of the waves model in north Brittany with a resolution of 500m has a filename **VAGUES_WW3_R1120_MANCHE-SUD-500M_20160903.dl.zip**.



The URL to use to script the download is then :

https://services.data.shom.fr/telechargement/oceano/VAGUES_WW3_R1120_MANCHE-SUD-500M_AAAAMMJJ.dl/file/VAGUES_WW3_R1120_MANCHE-SUD-500M_AAAAMMJJ.dl.zip

5.4.2 Archived data

You can script download calls with the following instructions.

Call the following URL via a GET request:

https://services.data.shom.fr/oceano/archive/download?date=AAAAMMJJ&model=THEMATIC_MODELNAME_RXXXX_AREA-NAME-XXXM&mail=YourEmailAddress

Exemple :

https://services.data.shom.fr/oceano/archive/download?date=20160101&model=VAGUES_MFWAM_R1000_EURAT01&mail=exemple@mail.com

The request result is a JSON file in the form: {publicationId, key}

The final download link is generated in the following manner:

https://services.data.shom.fr/{key}/telechargement/archiveoceano/ARCHIVEOCEANO_{publicationId}/file/THEMATIC_MODELNAME_RXXXX_AREA-NAME-XXXM_AAAAMMJJ.zip

The file is made available asynchronously. The download link indicated is only available once the mail has been received.

5.5 Access to the WMS

5.5.1 Service WMS

If you wish to display the oceanographic forecasts in another client, these are available via Web Map Service (WMS) at the URL: <https://services.data.shom.fr/ncwms2/wms>

To specify the date, simply add the TIME parameter to the URL, for example:

<https://services.data.shom.fr/ncwms2/wms?TIME=2016-07-26T00:00:00.000Z>

Display customization is dependent upon the client into which the service is inserted, on whether it manages the parameters and whether it accepts or removes them. In practice, it is possible to specify the following parameters: TIME - ELEVATION - STYLES - COLORSCALERANGE - ABOVEMAXCOLOR - BELOWMINCOLOR - NUMCONTOURS – NUMCOLORBANDS.

Example :

https://services.data.shom.fr/ncwms2/wms?SERVICE=WMS&VERSION=1.3.0&REQUEST=GetMap&FORMAT=image%2Fpng&LAYERS=VAQUES_WW3_R1100_NORGAS-2MIN%2Fof%20wind%20%40%20Mean%20sea%20level&BBOX=-7.0%2C43.29999923706055%2C4.699999809265137%2C52.900001525878906&TIME=2016-08-25T12%3A00%3A00.000Z&STYLES=vector%2Fetat_mer&WIDTH=512&HEIGHT=512&CRS=CRS%3A84

Parameters are described on the website of the University of Reading : <https://reading-escience-centre.gitbooks.io/ncwms-user-guide/content/04-usage.html>

For data to be effectively imported they must exist. To determine whether these data are available, you can view the getCapabilities service document that lists all available layers:

<https://services.data.shom.fr/ncwms2/wms?SERVICE=WMS&REQUEST=GetCapabilities&VERSION=1.3.0>

5.5.2 Name of the layers

Correspondence of names between WMS and data.shom.fr.

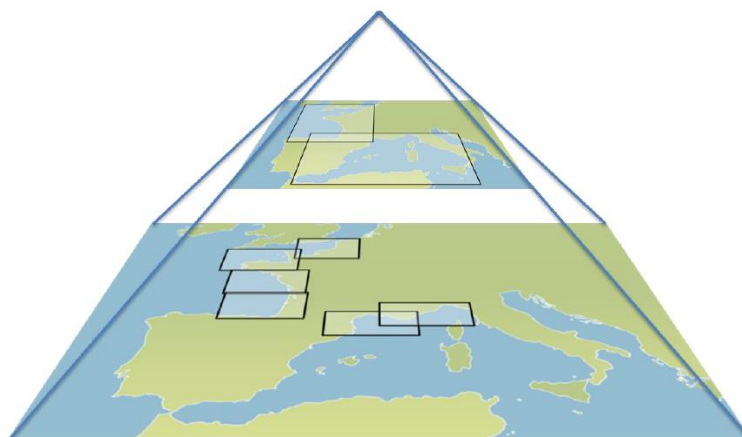
Name data.shom.fr	Name WMS
Waves	VAGUES_MFWAM_.... / VAGUES_WW3_...
Waves (height and direction)	u:v group (dir +mag)
Waves period	VAR85-10-2-201_msl
Wind waves (height and direction)	u0:v0 group (dir +mag)
Wind waves period	Mean_period_of_wind_waves_msl
Primary swell (height and direction)	u1:v1 group (dir +mag)
Primary swell mean period	Primary_wave_mean_period_msl
Secondary swell (height and direction)	u2:v2 group (dir +mag)
Secondary swell mean period	Secondary_wave_mean_period_msl
Meteorology	METEO_ARPEGE_... / METEO_AROME_...
Wind speed and direction	u:v group (dir +mag)
Atmospheric pressure at sea level	Pressure_reduced_to_MSL_msl
Water level	NIVEAUX_HYCOM2D_....
Storm surge	Surge
Sea surface height above mean sea level	Ssh (= Sea surface height)

Hourly surface hydrodynamic	HYDRODYN-SURF_HYCOM3D-SURF_...
Sea water velocity	u:v group (dir +mag)
Sea water temperature	temperature
Sea water salinity	salinity
Hydrodynamique 3D Moyenne journalière	HYDRODYN-MJ_HYCOM3D-MJ_...
Sea water velocity (daily mean)	u:v group (dir +mag)
Sea water temperature (daily mean)	temperature
Sea water salinity (daily mean)	salinity
RADARHF	RADARHF_OBS_...
Radar HF - Sea water velocity	u:v group (dir +mag)

*MSL = Mean Sea Level

5.6 Oceanographic data layer

The diagram below describes the architecture of the regions making up the oceanographic data layer. At a given zoom level, several regions may be geographically aggregated. When changing zoom level, other oceanographic areas are used (they possess a better-suited native resolution).



The data displayed in the “Oceanography” menu conforms to this pyramidal structure, selecting the constitutive oceanographic regions.

5.7 Data format

The files processed by data.shom.fr and available for download are in Netcdf or Grib scientific binary formats and conform to OGC (*Open Geospatial Consortium*) guidelines and to the CR (*Climate Forecast*) convention.

The preferred format for data transfer and viewing on data.shom.fr is the netcdf format. We attempt to adhere as closely as possible to the guidelines of the Climate Forecast (CF) convention. Netcdf version 3 or 4 may be used:

- standard names must conform to the CF convention;
- as must the attribute units (temperature on the other hand is left in degC);
- time: in Julian days since a reference date defined in units (example for the waves `time:units = "days since 1990-01-01T00:00:00Z" ;`);
- the data is in packed short format: with `_FillValue` set to -32767s (this guarantees “light”

Netcdf files);

- the coordinates may be lon(X),lat(Y) vector mode, but also in “curvilinear” mode such as lat(X,Y);

- as much information as possible is placed in the global attributes: title, convention, bulletin_date (run network date), geographical extensions, etc.

The aim is to ensure that the datum is integrated without any problems and compatible with all viewer types.

The netcdf format is thus most frequently used, but for the “Weather” data retrieved from Météo France, the grib format is used with codes that conform to WMO requirements. This relates to:

- Arpège weather
- MFWAM waves

Note: For each oceanographic thematic, one file per day is generated, containing multiple variables covering several terms.

5.8 Description of downloaded files

Forecasts are available from D-15 to D+4, in the form of one .dl.zip file per day containing the data (in NetCDF or GRIB format) and its metadata (in .xml format).

Waves (Height, Period)

Depending on the zoom :

- MFWAM Global 0,5 GRIB format: *VAGUES_MFWAM_R0000_GLOB05_AAAAMMJJ.dl.zip*
- MFWAM Europe 0,1° GRIB format: *VAGUES_MFWAM_R1000_EURAT01_AAAAMMJJ.dl.zip*
- WW3* 2' NetCDF format: *VAGUES_WW3_R1X00_FACADE-2MIN_AAAAMMJJ.dl.zip*
- WW3* 500m NetCDF format: *VAGUES_WW3_R1XX0_REGION-500M_AAAAMMJJ.dl.zip*
- WW3* 200m NetCDF format: *VAGUES_WW3_R1XXX_SOUS-REGION-200M_20160803.dl.zip*

*reprojection of the irregular WW3 grid to regular grids for different resolution

Meteorology (wind, atmospheric pressure)

Depending on the zoom :

- ARPEGE Global 0,5° GRIB format: *METEO_R0000_ARPEGE-GLOB05-MER_AAAAMMJJ.dl.zip*
- ARPEGE Europe 0,1° GRIB format: *METEO_R1000_ARPEGE-EURAT01-MER_AAAAMMJJ.dl.zip*
- AROME France 0,01° GRIB format: *METEO_R1100_AROME-EURW1S100-MER_AAAAMMJJ.dl.zip*

Water level (Storm surge, sea surface height*)

2 façades, Grille Curviligne (2km à 500m) au format NetCDF :

- Façade Manche-Atlantique : *NIVEAUX_HYCOM2D_R1000_ATL-CG_AAAAMMJJ.dl.zip*
- Façade Méditerranée : *NIVEAUX_HYCOM2D_R2000_MED-CG_AAAAMMJJ.dl.zip*

*only for Manche-Atlantique

Hourly surface hydrodynamic* (velocity, temperature, salinity)

2 fronts, regular grid 1', NetCDF format:

- HYCOM Manche-Atlantique : *HYDRODYN-SURF_HYCOM3D-SURF_R1000_MANGASC_AAAAMMJJ.dl.zip*
- HYCOM Méditerranée : *HYDRODYN-SURF_HYCOM3D-SURF_R2000_MEDOCNORD_AAAAMMJJ.dl.zip*

*extraction toutes les heures de la couche de surface du modèle 3D

Daily mean 3D hydrodynamic (velocity, temperature, salinity)

2 fronts, regular grid 1', NetCDF format:

- HYCOM Manche-Atlantique : *HYDRODYN-MJ_HYCOM3D-MJ_R1000_MANGASC_AAAAMMJJ.dl.zip*
- HYCOM Méditerranée : *HYDRODYN-MJ_HYCOM3D-MJ_R2000_MEDOCNORD_AAAAMMJJ.dl.zip*

5.9 Data nomenclature

For all data.shom.fr files, the nomenclature includes the notion of:

THEMATIC_MODELNAME_RXXXX_AREA-NAME-XXM_YYYYMMDD.nc.gz

- **THEMATIC**: considered domain, for example: hydrodynamics t°/S/currents (HYDRODYN-SURF or HYDRODYN-MJ), waves (VAGUES), meteorology (METEO), water levels and surges (NIVEAUX).
- **MODELNAME**: refers to the name of the type of model used: WW3/MFWAM, HYCOM2D/HYCOM3D-SURF/HYCOM3D-MF, ARPEGE/AROME. HYCOM3D-SURF refers to the extraction of the surface of 3D outputs to generate a 2D surface field. HYCOM3D-MJ refers to the daily average of 3D outputs over 24 h.
- **RXXXX**: RXXXX code indicating the zoom level for which the data is adapted. **It indicates the “relationship” between the areas and specifies the zoom level at which the delivered datum can be viewed online.** When the user changes zoom level, the system automatically switches from one model to the next in order to ensure that it is displayed with the appropriate resolution at the given zoom level.
- **AREA-NAME-XXM**: [may contain “-” characters] name of the geographical extent covered by the file, along with the grid resolution. When the grid mesh is uneven or curvilinear, “-UG” and “-CG” are appended to the name, respectively.
- **YYYYMMDD**: data validity date, **one file per day is produced, each of which may contain several time steps.** For the netcdf files, the run date is contained in the global attributes.

For example:

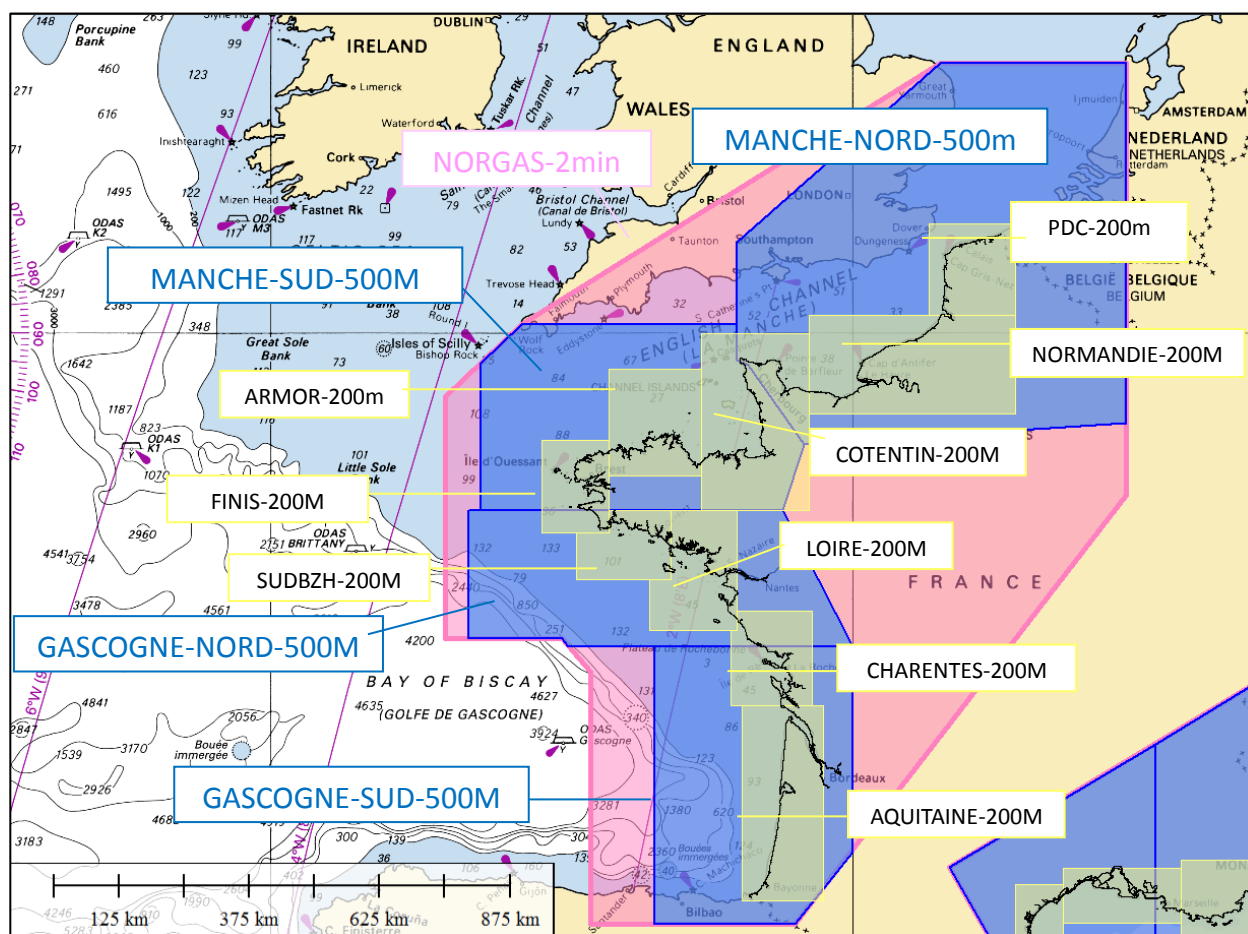
HYDRODYN-SURF_HYCOM3D-SURF_R1000_MANGASC_20160819.nc.gz
HYDRODYN-MJ_HYCOM3D-MJ_R2000_MEDOCNORD_20160819.nc.gz
VAGUES_WW3_R1220_FINIS-200M_20150116.nc.gz
METEO_ARPEGE_R1000_EURAT01-MER_20150523.grb.gz
NIVEAUX_HYCOM2D_R1000_ATL-CG_20160819.nc.gz

5.10 Wave model extents de vagues

Models shown in **blue** are obtained by projecting the WW3 NORGAS-UG and MENOR-UG uneven grid models onto a regular grid.

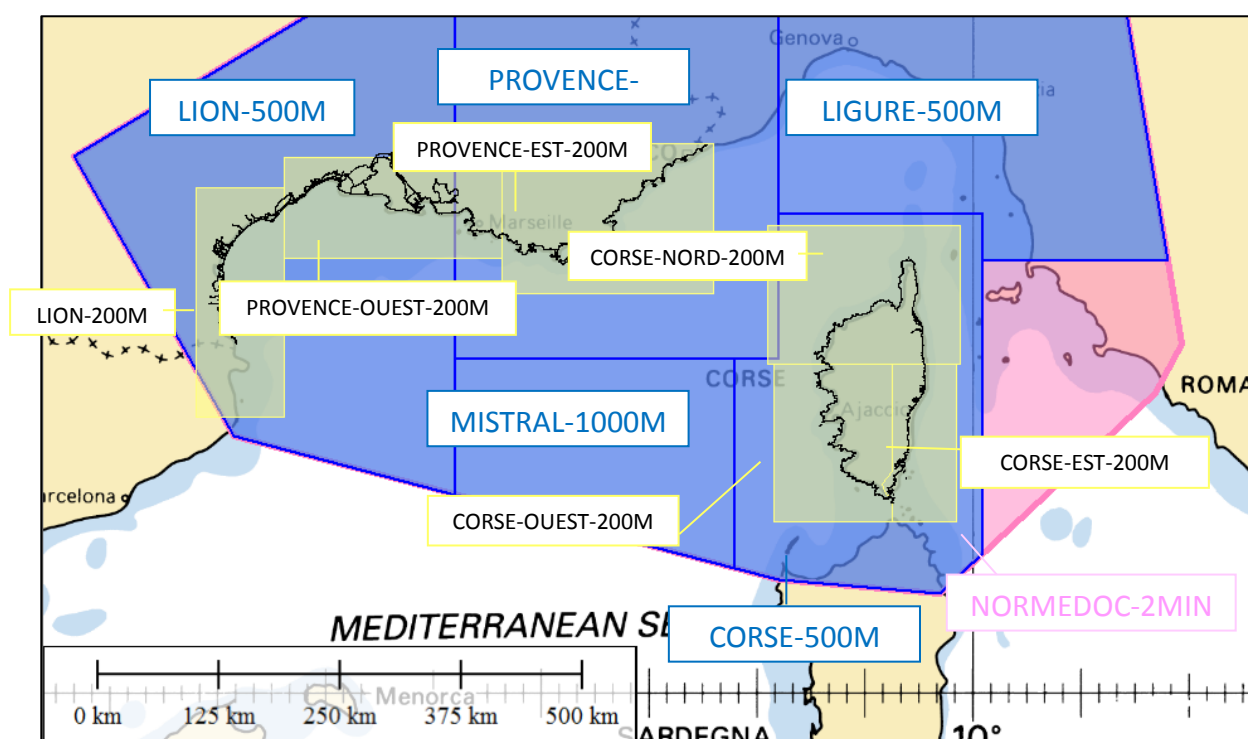
Model/Area	Zoom level matrix	Model type	Spatial resolution	Temporal resolution
GLOBAL	R0000	MFWAM	30 minutes	3h
EUROPE	R1000	MFWAM	6 minutes	3h

Atlantic coast				
Modèle/Zone	Matrice niveau de zoom	Type de modèle	Résolution spatiale	Résolution temporelle
NORGAS	R1100	WW3	2 minutes	3h
MANCHE-NORD	R1110	WW3	500m	3h
MANCHE-SUD	R1120	WW3	500m	3h
GASCOGNE-NORD	R1130	WW3	500m	3h
GASCOGNE-SUD	R1140	WW3	500m	3h
PDC	R1111	WW3	200m	3h
NORMANDIE	R1112	WW3	200m	3h
COTENTIN	R1113	WW3	200m	3h
ARMOR	R1121	WW3	200m	3h
FINIS	R1122	WW3	200m	3h
SUDBZH	R1131	WW3	200m	3h
LOIRE	R1132	WW3	200m	3h
CHARENTES	R1141	WW3	200m	3h
AQUITAINE	R1142	WW3	200m	3h



Areas with 500 m and 200 m resolution on the Channel and Atlantic coasts

Mediterranean coast				
Model/Area	Zoom level matrix	Model type	Spatial resolution	Temporal resolution
NORMEDOC	R1200	WW3	2 minutes	3h
LION	R1210	WW3	500m	3h
PROVENCE	R1220	WW3	500m	3h
LIGURE	R1230	WW3	500m	3h
CORSE	R1240	WW3	500m	3h
MISTRAL	R1250	WW3	1000m	3h
LION	R1211	WW3	200m	3h
PROVENCE-OUEST	R1221	WW3	200m	3h
PROVENCE-EST	R1222	WW3	200m	3h
CORSE-NORD	R1241	WW3	200m	3h
CORSE-EST	R1242	WW3	200m	3h
CORSE-OUEST	R1243	WW3	200m	3h



Areas with 2-minute, 500 m and 200 m resolution on the Mediterranean coast

6 Oceanogram service

This service allows you to compile, free of charge, the highest resolution 4 days forecasts at 1 point derived from the Shom and Météo-France models.

6.1 Access and choice of location

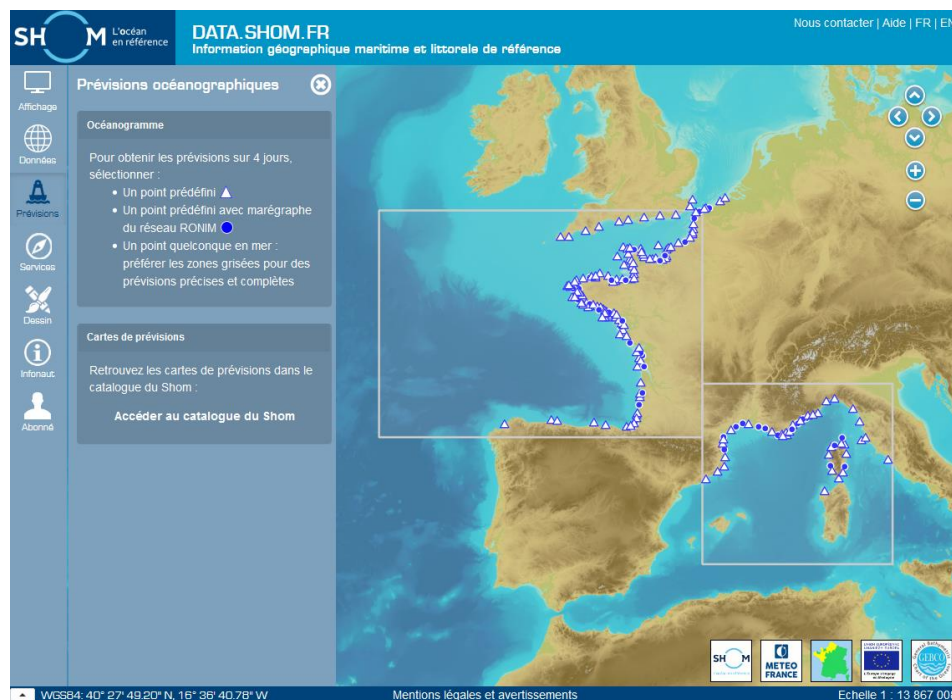
The service is reached via the “Forecast” menu in the left-hand vertical strip.



The user can click anywhere at sea to query the highest resolution models available at the selected geographical position.

The home screen displays the extent of the HYCOM3D hydrodynamic models (pale grey) containing the largest number of parameters: meteorology, waves, currents, surge, water levels, water temperature and salinity. Outside of this, only the meteorology and offshore waves are available.

A few **harbours or spots** (in blue on-screen) are proposed at the geographical positions most representative of the sections of coastline. It is possible to differentiate those with a tide gauge from the RONIM network.



6.2 Models used

You can, at any time, check the models used to generate the graphs by going to the bottom of the Oceanogram, where the sources are listed.

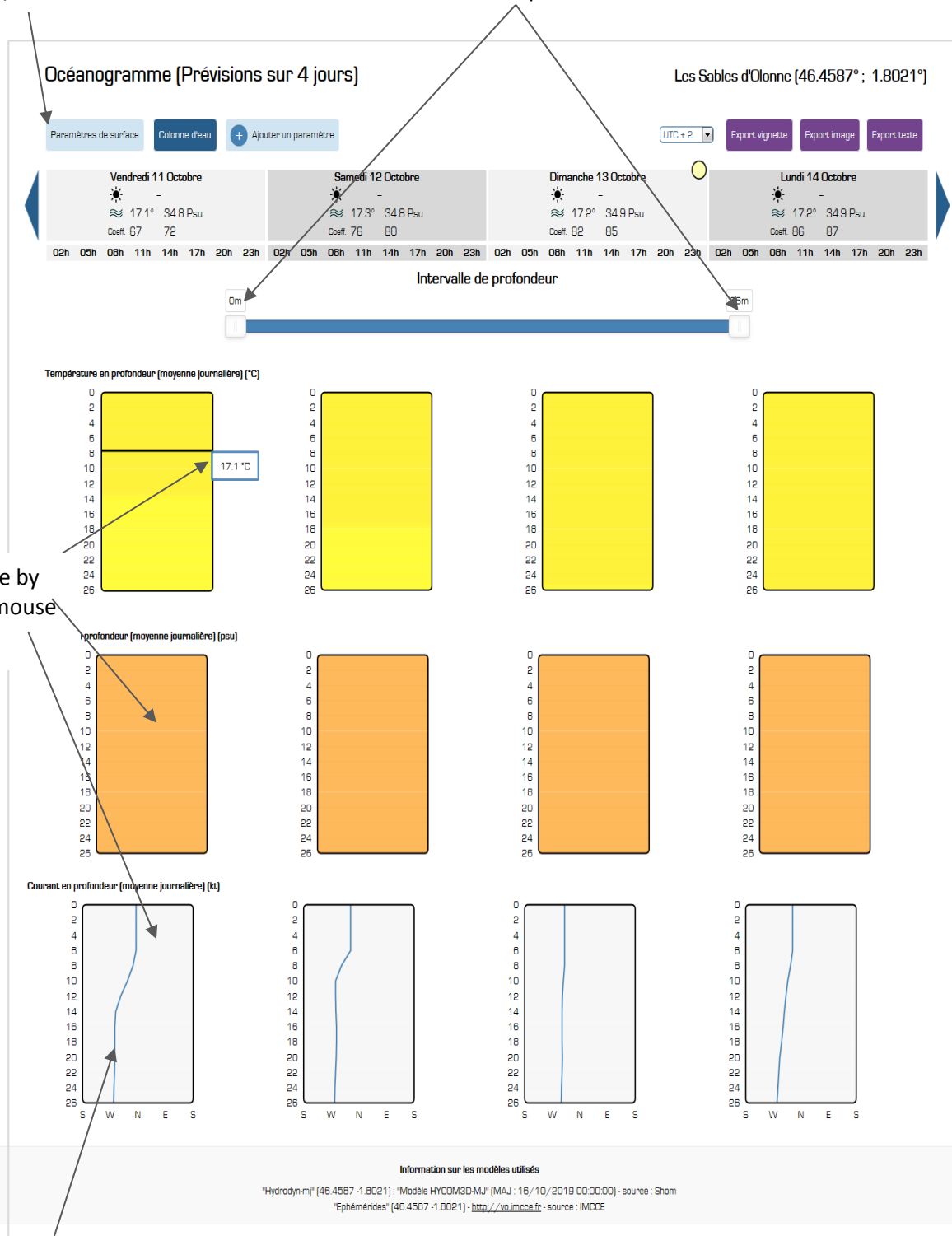
From the position requested by the user, the service selects the highest resolution models available from amongst the following:

- meteorology: ARPEGE GLOB0.5°, ARPEGE EURAT0.1°, AROME 0.01°;
- waves: MFWAM GLOB0.5°, MFWAM EURAT0.1°, WW3-2MIN, WW3-500M or WW3-200M;
- water levels: HYCOM2D (2 km to 500 m curvilinear grid);
- hydrodynamics: HYCOM3D-SURF (hourly surface) and HYCOM3D-MJ (daily average for the water column).

6.4 Water column oceanogram

Back to surface parameters

Slide the cursors to define the max and min water column depth boundaries

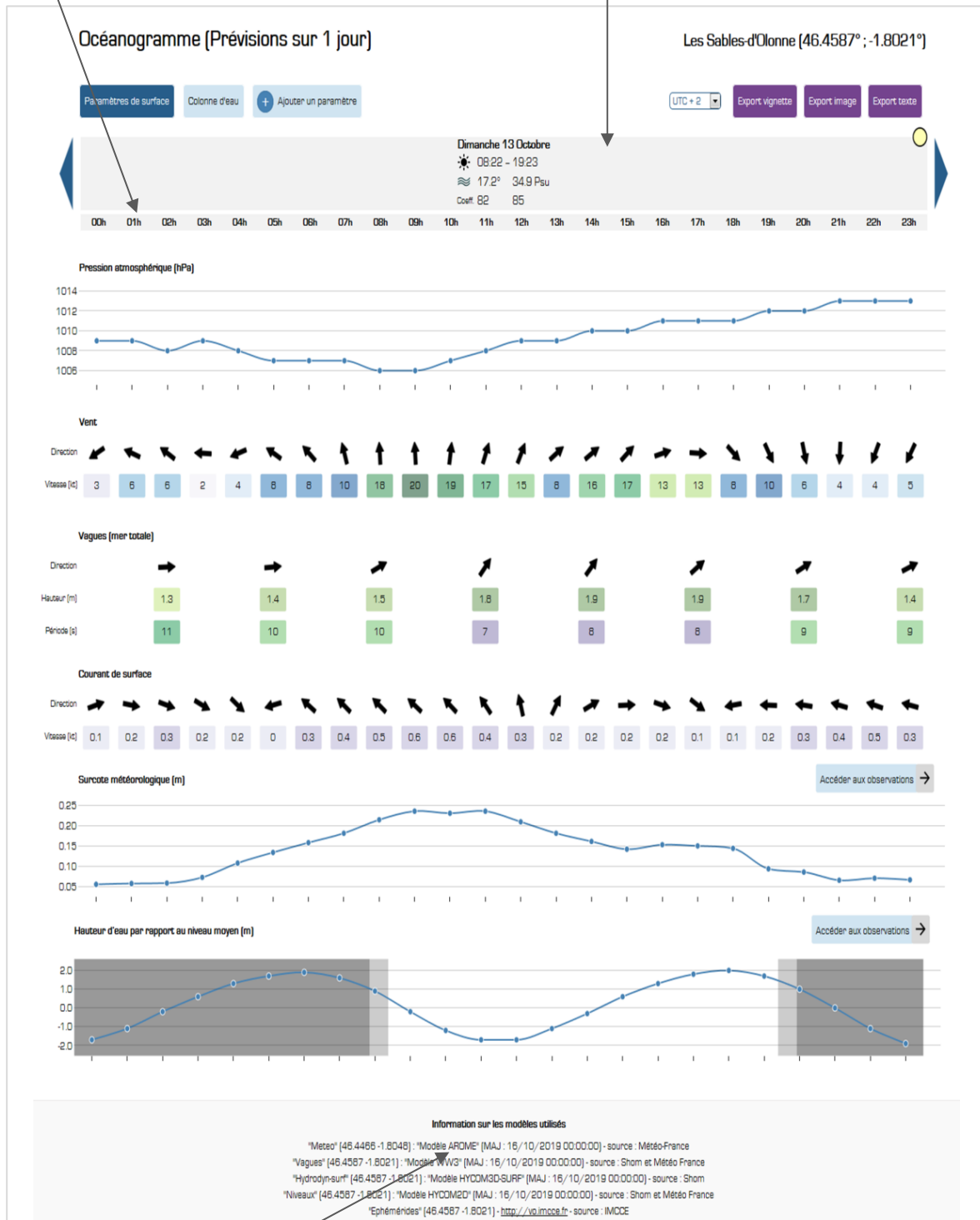


The blue curve indicates the direction of the average current

6.5 1-day oceanogram

Forecasts are displayed in hourly increments

Click on the strip to return to the 4-day oceanogram



The Météo-France AROME model provides high-resolution weather forecasts for the current day.

6.6 Direct access by URL

It is possible to access the oceanogram via its URL. Either the dynamic version as on data.shom.fr or the static export to image or text.

URL nomenclature:

data.shom.fr: `https://services.data.shom.fr/oceano/render/html?duration=4&delta-date=0&lon=-4.042968749999998&lat=47.45037978769005&utc=1&lang=fr`

Export to image: `https://services.data.shom.fr/oceano/render/image?duration=4&delta-date=0&lon=-4.042968749999998&lat=47.45037978769005&utc=1&lang=fr`

Export to text: `https://services.data.shom.fr/oceano/render/text?duration=4&delta-date=0&lon=-4.042968749999998&lat=47.45037978769005&utc=1&lang=fr`

With the parameters :

- **duration** indicates if it is a 1-day or 4-day oceanogram.
- **delta-date** allows to choose the start date of the oceanogram. If left to 0 it starts on the actual date. If 1 is set the data displayed will start the following day. And -1 for yesterday.
- **lon** and **lat** are the coordinates in WGS 84 decimal degrees of the point of the oceanogram.
- **utc** configures the timezone to display the oceanogram. You can choose between TU, TU+1 or TU + 2. Respectively indicate 0, 1 or 2 in the URL.
- **lang**, to choose the display language between french (fr) and english (en).

7 Sea level observations

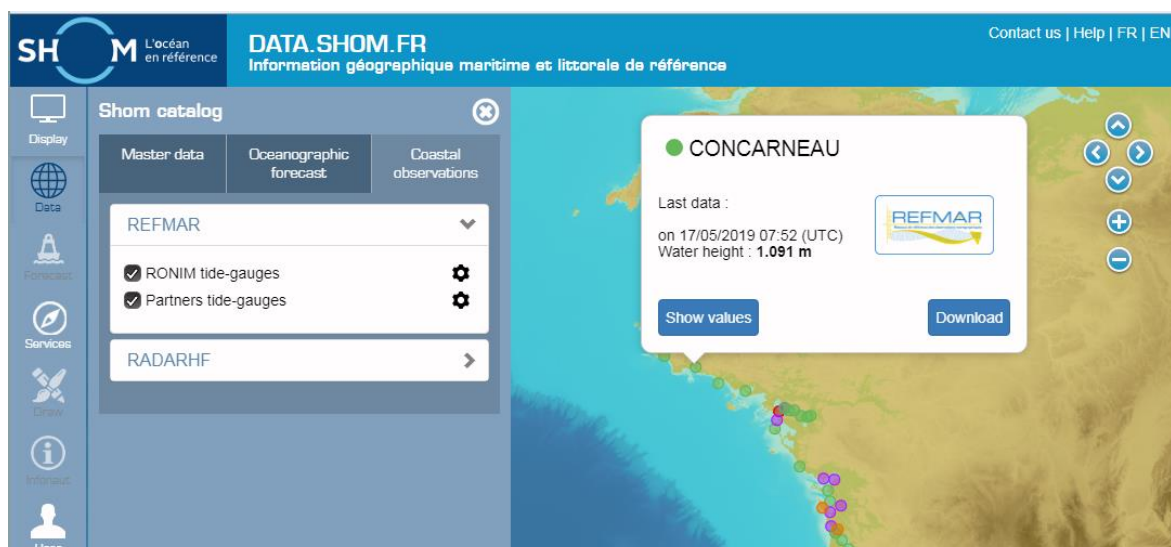
All the news from REFMAR on <http://refmar.shom.fr/en>.

7.1 Data access

Go to <http://data.shom.fr>. On the left side, select "Data" then click "Access to Shom catalog". Then choose Coastal observations and REFMAR. You can display the RONIM tide gauges or the partners. Direct access to both layers: <https://data.shom.fr/donnees/refmar>



Then click on the desired harbor to view the tidal observations, predictions and surge data.



You can view the data ("Show values") or directly access the download page ("Download").

7.2 Download tide gauge data

You can download REFMAR sea level measurements from data.shom.fr in two ways:

- **Direct manual download:** with this method you select the data to download (sources, dates, export format) and download a file in ".zip" format containing the metadata file of the site and the data file;
- **Data feed download (expert mode):** With this method you can query and download data or information about an observatory by HTTP requests.



7.2.1 Manual download from data.shom.fr

7.2.1.1 How it works

Direct manual download allows you to easily and quickly obtain sea level measurements. With this method you select the data to download (sources, dates, export format) and receive a mail with the download link to a ".zip" file containing the metadata file of the site and the data file.

It is possible to download from different sites at the same time on the condition that the parameters are identical. Note that the option "Download all available data" is limited to 1 site at a time.

The configuration page is the same for every sites, here is the direct URL : <https://data.shom.fr/donnees/refmar/download>.

7.2.1.2 Downloading


- First select your site(s) in the interface (label 1).

You can search for sites either by their name or by their id number. Use the search bar on the top right of the table (label 2).

To help your selection first and last date are indicated for each type of data or source. To view them all click on the + button at the beginning of each line (label 4).

Then tick the box for the stations you wish to download data (label 3).

At the bottom of the table is indicated the number of stations selected (label 5).



Download tide gauge data

[← Back to the tide gauges](#)

This page allows you to download free tide gauge data. Choose the tide gauges from those available and then set the data you want to download. Please note that the parameters are identical on the selected tide gauges. Finally, enter your email address, a download link will be sent when it is available.
Global REFMAR DOI : <http://dx.doi.org/10.17183/REFMAR>

Tide-gauges choice **1**

Show 10 entries

Search: bou **2**

	<input type="checkbox"/>	Id REFMAR ↑↓	State ↑↓	Name ↑↓	Zone ↑↓	Producer ↑↓	First date ↑↓
4 +	<input checked="" type="checkbox"/>	94	●	BAYONNE_BOUCAU	FM	Shom	1967-05-22T23:00:00.000Z
Last date 2019-05-17T08:19:57.000Z Raw data high frequency from 2011-04-27T13:36:46.000Z to 2019-05-17T08:19:57.000Z Raw data (delayed mode) from 2005-10-10T13:35:00.000Z to 2019-05-17T04:50:00.000Z Validated (delayed mode) from 1999-06-03T08:00:00.000Z to 2019-04-01T09:20:00.000Z Validated hourly data from 1967-05-22T23:00:00.000Z to 2019-04-01T08:00:00.000Z Raw hourly data No data High and low waters No data							
+	<input type="checkbox"/>	111	●	BOULOGNE-SUR-MER	FM	Shom	1941-11-20T23:00:00.000Z
+	<input type="checkbox"/>	155	●	BOURCEFRANC_LE_CHAPUS	FM	SPC VCA	1971-09-30T23:00:00.000Z
+	<input type="checkbox"/>	13	●	CHERBOURG	FM	Shom	1943-03-30T23:00:00.000Z
+	<input type="checkbox"/>	6270	●	CIBOURE	FM	DREAL Nouvelle Aquitaine	2000-05-21T22:00:00.000Z

Showing 1 to 5 of 5 entries (filtered from 127 total entries) 2 rows selected

Previous 1 Next

- Configuring your request

Below the table, configure your request.

Tick the box in **label 1** if you wish to download all available data for the station selected. Thus the configuration of Start and end date is not necessary anymore. You still have to choose the output format and the type of observations.

Chose your start (**label 2**) and end date (**label 3**) and the type of [output format](#) (**label 4**). Finally chose the kind of observations you want : raw data high frequency, raw data (delayed mode), validated (delayed mode), validated hourly data, raw hourly data, high and low waters.

Download parameters

Configure the data to be download with the available parameters. You can download all available data for one selected tide-gauge only.

1

☐ Download all available data (limited to 1 site)

Start date 2 End date 3 Type 4

Tide gauge observations 5

☐ Raw data high frequency ☐ Raw data (delayed mode) ☐ Validated (delayed mode) ☐ Validated hourly data ☐ Raw hourly data ☐ High and low waters

Personal information

Enter the following information to receive the download link by email.

Name (*) 6 Mail (*)

7

☐ I would like to receive from the REFMAR team information on the observation of sea level and its applications.

8

- Fill in your details

Fill in your name and email address (**label 6**). You can chose to subscribe to the REFMAR newsletter by ticking the dedicated box (**label 7**). Click on Generate archive (**label 8**) to validate your order. If everything went well, a Success message is displayed.

Success - Your download process is being processed. An email will be sent to the specified address within a few minutes with the download link when it is ready.

You will receive, in a shorter or longer period depending on the amount of data to be prepared, an email containing the download link of the archive in .zip format.

- Contents of the zipped folder

The folder containst :

A file STATION-ID.sml containing all the useful information on the tide gauge obervatory. The fileier *.sml is described below in [7.3.6 SML file](#).

One data file per year in the chosen format. Note that the data is always provided in UTC.

7.2.2 Subscribe to feed

You can set up an automatic data feed to automatically download sea level measurements. This system allows users to collect data from tide gauges by queries. Important, downloading by stream is limited to 31 days per request.

7.2.2.1 How it works

From each page of a station you can request the service URL. It is the same for all tide gauges. It is by setting the request sent to the service that different stations are interrogated.

Click the "Subscribe to stream" button on the right above the sea level graph as a function of time.



In the new window that opens, enter your name (**label 1**) and your email address (**label 2**). If you want to receive information on tide gauge stations (information on new observatories, observatories undergoing maintenance and other sea level-related news), simply leave checked the box (**label 3**). You can subscribe at any time by downloading new data and making sure the box is checked.

Click on "Send the link" (**label 4**).

Once you receive the server URL by email, you can make http requests in different ways:

- data collection by an HTTP request module in a browser;
- data collection by a script.

Service help is available at this address : <https://services.data.shom.fr/maregraphie/service/help>

Data is available in the formats : XML (POX), JSON or TXT.

- GET requests

A GET request is a URL that runs directly in the address bar of its browser.

Ex : <https://services.data.shom.fr/maregraphie/observation/json/3?sources=1&dtStart=2018-02-26&dtEnd=2018-02-27>

- POST requests

A POST request is a request that itself sends data. To run it in your browser you have to install an add-on module like RESTClient or Postman.

These queries are composed of a target site or target URL, a header or header and a request body or body.

For the rest of the description of POST requests, the module used is "Postman". As with most existing modules, it can also be used for GET requests.

7.2.2.2 GetCapabilities request (GET)

The GetCapabilities request provides all the functions and parameters available by tide gauge (which sources, periods of availability, position of the tide gauge ...).

This request is only available in GET:

<https://services.data.shom.fr/maregraphie/sos/service?request=GetCapabilities>

7.2.2.3 DescribeSensor request (POST)

The DescribeSensor request makes it possible to request information from a tide gauge (here is the one for Roscoff which identifier is 54). A special page of the site refmar.shom.fr gathers for each tide gauge their identifier.

The tide gauge is set on the "procedure" line. The URL will be the one provided by the GetCapabilities.

```
URL : https://services.data.shom.fr/maregraphie/sos/service
Header : Content-Type: application/json
Body :
{
  "request": "DescribeSensor",
  "service": "SOS",
  "version": "2.0.0",
  "procedure": "https://shom.fr/maregraphie/procedure/54",
  "procedureDescriptionFormat": "http://www.opengis.net/sensorML/1.0.1"
}
```

7.2.2.4 GetObservation request (GET or POST)

This query retrieves the data from the wanted tide gauge. It is possible to make GetObservation requests in GET (3 formats available) or POST (only JSON and XML in output).

Important, downloading by stream is limited to 31 days per request.

In this example all the data (WaterHeight/**0**) of the tide gauge observatory of Toulon (identifier **68**), from **15/01/2014 à 00h00** to **17/01/2014 à 23h59min59sec** are requested. The Z corresponds to the Zulu time (= UTC = UT + 0h).

GET (all formats):

`https://services.data.shom.fr/maregraphie/observation/json/68?sources=0&dtStart=2014-01-15T00:00:00Z&dtEnd=2014-01-17T23:59:59Z`

- **Format**, chose between : json, pox (xml) or txt;
- Station **Identifier**;
- **Type(s) of water height** requested among (= "observedProperty"):
 - **1** : Raw high frequency;
 - **2** : Raw delayed mode;
 - **3** : Validated delayed mode ;
 - **4** : Validated hourly;
 - **5** : Raw hourly;
 - **0** : All types available over the requested period;

It is also possible to request several by separating them with commas: 3,4

- **dtStart** and **dtEnd** specify the time limits of the period requested. The format "2015-01-15T00:00:00+00:00", corresponds to:
[year]-[month]-[day]T[hour]:[minutes]:[seconds][Time zone here TU]

POST, JSON format:

```
URL : https://services.data.shom.fr/maregraphie/sos/service
Header : Content-Type: application/json
Body :
{
  "request": "GetObservation",
  "procedure": ["https://shom.fr/maregraphie/procedure/68"],
  "observedProperty": ["https://shom.fr/maregraphie/observedProperty/WaterHeight/0"],
  "temporalFilter": [{
    "during": {
      "ref": "om:phenomenonTime",
      "value": [
        "2014-01-15T00:00:00Z",
        "2014-01-17T23:59:59Z"
      ]
    }
  ]
}
```

- "procedure" = Station **Identifier**;
- "observedProperty" = **Type(s) of water height** among:

- WaterHeight/1 : Raw high frequency;
- WaterHeight/2 : Raw delayed mode;
- WaterHeight/3 : Validated delayed mode ;
- WaterHeight/4 : Validated hourly;
- WaterHeight/5 : Raw hourly;
- WaterHeight/0 : All types available over the requested period;

It is also possible to ask for more by separating the urls by commas:

"observedProperty": ["https://shom.fr/maregraphie/observedProperty/WaterHeight/4",
"https://shom.fr/maregraphie/observedProperty/WaterHeight/3"]

- "temporalFilter", specifies the time limits of the period requested. The format "2015-01-15T00:00:00+00:00", corresponds to:
[year]-[month]-[day]T[hour]:[minutes]:[seconds][Time zone here TU]

POST, XML format :

```
URL : https://services.data.shom.fr/maregraphie/sos/service
Header : Content-Type: application/xml
Body :
<GetObservation
  xmlns="http://www.opengis.net/sos/1.0"
  xmlns:om="http://www.opengis.net/om/1.0"
  xmlns:ogc="http://www.opengis.net/ogc"
  xmlns:gml="http://www.opengis.net/gml"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" version="1.0.0" service="SOS"
  xsi:schemaLocation="http://www.opengis.net/sos/1.0
  http://schemas.opengis.net/sos/1.0.0/sosGetObservation.xsd">
  <offering>http___shom.fr_maregraphie_offering_68</offering>
  <eventTime>
    <ogc:TM_During>
      <ogc:PropertyName>om:samplingTime</ogc:PropertyName>
      <gml:TimePeriod>
        <gml:beginPosition>2014-01-15T00:00:00Z</gml:beginPosition>
        <gml:endPosition>2014-01-17T23:59:59Z</gml:endPosition>
      </gml:TimePeriod>
      </ogc:TM_During>
    </eventTime>
    <observedProperty>http://shom.fr/maregraphie/observedProperty/WaterHeight/0</observedProperty>
    <responseFormat>text/xml; subtype="om/1.0.0"</responseFormat>
    <resultModel>om:Measurement</resultModel>
    <responseMode>inline</responseMode>
  </GetObservation>
```

- <offering> = Station Identifier;

- "observedProperty" = Type(s) of water height among:

- WaterHeight/1 : Raw high frequency;
- WaterHeight/2 : Raw delayed mode;
- WaterHeight/3 : Validated delayed mode ;
- WaterHeight/4 : Validated hourly;
- WaterHeight/5 : Raw hourly;
- WaterHeight/0 : All types available over the requested period;

It is also possible to ask for more by separating the urls by commas:

"observedProperty": ["https://shom.fr/maregraphie/observedProperty/WaterHeight/4",
"https://shom.fr/maregraphie/observedProperty/WaterHeight/3"]

- "temporalFilter", specifies the time limits of the period requested. The format "2015-01-15T00:00:00+00:00", corresponds to:
[year]-[month]-[day]T[hour]:[minutes]:[seconds][Time zone here TU]

7.2.2.5 Scripting the data collection

To automate data retrieval, it is possible to easily script GetObservation requests with a wget command:

```
wget -O outputFile.extension "GetObservation_inGet"
```

For example, the request to retrieve the high frequency raw data from the Brest station from 3/07/2018 to 9/07/2018 in TXT format is as follows:

```
wget -O reponse.txt "https://services.data.shom.fr/maregraphie/observation/txt/3?sources=1&dtStart=2018-07-03T00:00:00Z&dtEnd=2018-07-09T23:59:59Z"
```

7.3 Format of tide gauges data

Sea level observations are covered by the "Oceanographic geographical features" theme of Annex III of the INSPIRE Directive. More specifically, these data come under the Observations and Measurements model. Accordingly, the dissemination of REFMAR tide gauge data on data.shom.fr meets INSPIRE and ETALAB standards. The Sensor Observation Service provides two data formats: JSON and XML. To remain in continuity with the measurements delivered for several years on the REFMAR website, the TXT format was retained with no changes.

7.3.1 The Sensor Observation Service (SOS)

The Sensor Observation Service (SOS) is a special web service featuring an official standard. This service which is a standard of the Open Geospatial Consortium (OGC) is currently being adopted by INSPIRE as the official service for downloading observation and measurement data. Using SOS you can directly query measurement and observation data in a standardized way. The DescribeSensor query provides information on a given tidal observatory and GetObservations retrieves in XML or JSON the observations for a given site over a given period of time, for a given type of source (raw data, and validated data at different time steps).

7.3.2 ISO metadata and cataloguing

The platform data.shom.fr has implemented this standard to "easily" meet the INSPIRE requirements for tidal observation data. Likewise, the architecture of data.shom.fr complies with the Directive regarding cataloguing and displaying ISO metadata.

7.3.3 TXT format

TXT is one of 3 REFMAR tidal data dissemination formats available on data.shom.fr. This format is the simplest of the 3. It is composed of a header summarizing the essential information about the tidal observatory and the observations and data as such (one sea level measurement per line).

7.3.3.1 Header

This block contains all the information regarding the sea level observations. Each line starts with a "#" symbol. The following example shows the information for the port of Brest.

```
# Station : BREST
# Longitude : -4.49503994
# Latitude : 48.38290024
# Organisme fournisseur de données : Shom, Marine nationale
# Fuseau horaire : UTC
# Référence verticale : Zéro hydrographique
# Unité : m
# Source 1 : Données brutes temps réel
# Source 2 : Données brutes temps différé
# Source 3 : Données validées temps différé
# Source 4 : Données horaires brutes
# Source 5 : Données horaires validées
# Source 6 : Pleines et basses mers
# Date;Valeur;Source
```

7.3.3.2 Data

Each data line is composed of a date (in UTC) DD/MM/YYYY HH:MM:SS, a water height (in m) MM.DC and the data source (from 1 to 6 corresponding to source 1 to 5). The accuracy of the data (m, cm, mm ...) depends on the supplier and the acquisition method.

```
07/01/2019 00:05:33;2.1889;1
07/01/2019 00:06:33;2.2074;1
07/01/2019 00:07:33;2.2245;1
07/01/2019 00:08:33;2.244;1
07/01/2019 00:09:33;2.2666;1
07/01/2019 00:10:33;2.2841;1
07/01/2019 00:11:33;2.3001;1
07/01/2019 00:12:33;2.3195;1
07/01/2019 00:13:33;2.3342;1
07/01/2019 00:14:33;2.3451;1
07/01/2019 00:15:33;2.3569;1
07/01/2019 00:16:33;2.3695;1
07/01/2019 00:17:33;2.3867;1
07/01/2019 00:18:33;2.3991;1
```

7.3.4 JSON format

JSON, which stands for JavaScript Object Notation, is one of 3 REFMAR tidal data dissemination formats available on data.shom.fr. It is a text format derived from JavaScript object notation. It is used to represent structured information the way XML can.

The JSON file contains raw data without a header.

```
{ "data": [
  {
    "idstation": 68,
    "idsource": 3,
    "value": 0.42,
    "timestamp": "2014/01/15 00:00:00"
  },
  {
    "idstation": 68,
    "idsource": 2,
    "value": 0.377,
    "timestamp": "2014/01/15 01:00:00"
  }
]
```

Each block corresponds to a water height for a given date/time. With:

- idstation : Station identifier, here it is 68 for TOULON;
- idsource : the type of data, here 3 and 2 for Validated delayed mode data and Raw delayed mode data;
- value : the water height in meters;
- timestamp : date and time of the data in UTC.

7.3.5 XML format

XML is one of the 3 REFMAR tidal data dissemination formats available on data.shom.fr. This format is based on GML. Geography Markup Language (GML) is an XML-derived language for encoding, manipulating and exchanging geographic data. It is a standard developed by the Open Geospatial Consortium to ensure data interoperability in the field of geographic information and geomatics. The XML file is made up of two series of blocks: <gml:boundedBy> and <om:member>.

7.3.5.1 <gml:boundedBy>

This block provides the coordinates of the tidal observatory for which the sea level measurements are being downloaded.

```

<gml:boundedBy>
  <gml:Envelope srsName="EPSG:4326">
    <gml:lowerCorner>50.72738 1.57766</gml:lowerCorner>
    <gml:upperCorner>50.72738 1.57766</gml:upperCorner>
  </gml:Envelope>
</gml:boundedBy>

```

7.3.5.2 <om:member>

The rest of the file consists of <om:member> blocks. These blocks provide the water level data with a date/time – height pair per block.

The main information is:

- <gml:timePosition>2015-01-15T13:34:17.000Z</gml:timePosition> providing the date and time of measurement.

The format is [year]-[month]-[day]T[hour]:[minutes]:[seconds][time system].

The time system is shown here with a letter corresponding to the time zone (Z: Zulu = UTC).

The tide gauge used is Toulon (identifiert 68).

- <om:result uom="m">5.69</om:result> that provides the water height in meters.

```

<om:member>
  <om:Measurement gml:id="o_1422525328219">
    <om:samplingTime>
      <gml:TimeInstant gml:id="phenomenonTime_187">
        <gml:timePosition>2015-01-15T13:34:17.000Z</gml:timePosition>
      </gml:TimeInstant>
    </om:samplingTime>
    <om:resultTime xlink:href="#phenomenonTime_187"/>
    <om:procedure xlink:href="http://shom.fr/maregraphie/procedure/68"/>
    <om:observedProperty xlink:href="http://shom.fr/maregraphie/observedProperty/WaterHeight/1"/>
    <om:featureOfInterest>
      <sa:SamplingPoint gml:id="sf_4A577B6E15ED117A19DA671B743D7D43561B1D43">
        <gml:name
codeSpace="http://www.opengis.net/def/nil/OGC/0/unknown">http://shom.fr/maregraphie/featureOfInterest/111</gml:name>
        <gml:name
codeSpace="http://www.opengis.net/def/nil/OGC/0/unknown">http://shom.fr/maregraphie/featureOfInterest/111</gml:name>
        <sa:sampledFeature xlink:href="urn:ogc:def:nil:OGC:unknown"/>
        <sa:position>
          <gml:Point gml:id="point_sf_4A577B6E15ED117A19DA671B743D7D43561B1D43">
            <gml:pos srsName="EPSG:4326">50.72738 1.57766</gml:pos>
          </gml:Point>
        </sa:position>
      </sa:SamplingPoint>
    </om:featureOfInterest>
  </om:Measurement>
</om:member>

```



```

<om:result uom="m">4.86</om:result>
</om:Measurement>
</om:member>

```

7.3.6 Fichier SML

The format of the SML (Sensor Markup Language) file is an approved OGC (Open Geospatial Consortium) standard that provides a standard model encoded in XML to describe sensors and measurement processes. This file is present every time you download a data file in any format (TXT, XML or JSON).

The SML file is an XML file consisting of several sections:

7.3.6.1 Section `<sml:keywords>`

Not applicable

7.3.6.2 Sections `<sml:identification>` et `<sml:classification>`

These two sections contain the number and name of the observatory provided respectively by:

`<sml:identifier name="uniqueID">` and `<sml:identifier name="longName">`

`<sml:classifier name="value">` and `<sml:classifier name="label">`

```

<sml:identification>
<sml:IdentifierList>
  <sml:identifier name="uniqueID">
    <sml:Term definition="urn:ogc:def:identifier:OGC:1.0:uniqueID">
      <sml:value>http://shom.fr/maregraphie/procedure/111</sml:value>
    </sml:Term>
  </sml:identifier>
  <sml:identifier name="id_shom">
    <sml:Term definition="http://">
      <sml:value>111</sml:value>
    </sml:Term>
  </sml:identifier>
  <sml:identifier name="longName">
    <sml:Term definition="urn:ogc:def:identifier:OGC:1.0:longName">
      <sml:value>BOULOGNE-SUR-MER</sml:value>
    </sml:Term>
  </sml:identifier>
  <sml:identifier name="shortName">
    <sml:Term definition="urn:ogc:def:identifier:OGC:1.0:shortname">
      <sml:value>http://shom.fr/maregraphie/procedure/111</sml:value>
    </sml:Term>
  </sml:identifier>

```

```

</sml:IdentifierList>
</sml:identification>

```

```

<sml:classification>
  <sml:ClassifierList>
    <sml:classifier name="value">
      <sml:Term definition="http://shom.fr/maregraphie/id_shom">
        <sml:value>111</sml:value>
      </sml:Term>
    </sml:classifier>
    <sml:classifier name="label">
      <sml:Term definition="http://shom.fr/maregraphie/label">
        <sml:value>BOULOGNE-SUR-MER</sml:value>
      </sml:Term>
    </sml:classifier>
  </sml:ClassifierList>
</sml:classification>

```

7.3.6.3 Sections <validTime>

This section provides the SML file creation date or update date.

```

<sml:validTime>
  <gml:TimePeriod>
    <gml:beginPosition>2015-01-23T10:16:59.530Z</gml:beginPosition>
    <gml:endPosition indeterminatePosition="unknown"/>
  </gml:TimePeriod>
</sml:validTime>

```

7.3.6.4 Section <legal constraint>

This provides information on the tide gauge data terms of use.

```

<sml:legalConstraint>
  <sml:Rights>
    <sml:documentation>
      <sml:Document>
        <gml:description>Voir les conditions générales d'utilisation sur
l'espace de diffusion.</gml:description>
      </sml:Document>
    </sml:documentation>
  </sml:Rights>

```

```
</sml:legalConstraint>
```

7.3.6.5 Section <Capabilities>

This section provides a great deal of information on the observatory:

- The city where the observatory is located;
- The time system (XXXXXXXXXXXXXXXXXXXXXX);
- The geographic coordinates of the observatory (WGS84);
- The geographical area: FM: Metropolitan France / Overseas???
- The managing bodies of the observatory;
- The date of the first water level observation;
- Links to specific information on the observatory (inventory, vertical datum, sensor type, log). This information is present on the observatory information page on the REFMAR website;
- Tide gauge status (this is also shown on the tide gauge page by a color-coded dot next to the name:
 - OK => green;
 - Problem => orange (maintenance);
 - Out of service => red
- The name of the site used for calculating tidal predictions (element: SPM);
- The height of the chart datum relative to the vertical datum (element: zh_ref);
- The name of the vertical datum (element: ref_name);
- The chart datum of the observatory.

```
<sml:capabilities name="characterics">
  <swe:DataRecord>
    <swe:field name="ville_d_hebergement">
      <swe:Text definition="http://shom.fr/maregraphie/ville_d_hebergement">
        <swe:value>Boulogne-sur-mer</swe:value>
      </swe:Text>
    </swe:field>
    <swe:field name="fuseau_horaire">
      <swe:Text definition="http://shom.fr/maregraphie/fuseau_horaire">
        <swe:value>+1</swe:value>
      </swe:Text>
    </swe:field>
    <swe:field name="longitude">
      <swe:Quantity definition="http://shom.fr/maregraphie/longitude">
        <swe:value>1.57766</swe:value>
```

```

    </swe:Quantity>
</swe:field>
<swe:field name="latitude">
  <swe:Quantity definition="http://shom.fr/maregraphie/latitude">
    <swe:value>50.72738</swe:value>
  </swe:Quantity>
</swe:field>
<swe:field name="sect_geographique">
  <swe:Text definition="http://shom.fr/maregraphie/sect_geographique">
    <swe:value>FM</swe:value>
  </swe:Text>
</swe:field>
<swe:field name="organisme">
  <swe:Text definition="http://shom.fr/maregraphie/organisme">
    <swe:value>SHOM / Région Nord pas de Calais / Port de Boulogne-sur-Mer</swe:value>
  </swe:Text>
</swe:field>
<swe:field name="date_prem_obs">
  <swe:Category definition="http://shom.fr/maregraphie/date_prem_obs">
    <swe:value>1941/11/20 00:00:00.000000000</swe:value>
  </swe:Category>
</swe:field>
<swe:field name="inventaire">
  <swe:Text definition="http://shom.fr/maregraphie/inventaire">
    <swe:value>http://refmar.shom.fr/</swe:value>
  </swe:Text>
</swe:field>
<swe:field name="ref_verticale">
  <swe:Text definition="http://shom.fr/maregraphie/ref_verticale">
    <swe:value>http://refmar.shom.fr/</swe:value>
  </swe:Text>
</swe:field>
<swe:field name="descriptif_capteur">
  <swe:Text definition="http://shom.fr/maregraphie/descriptif_capteur">
    <swe:value>http://refmar.shom.fr/</swe:value>
  </swe:Text>
</swe:field>
<swe:field name="acces_niv_moyen">
  <swe:Text definition="acces_niv_moyen">
    <swe:value>http://diffusion.shom.fr/produits/references-verticales/references-altimetriques-

```

```

maritimes-ram.html</swe:value>

    </swe:Text>
</swe:field>
<swe:field name="collocalisation">
    <swe:Text definition="http://shom.fr/maregraphie/collocalisation">
        <swe:value>http://www.sonel.org/spip.php?page=gps&idStation=642</swe:value>
    </swe:Text>
</swe:field>
<swe:field name="etat_maregraphe">
    <swe:Text definition="http://shom.fr/maregraphie/etat_maregraphe">
        <swe:value>OK</swe:value>
    </swe:Text>
</swe:field>
<swe:field name="info_maregraphe">
    <swe:Text definition="http://shom.fr/maregraphie/info_maregraphe">
        <swe:value>http://refmar.shom.fr/</swe:value>
    </swe:Text>
</swe:field>
<swe:field name="journal_de_bord">
    <swe:Text definition="http://shom.fr/maregraphie/journal_de_bord">
        <swe:value>http://refmar.shom.fr/</swe:value>
    </swe:Text>
</swe:field>
<swe:field name="spm">
    <swe:Text definition="http://shom.fr/maregraphie/spm">
        <swe:value>BOULOGNE</swe:value>
    </swe:Text>
</swe:field>
<swe:field name="zh_ref">
    <swe:Text definition="http://shom.fr/maregraphie/zh_ref">
        <swe:value>-4,4</swe:value>
    </swe:Text>
</swe:field>
<swe:field name="nom_ref">
    <swe:Text definition="http://shom.fr/maregraphie/spm">
        <swe:value>IGN69</swe:value>
    </swe:Text>
</swe:field>
<swe:field name="zero_hydro">
    <swe:Text definition="http://shom.fr/maregraphie/spm">

```

```

    <swe:value>zero_hydrographique</swe:value>
  </swe:Text>
</swe:field>
</swe:DataRecord>
</sml:capabilities>

```

7.3.6.6 Section **<sml:capabilities name="organisme">**

This section provides the names, logos and links to the managing bodies of the tidal observatory.

7.3.6.7 Section **<sml:capabilities name="observedBBOX">** et **<sml:capabilities name="offerings">**

Not applicable

7.3.6.8 Section **<sml:contact">**

This section provides the contact detail for REFMAR.

7.3.6.9 Section **<sml:position name="sensorPosition">**

This provides the geographical coordinates of the site.

7.3.6.10 Sections **<sml:inputs>** et **<sml:outputs">**

This provides the different types of water heights available.

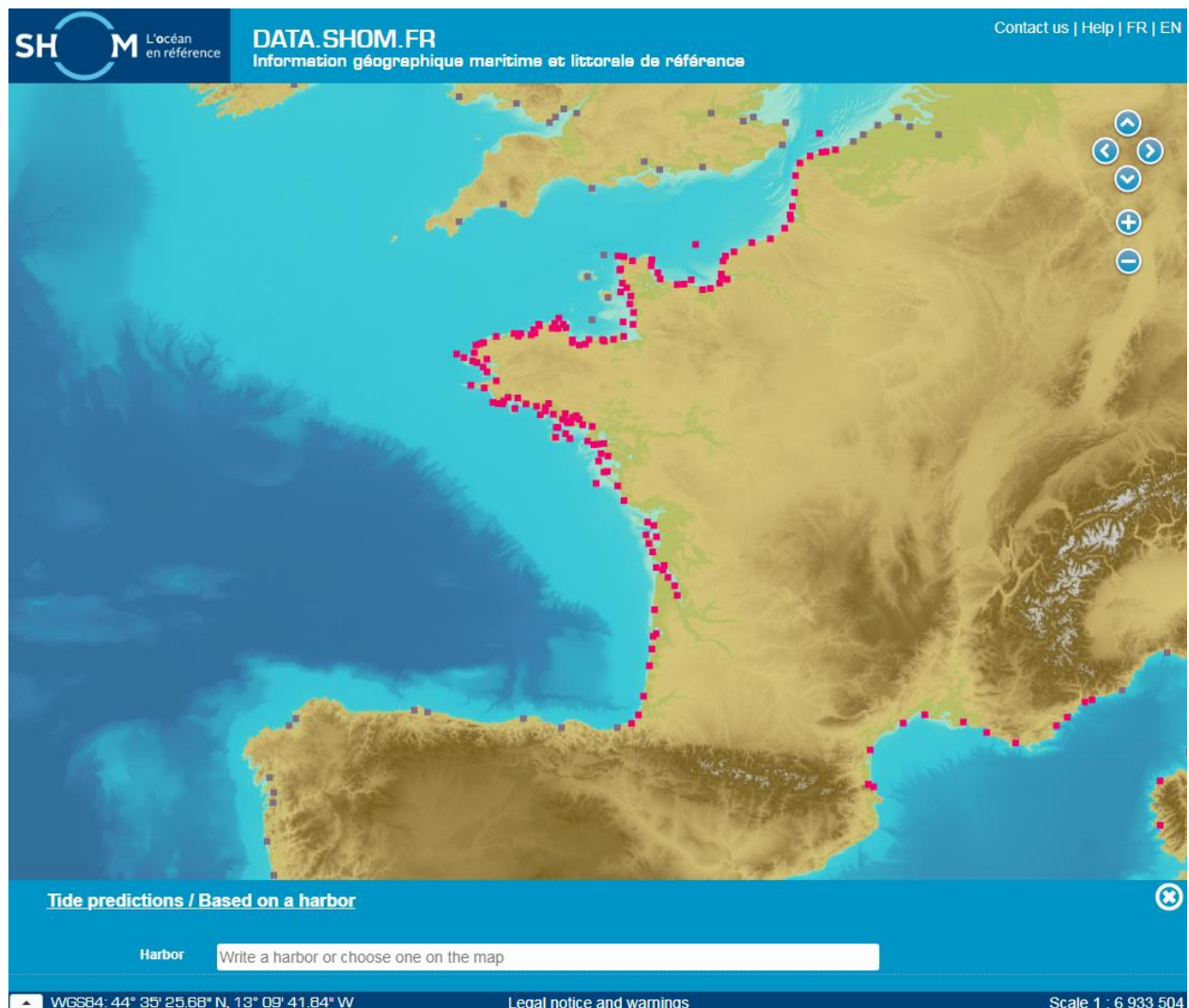
8 Using the tide predictions service

This service is only available to authenticated users with a valid subscription.

The service is also available via a Google sheet allowing multiple queries to be submitted in succession without having to use the data.shom.fr interface. You can find the instructions [here](#).

8.1 Based on a harbor

Once logged in go to the “Services” menu and select “Tide predictions”, then “Based on a harbor”. A window is displayed and a layer containing points corresponding to available harbors is added to the map.



You can select a harbor by clicking on the corresponding point in the map, or by entering part of the name into the window search bar, then selecting the harbor from the proposed list.

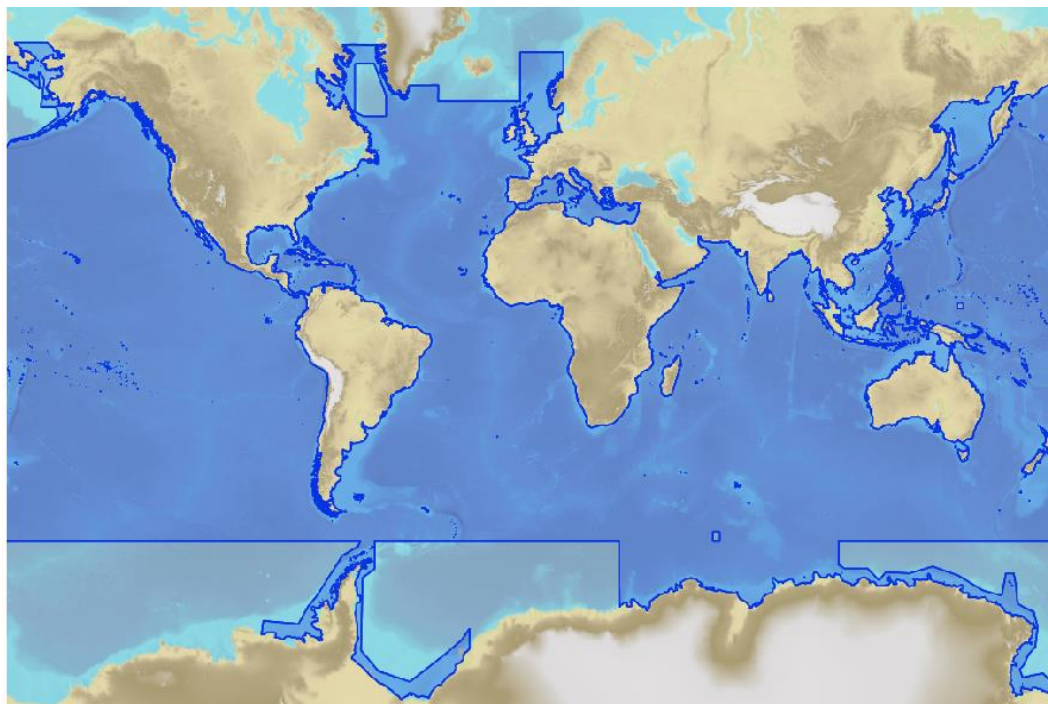
Harbors whose names are followed by a “*” propose official predictions for the current year (n) and for the following year (n+1). Predictions prior to year n are made from the parameters of year n, while predictions after year n+1 are calculated from the parameters of year n+1; they are consequently unofficial.

Tide predictions are provided relative to the chart datum.

8.2 Based on a point

This service provides tide predictions for any point at sea, outside of the sites covered by the “Based on a harbor” service. Calculations are based on Shom tide models, using all tide collected and validated tide information in its tide database. The predictions proposed here constitute the best possible calculation in light of the knowledge of these regions.

You can choose any point in the area covered by the service (blue zone). The service also works with points identified as harbors in the previous service.



8.3 Service interface

8.3.1 Based on a harbor

Tide predictions / Based on a harbor

Harbor
Pornichet (PORNICHET) France

Harmonic constants
☒ Vintage
☐ Most up to date

Start date 1 10/05/2019
Time system 2 TU +0
Duration 3 1 day(s)

4 Prédiction
☒ Tides
☒ Water levels
☒ Water Threshold

5 ☐ With coefficients (only for the current year and the next one)
Tides

6 Time step 60 minutes
Water levels

Water threshold 7 0 centimeters
Water Threshold

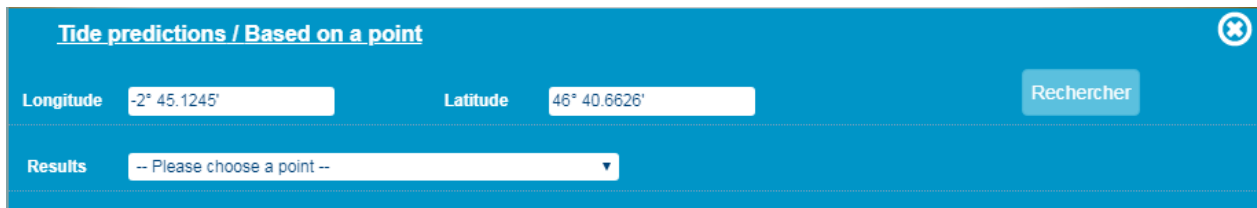
Periods during which the height is lesser to threshold

Send

For all tide predictions, the following parameters must be specified:

- **Start date (label 1):** this is the date of the first day of predictions. This date can be in the past, from 01/01/1700, or in the future, up to 31/12 20 years after the current year.
- **Time zone (label 2):** by default, the local time system of the requested site (e.g. TU-4 for Guadeloupe, or TU+4 for Reunion) is selected. The time system corresponds to the time zone in which the tide times are to be expressed. For all sites, it is also possible to select TU+0. For Metropolitan France, local time (TU+1) corresponds to standard time, and it is also possible to select TU+2 to use summer standard time.
- **Duration in days (label 3):** the maximum prediction duration is 20 years (i.e. 7300 days) and the last calculation date must not fall later than 31/12, 20 years after the current year. This means that for example in 2013, the prediction start and end dates must be no later than 31/12/2033.
- **Type of prediction (label 4):** there are 3 different types of tide prediction, for which an additional parameter is required.

8.3.2 Based on a point



The interface first invites you to enter the coordinates of your point of interest. You can either click on the map, or enter the coordinates manually.

You must then determine which point of the model is the closest to your point. Select the appropriate point from the model or a harbor.

8.4 Prediction types

8.4.1 Tide tables

The "Tide table" prediction type gives a file containing the times and water levels of high and low tides for each requested prediction day (one row per date). If the selected harbor is located on the French Channel-Atlantic coastline, an additional option is displayed for showing the correlated tidal coefficients (**label 5**). The result file thus contains additional columns displaying the coefficient values for each high tide (a hyphen is placed in this column for low tides). These tidal coefficients are calculated only for the current and next years.

Important: in some areas, as a result of specific phenomena, there may be more than 2 high or low tides per day. In this case, if correlation is requested, the result is not immediately sent to the customer as it requires additional manual processing by Shom.

The directory received contains 3 files for this type of prediction:

- a result file in the following xml format:

```

<?xml version='1.0'encoding=UTF-8?>
<tide xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'xsi:noNamespaceSchemaLocation='maree.xsd'>
<city>
  <port type='principal'>
    <name>Dunkerque</name>
    <position>
      <systemeGeodesique>wgs84</systemeGeodesique>
      <latitude>51.049999</latitude>
      <longitude>2.366667</longitude>
    </position>
    <values content='prediction'>
      <!-- 1 -->
      <value coef='070'state='high'>
        <dateTime>2013-08-06T00:26:00+01:00</dateTime>
        <height>5.57</height>
      </value>
      <value state='low'>
        <dateTime>2013-08-06T07:11:00+01:00</dateTime>
        <height>1.04</height>
      </value>
    </values>
  </port>
</city>
</tide>

```

- a result file in the following txt format:

```

Site : DUNKERQUE (Dunkerque - France)
latitude : 51.049999 - longitude : 2.366667
Système horaire : +01:00
date      Heure hauteur      coef.  Heure hauteur      coef.  Heure hauteur      coef.
2013-08-06 00:26 5.57 070  07:11 1.04 ---  12:42 5.63 074  19:30 0.78 ---
2013-08-07 00:58 5.71 077  07:44 0.94 ---  13:11 5.75 080  20:03 0.67 ---

```

- an information file describing the parameters used for the prediction (site name, type of calculation, time zone, start date and duration).

8.4.2 Water levels

The “water level at a given time step” prediction type gives the water levels every 5, 10, 15, 30 or 60 minutes for the requested dates. The time step is selected from a drop-down menu (**label 6**). The directory delivered contains on the one hand an information file in text format describing the parameters used for the prediction and, on the other hand, the prediction file in text format. This latter consists of 3 columns: date, time and height, with one row per water level, with no column headers:

```

2013-08-06 00:00:00 5.53
2013-08-06 00:05:00 5.55

```

8.4.3 Water thresholds

The “Water thresholds” prediction type calculates the times for which the water level is below or above a given value. For this, enter a water level in cm between 0 and 2000 (**label 7**) and whether you want the times during which the water level is higher or lower than this value. For example, if you enter a value of 100 cm along with the “higher” operator, the result returned represents all times for which the water level is higher than 1 m.

The directory delivered contains an information file in text format describing the parameters entered for the prediction, along with the prediction file with, for each day, the various times matching the request (one row per day).

Important: unexpected results may be returned in some cases:

Water level \ Requested values	Lower than the lowest tide during the calculation period	Higher than the highest tide during the calculation period
Lower than the entered water level	Empty result	0 h-24 h
Higher than the entered water level	0 h-24 h	Empty result

8.5 Tide prediction service API

If you are a subscriber to the tide prediction services [Prédictions à la carte](#) (Based on a harbor **Erreur ! Source du renvoi introuvable.**) ou [Prédictions de marées en tout point](#) (based on a point REF_Ref534973441 \r \h 8.2), you can directly access the services via their API.

If you wish to script the requests, check that your server can accept security TLS1.2 minimum otherwise authentication will fail.

API manual : <https://services.data.shom.fr/spm/doc/>

8.5.1 Google Sheet

Une feuille Google comprenant des scripts permet de lancer des commandes à répétition en remplissant un tableau avec les ports et paramètres des commandes. La notice complète est disponible [ici](#).

8.5.2 Based on a harbor (Prédictions à la carte)

Functionalities of the tide prediction service computed with vintage harmonic constants

8.5.2.1 List of harbors

This request returns the list of every harbor available and their characteristics.

- **GET Request** with no authentication :

<https://services.data.shom.fr/spm/listHarbors>

- The **result** is XML list with one harbor per tag:

```
<?xml version="1.0" encoding="UTF-8"?>
<harbors>
  <harbor cst="ABER_BENOIT_MEAN_RENEAT" name="Aber Benoit" country="France" defaultUT="1"
    additionalUT="2" isCoeffAvailable="1" isOfficial="1" />
  <harbor cst="ABER_WRAC_H" name="Aber Wrac'h" country="France" defaultUT="1" additionalUT="2"
    isCoeffAvailable="1" isOfficial="1" />
  <harbor cst="ABERDEEN" name="Aberdeen (USA)" country="Etats-Unis" defaultUT="-8"
    additionalUT="0" isCoeffAvailable="0" isOfficial="0" />
  ...
</harbors>
```

cst: identifier of the harbor, to be used in the following requests;

name: name of the harbor;

country: country of the harbor;

defaultUT: default time zone of the harbor;

additionalUT: other time zones available for the harbor;

isCoeffAvailable: whether the tidal coefficients are available (1) or not (0);

isOfficial: whether the harbor is official (1) or not (0).

8.5.2.2 Checking your access to the service

This request checks if you have the rights to access the service. To authenticate yourself you will need your key, login and password.

- **GET Request** with basic authentication:

`https://services.data.shom.fr/spm/yourKey/spm/checkAccess`

- **Result**

« OK » if you have access;

Error message « No rights for this resource or resource does not exist » if you do not have access;

Error message 401 if you did not authenticate correctly.

8.5.2.3 Requesting tide predictions

This request Cette requête de faire une commande de prédiction. Note that the result is an order number that is used to build the data request.

! Important: in some areas, as a result of specific phenomena, there may be more than 2 full or low tides per day. In this case, if correlation is requested, the result is not immediately sent to the customer as it requires additional manual processing by Shom.

- **POST request** with basic authentication:

`https://services.data.shom.fr/spm/yourKey/spm?harborName=idHarbor&functions=typePrediction&utc=timeZone&date=startDate&duration=duration&correlation=coeff&nbWaterLevels=timeStep&waterThreshold=threshold&sign=thresholdDirection`

harborName (mandatory): identifier of the harbor = CST from the harbor list.

functions (mandatory): prediction type requested. Possible functions are hlt for tide tables, wl for water levels and wt for water threshold.

utc (mandatory): time zone chosen. Corresponds to defaultUT or additionalUT in the harbor list. Must be a whole number between -14 and +12.

date (mandatory): start date that is the first day of predictions. Must be in the format YYYY-MM-DD. The year must be 1700 and 20 years in the future.

duration (mandatory): duration, in days, for the predictions requested. Is a whole number between 1 and 7305 (20 years).

correlation: if the type hlt/tide tables is requested, this parameter indicates if the tidal

coefficient is requested (1) or not (0). You can check coefficient availability first in the harbor list (isCoeffAvailable=1). They are available only for the current and next year.

nbWaterLevels: mandatory if the type wl/water levels is requested. It indicates the time step. The number of levels must be a number from this list : 24, 48, 96, 144, 288. 24 = step of 60 minutes, 48 = step of 30 minutes, 96 = step of 15 minutes, 144 = step of 10 minutes, 288 = step of 5 minutes.

waterThreshold: mandatory if the type wt/water threshold is requested. It indicates the height in cm of the threshold.

sign: mandatory if the type wt/water threshold is requested. It indicates if you want measures above or below the threshold. The sign can be 0 for below or 1 for above.

Example of request to order tide tables from the whole year of 2019 with coefficients, threshold above 1m80 and water levels every 30 minutes for Biscarosse.

<https://services.data.shom.fr/spm/myKey/spm?harborName=BISCARROSSE&functions=ht,wl,wt&utc=1&date=2019-01-01&duration=365&correlation=1&nbWaterLevels=48&waterThreshold=180&sign=1>

- The **Result** is a number of order like « 154711660613007680 » that is needed to build the download link. An email is sent for every order/request and it contains the link to the .zip file containing the data ordered. The link is made as follows:
https://services.data.shom.fr/yourKey/telechargement/spm/SPM_orderNumber/file/commande.zip

Example :

https://services.data.shom.fr/myKey/telechargement/spm/SPM_154711870949106851/file/commande.zip

8.5.3 Based on a point (Prédictions de marée en tout point)

8.5.3.1 Vérifier votre accès au service

This request checks if you have the rights to access the service. To authenticate yourself you will need your key, login and password.

- **GET Request** with basic authentication:

<https://services.data.shom.fr/spm/yourKey/sapm/checkAccess>

- **Result**

« OK » if you have access;

Error message « No rights for this ressource or ressource does not exist » if you do not have access;

Error message 401 if you did not authenticate correctly.

8.5.3.2 Récupérer les infos d'un point

This request gives details about your point: if it is on land, in the Bay of Seine area or if coefficients are available.

- **GET Request** with basic authentication:

`https://services.data.shom.fr/spm/yourKey/sapm/getInfoFromPoint?latitude=latitude&longitude=longitude`

latitude, **longitude** : coordinates of the point in decimal degrees.

Example :

`https://services.data.shom.fr/spm/myKey/sapm/getInfoFromPoint?longitude=12.1777&latitude=-6.0`

- **Result** is of the type: { "isPointInLand": 0, "coeff": 0, "baieDeSeine": 0 }

8.5.3.3 Obtaining model points closest to your position

This request is essential because you can only ask for predictions if the point is part of the model or a harbor. With this request you get the closest model points to your position of interest.

- **GET Request** with basic authentication:

`https://services.data.shom.fr/spm/yourKey/sapm/getNearestLocalities?latitude=latitude&longitude=longitude`

Exemple : `https://services.data.shom.fr/spm/myKey/sapm/getNearestLocalities?longitude=-4.78592&latitude=48.34986`

- The result is a json showing one objet per point or harbor sorted by proximity:

```
{
  "harbors": [
    {
      "cst": "TREZ-HIR",
      "toponyme": "Trez-Hir",
      "ut": "1.0000000000000000",
      "ut_sup": "2.0000000000000000",
      "pays": "France",
      "official": "1",
      "coeff": "1",
      "distance": 8767.38150885224
    },
    { },
    { }
  ],
  "points": [
    {
      "gid": "501001617",
      "lon": -4.7648,
      "lat": 48.3333,
      "qualite": 0,
      "coeff": 722.4,
      "baie_de_se": 0,
      "distance": 2.41704572188602
    },
    { },
    { },
    { },
    { }
  ]
}
```


harbors : harbors close to the position

cst: identifier of the harbor, to be used in the following requests;

toponyme: name of the harbor;

ut: default time zone of the harbor;

ut_sup: other time zones available for the harbor ;

pays: country of the harbor;

official: whether the harbor is official (1) or not (0);

coeff: whether the tidal coefficients are available (1) or not (0);

distance: distance from the position and the harbor.

points : model points close to the position

gid : point identifier;

lon : longitude;

lat : latitude;

qualite : quality of the point;

coeff : possibility to ask for coefficients;

baie_de_se : if the point is in the bay of Seine;

distance : distance from the position and the model point.

If you have no result, no error message, then check that the position interrogated is in the area covered by the service and at sea with the request `getInfoFromPoint` in chapter 8.5.3.2.

8.5.3.4 Requesting predictions

This request is to order **predictions from a model point**. To order **predictions from a harbor**, please refer to chapter 8.5.2.3.

- **POST Request** with basic authentication:

`https://services.data.shom.fr/spm/yourKey/spm?longitude=longitude&latitude=latitude&functions=typePrediction&date=startDate&duration=duration&correlation=coeff&nbWaterLevels=timeStep&waterThreshold=threshold&sign=thresholdDirection`

latitude, longitude (mandatory): coordinates of the point in decimal degrees.

functions (mandatory): prediction type requested. Possible functions are hlt for tide tables, wl for water levels and wt for water threshold.

date (mandatory): start date that is the first day of predictions. Must be in the format YYYY-MM-DD. The year must be 1700 and 20 years in the future.

duration (mandatory): duration, in days, for the predictions requested. Is a whole number between 1 and 7305 (20 years).

Correlation : if the type hlt/tide tables is requested, this parameter indicates if the tidal coefficient is requested (1) or not (0). You can check coefficient availability first in the harbor list `isCoeffAvailable=1`). They are available only for the current and next year.

nbWaterLevels: mandatory if the type wl/water levels is requested. It indicates the time step. The number of levels must be a number from this list : 24, 48, 96, 144, 288. 24 = step of 60 minutes, 48 = step of 30 minutes, 96 = step of 15 minutes, 144 = step of 10 minutes, 288 = step of 5 minutes.

waterThreshold: mandatory if the type wt/water threshold is requested. It indicates the height in cm of the threshold.

sign: mandatory if the type wt/water threshold is requested. It indicates if you want measures above or below the threshold. The sign can be 0 for below or 1 for above.

Example of request to order tide tables from the whole year of 2019 with coefficients, threshold above 1m80 and water levels every 30 minutes for the point -4.7648, 48.4 :

<https://services.data.shom.fr/spm/myKey/sapm/predictionFromPoints?longitude=-4.7648&latitude=48.4&functions=hlt,wl,wt&date=2019-01-01&duration=31&correlation=0&nbWaterLevels=48&waterThreshold=180&sign=0>

- The **Result** is a number of order like « 154711660613007680 » that is needed to build the download link. An email is sent for every order/request and it contains the link to the .zip file containing the data ordered. The link is made as follows:
https://services.data.shom.fr/yourKey/telechargement/spm/SPM_orderNumber/file/commande.zip

Example :

https://services.data.shom.fr/myKey/telechargement/spm/SPM_154720721794100927/file/commande.zip

9 FAQ

9.1 OGC feeds

The aim of the [INSPIRE](#) European directive (2007/2/EC) of 14 March 2007 is, amongst others, to ensure the interoperability of geographical information throughout Europe through the implementation of standardized network services.

The [data.shom.fr](#) portal is a geographical information distribution platform that conforms to the requirements of the INSPIRE directive. It provides access to the standardized feeds implemented by Shom ([WMS](#), [WFS](#), [WMTS](#), etc.)

The data available on **data.shom.fr** can thus be viewed from other portals. Similarly, it is possible to instantaneously combine data from various sites.

The French Geocatalogue ([www.geocatalogue.fr](#)), collating geographical data references, serves as the Shom portal's search engine.

Open WMS: <https://services.data.shom.fr/INSPIRE/wms/r>

WMTS: <https://services.data.shom.fr/INSPIRE/wmts>

Oceanographic forecasts WMS service: <https://services.data.shom.fr/ncwms/wms>

Free vector data (Histolitt coastline, RAM...), along with the extents of the nautical charts (geotiffs and ENC) can be accessed via the following WFS feed: <https://services.data.shom.fr/INSPIRE/wfs>

These feeds include data visible on the portal, with the exception of the charts layers.

9.2 OGC feeds problems

9.2.1 On another portal

- I get the following error message: "server unreachable or insufficient rights":

Check whether the GIS software or portal you are using is compatible with the feed version.

9.2.2 In QGIS

- I cannot view the feed, I get the following error message: "Could not download the possibilities for this layer: Connection timed out"

QGIS allows you to configure the proxy used by the application. This is useful when several are used, though it requires manual input before using an external feed. For this, go to Settings > Options > Network and Proxy and fill in the host, port and proxy type (generally http).

9.2.3 In ArcGIS

- I cannot view the data from the WMS feed:

The feed used by Shom is version 1.3. You need to be using ArcGIS version 10 or later to view the feed data.

- I cannot view the data from the WMTS feed:

ArcGIS is only compatible with one type of tilematrix schema, this latter is not proposed by data.shom.fr. We recommend using QGIS.

9.3 Viewing problem on data.shom.fr

- I get a blank page when I attempt to view data.shom.fr

The proxy is preventing access to this page. The service managing the proxy must authorize access to this site.

- When I select my datum, only yellow rectangles are displayed.

Layer display varies according to scale. The yellow rectangles represent areas containing data. To display the datum itself, zoom into one of these areas.

- I have shown a data, but when I zoom in it disappears.

Data display is governed by resolution. Consequently, the data eventually disappears as you zoom in. Not all data disappear at the same moment.

9.4 Data access problem

- Je souhaiterais télécharger des données

Only the free data (listed [here](#)) can be downloaded without a subscription. Subscription rates are detailed in the Shom public pricing and on [diffusion.shom.fr](#).

To download free data, or those for which you possess a download subscription, select the corresponding layer in the catalogue, then in the layer manager section at the bottom, click on the floppy disc next to the layer you wish to download.

- I cannot use the “Extract data” menu to download my data (free data, or data for which I have a download subscription)

To download data, click on the floppy disc icon next to the layer name when added to the viewer. The “extract data” is not used for downloading, but for extracting part of the data and you must be subscribed to all of a layer’s services to be able to access this feature.

- What is the difference between data extraction and downloading?

Downloading generates data pre-packets, i.e. data already formatted for downloading and split into small download units (slab, map, or complete product if splitting is not applied). Links to all pre-packets intersecting the rectangle drawn by the user will be sent by email.

Extraction provides the user with an image file (or a vector file for those data that allow) containing data from the selected layer, in the footprint rectangle drawn by the user. You need to be subscribed to the raster feed (and to the vector feed for those data that allow) to access this service.

- I received an email message containing 50 links, how do I download everything in one operation?

Download managers are available (standalone applications or browser plugins) that will allow you, in just a few clicks, to identify all download links in the body of your email message, to launch them all simultaneously and to resume download in the event of an Internet connection problem. A list of these download managers can be found at the following page: https://fr.wikipedia.org/wiki/Gestionnaire_de_téléchargement

- I can’t unzip the downloaded files.

The zipped files are in .7z format. Perhaps you don’t possess a tool capable of unzipping this format.

The 7zip application, once downloaded and installed, can do this.

Due to their size, some zipped files are split into multiple parts. In this case, the .7z extension is followed by a .00x extension, where x is the number of the part. For example, an archive split into 3 parts will consist of 3 files: *file.7z.001*, *file.7z.002* and *file.7z.003*. To unzip the data, you must first download all of the archive's parts, then unzip the file via part 1.

- I can't use the downloaded oceanography files.

These files are an archive zipped using the "gunzip" tool, hence the .tar.gz extension. This archive can be extracted using the 7-zip tool in Windows. For Linux, the tools are native.

Once the archive has been extracted, the files include a metadata file in XML format and a netCDF file compressed with the same tool.

The following links list a number of FAQs concerning the netCDF format: <https://www.unidata.ucar.edu/software/netcdf/docs/faq.html> and processing tools <https://www.unidata.ucar.edu/software/netcdf/docs/software.html>.

9.5 Problem with the data

- The currents do not match the current atlases

To ensure consistent display, the currents have been aligned with Brest.

- Some maps disappear when I zoom in

To facilitate map viewing, the map display scale in the viewer has been aligned with the map scales.

10 Contact Shom

10.1 To obtain a subscription

You can obtain data or a subscription from our distribution space diffusion.shom.fr.

10.2 To ask questions concerning the portal and associated services

In the event of difficulties accessing the services, or for any portal-related questions or suggestions, contact Shom at the following address: data-support@shom.fr