



# Copernicus Marine Training Workshop

## QGIS installation notes and plugin configuration



PROGRAMME OF  
THE EUROPEAN UNION



Copernicus  
Marine Service

implemented by



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# 1. Introduction

This document is aimed at supporting a new user in installing and configuring QGIS for being used to manipulate and analyze Copernicus Marine data. It is based on information shared with the community from **official QGIS webpage**:

<https://qgis.org/en/site/index.html>

Some of the information contained in this document is also reported in the QGIS documentation, that the author suggests consulting for having a more comprehensive overview of additional features and supported operating systems.

In the next sections, it will be discussed:

- **How to install QGIS in Windows operating system** (but QGIS can run also on macOS, Linux, BSD and mobile devices and for these OS please visit the QGIS website).
- **How to install plugins** that can be relevant for the execution of the Copernicus Marine Training proposed exercises.
- **How to download Copernicus Marine products from the Data Store**, focusing on the capabilities as provided by the GUI.

Please note that information and access to relevant online resources have been performed on **08/06/2024**.

**This document has been prepared by Dr. Stefania A. Ciliberti (NOW Systems, Madrid).**

## 2. How to install QGIS

### 2.1. Standalone installation

In the following, a list of steps for installing QGIS on Windows OS laptop in standalone mode is given.

#### Step 1:

- Go to <https://qgis.org/en/site/index.html>
- Click on “Download now”
- You will be redirected to a new webpage, <https://qgis.org/en/site/forusers/download.html>. It requires for the following information:
  - For which operating system you want to download QGIS (“Installation Downloads”).
  - Which release you are interested in (“All releases”).
  - Access to source code (“Sources”).

In this case, we are interested in downloading the QGIS application for Windows (Figure 1).

- The QGIS provides you always:
  - The last available release: in this case, it is **QGIS 3.36**.
  - The long term stable release: it is **QGIS 3.34 LTR**.

For the scope of the Copernicus Marine Training Session, we suggest referring to the long-term stable release.

- Click then to “**Looking for the most stable version? Get QGIS 3.34 LTR**”. The download of the **OSGeo4W** installer will start automatically, and the corresponding executable will be saved in your local folder.

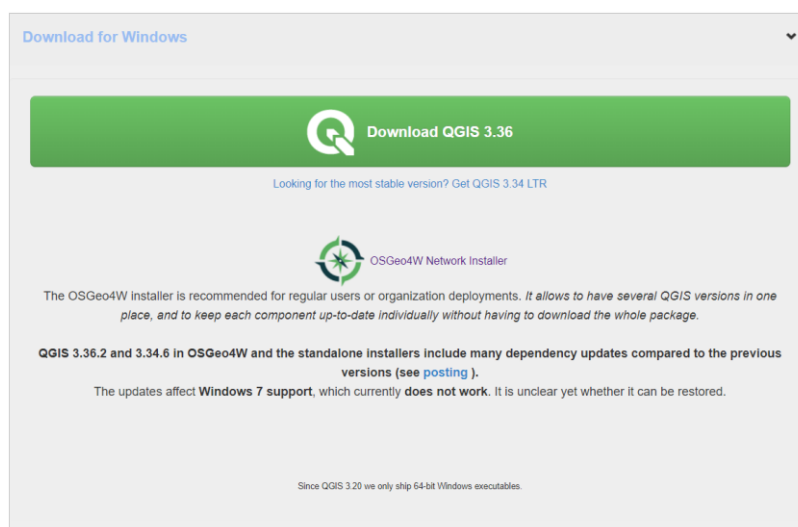


Figure 1. QGIS download webpage. Selection of QGIS application for Windows OS.

#### Step 2:

- Once the executable is ready, double click on QGIS-OSGeo4W-3.34.7-2.msi. A setup wizard is launched automatically, asking you:
  - To proceed with the installation: click on “Next”.

- To accept licences as displayed in the wizard:
  - Check the box “I accept the terms in the License Agreement”.
  - Click on “Next”.
- To specify the path where the QGIS 3.34 will be installed: “Next”.
- To launch the installation: click on “Install”. Warning: due to security reason, you may be asked to allow the execution as administrator (tested with Windows OS).
- After launching the installation, a window will appear, showing you the installation process until the end.
- Click on “Next” once the installation is completed.
- Once completed, you will see the refreshed wizard: click on “Finish”.

Steps are shown in Figure 2.

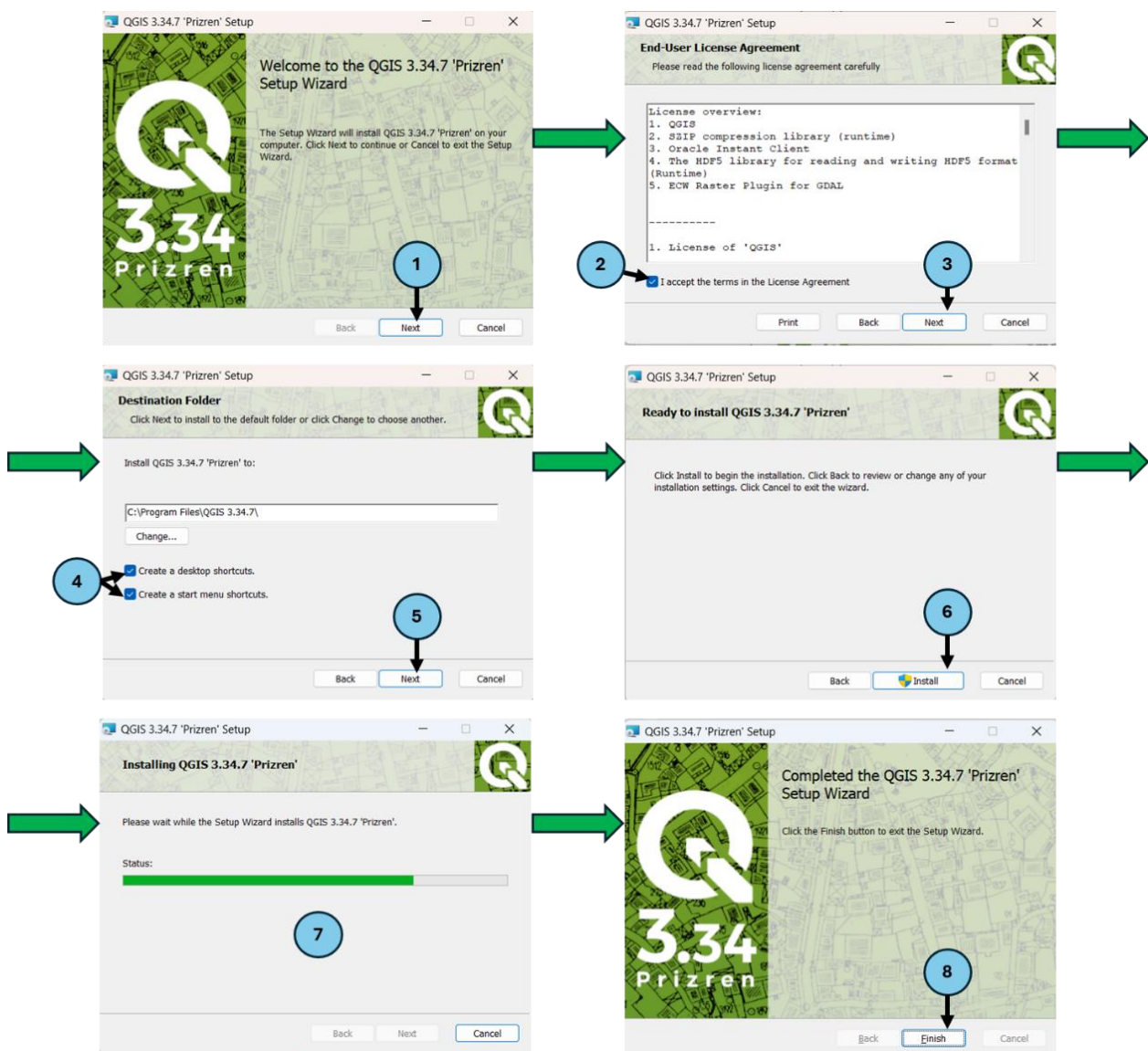


Figure 2. Step 2 workflow: installation of QGIS 3.34 LTR.

**Step 3:**

- In your desktop, you will see now a new folder, named “QGIS 3.34.7”, containing a list of applications that are ready to be used (Figure 3).
- Double click on “QGIS Desktop 3.34.7”. It will launch QGIS and the QGIS board will be displayed in your computer. You are now ready to use QGIS (Figure 4).

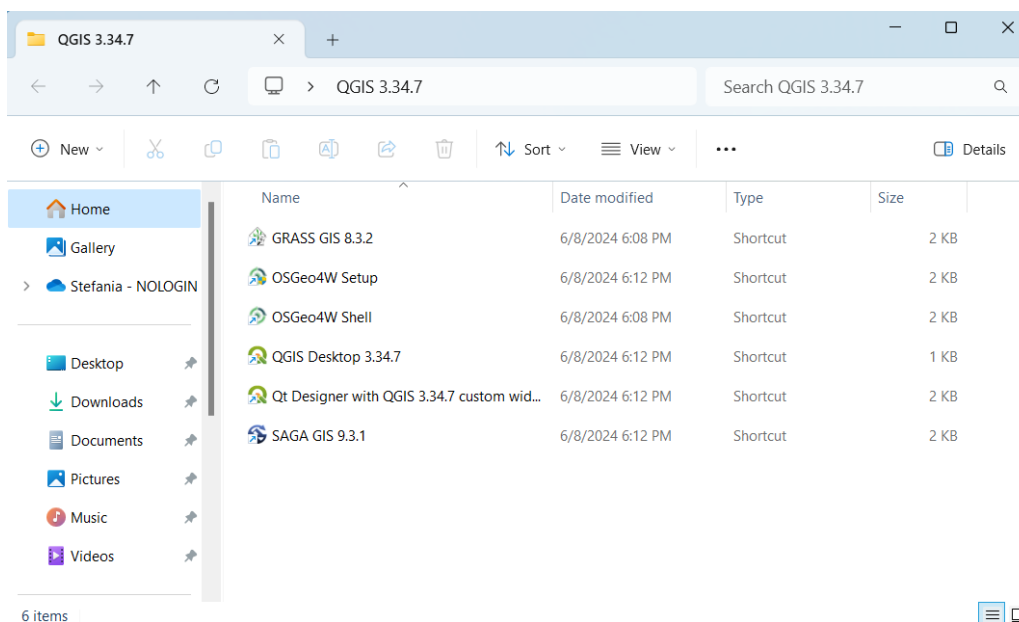


Figure 3. List of applications belonging to QGIS available in the dedicated folder after installation.

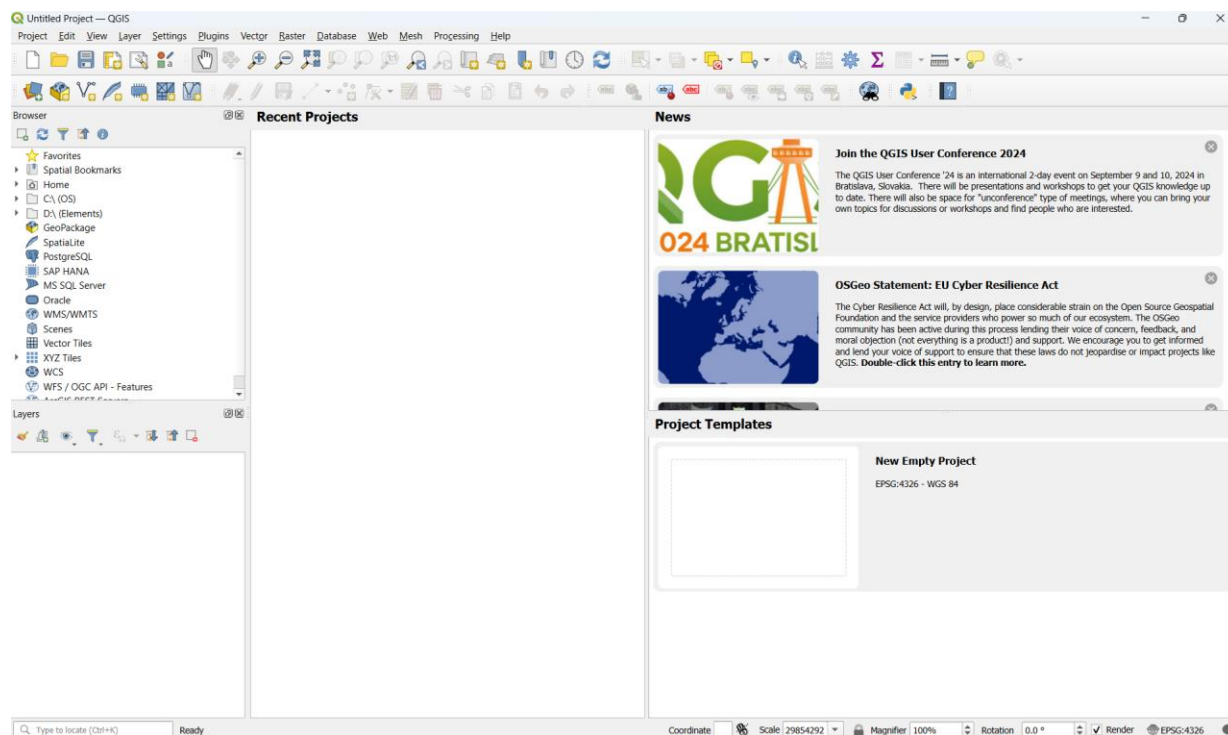


Figure 4. QGIS 3.28.14 ready to be used.

## 2.2. Installation through OSGeo4W installer

### Step 1:

- Go to <https://qgis.org/en/site/index.html>
- Click on “Download now”.
- You will be redirected to a new webpage, <https://qgis.org/en/site/forusers/download.html>. It requires for the following information:
  - For which operating system you want to download QGIS (“Installation Downloads”).
  - Which release you are interested in (“All releases”).
  - Access to source code (“Sources”).

In this case, we are interested in downloading the QGIS through the OSGeo4W installer, that is recommended for more advanced users.

- As shown in Figure 1, click on “OSGeo4W Network Installer”.
- You will be redirected to a new webpage, <https://qgis.org/en/site/forusers/alldownloads.html#osgeo4w-installer>. It gives very detailed information for users as shown (partially) in Figure 5.

**OSGeo4W installer**

More advanced QGIS users should use OSGeo4W packages, which for one make it possible to install several versions in parallel and also to do much more efficient updates as only changed components are downloaded and installed.

The OSGeo4W repository contains a lot of software from OSGeo projects. QGIS and all dependencies are included, along with Python, GRASS, GDAL, etc. The installer is able to install from internet or just download all needed packages beforehand. The downloaded files are kept in a local directory for future installations and could also be used to install offline.

Steps are:

- Download [OSGeo4W Installer](#) and start it
- Choose *Express Install* and select *QGIS* to install the *latest release* and/or *QGIS LTR* to install the *long term release*.

Alternatively to *Express* you also use the *Advanced Install*, navigate to the *Desktop* section and pick one or more of the following packages:

Release	Version	Package	Description
Latest Release	3.36.3 Maidenhead	qgis	Release
		qgis-rel-dev [1]	Nightly build of the upcoming point release
Long Term Release	3.34.7 Prizren LTR	qgis-ltr	Release
		qgis-ltr-dev [1]	Nightly build of the upcoming long term point release
Development	3.37 master	qgis-dev [1]	Nightly build of the development version

Figure 5. QGIS installation using OSGeo4W installer. An extract from the main page that describes QGIS installation types for different OS.

- From the Table of Contents of the QGIS Installers webpage as reported in Figure 5, select “OSGeo4W installer” topic. It downloads automatically an executable called **osgeo4w-setup** that is saved in your local folder.



**Step 2:**

- Once the executable is available in your local folder, double click to **osgeo4w-setup**. A setup wizard is launched automatically, asking you:
  - To choose among “Express Install” or “Advanced Install”. Select “Express Install” and then click on “Next”.
  - To select the packages: select “QGIS LRT, GDAL, GRASS GIS” and then click on “Next”.
  - The installation will be automatically completed.

**Step 3:**

- After the installation is completed, the **QGIS 3.34.7** is available and is shown in the list of applications installed in your local. Then, launch it through the Windows Starter and you will display the QGIS board as previously shown in Figure 4.



### 3. How to install QGIS plugins

#### 3.1. Installation of the CMEMS-NetCDF plugin

The Copernicus Marine Service makes available the CMEMS-NetCDF plugin, which enables the handling of data in NetCDF format.

The user can follow the instructions on how to install it in QGIS by accessing [this dedicated webpage](#) at the E-Learning section.

In brief, after downloading in your local folder, to install and configure the CMEMS-NetCDF plugin to be used in QGIS, it is necessary to follow these steps:

- From the top menu of QGIS, select **Plugins > Manage and Install Plugins....**
- Then, a window **Plugin | Install from ZIP** at the left panel appears, and you can browse through your personal folder to select the zip file containing the CMEMS-NetCDF plugin as downloaded from the Copernicus Marine E-Learning Section.
- Finally, select Install Plugin. Figure 6 schematized the main steps as performed through the QGIS GUI. The same steps can be performed in case an update of the plugin through a new zip file needs to be done. Once installed/updated, the CMEMS-NetCDF icon appears in the QGIS toolbar, and it is ready to be used.

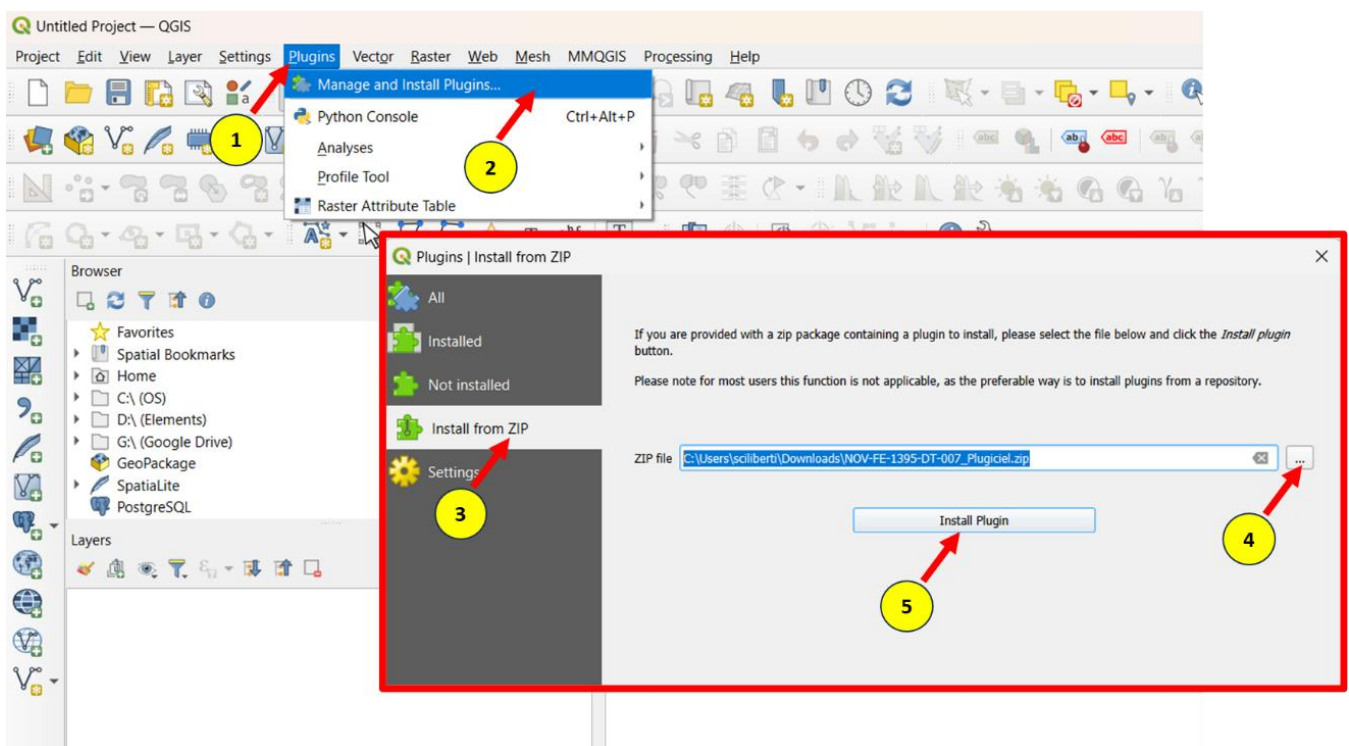


Figure 6. Step for installing / updating the CMEMS-NetCDF plugin in QGIS.

Once clicking on the CMEMS-NetCDF icon available in the toolbar or selecting **Plugins > NetCDF2GIS > Import NetCDF files** from the QGIS top menu, a GUI appears with functions to load and explore the NetCDF file structure and semantic, as schematized in Figure 7.

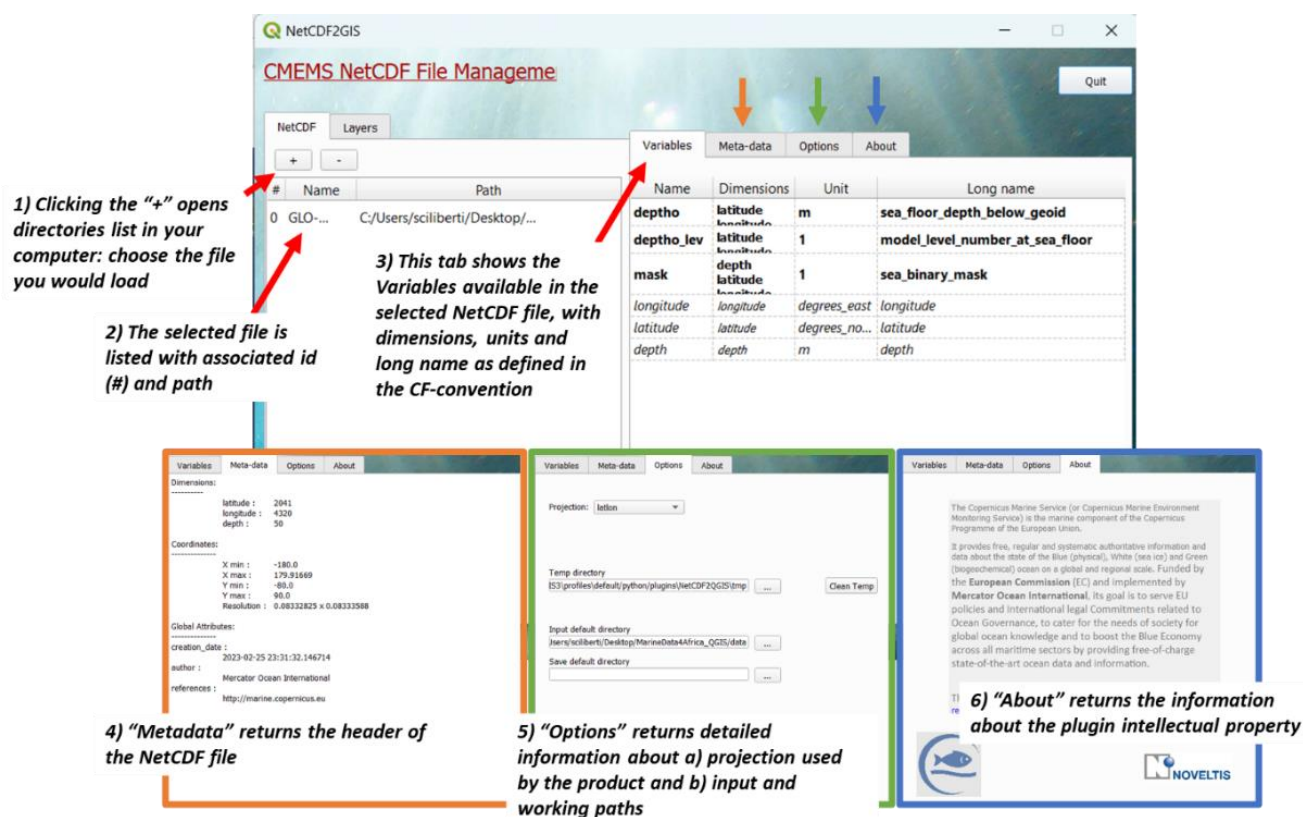


Figure 7. Overview of the CMEMS-NetCDF plugin functionality for loading a NetCDF file.

## 3.2. Installation of the additional plugin useful for Copernicus Marine Training exercises

In the following, the list of additional plugins that can support the implementation of the proposed exercises.

To install them, open the QGIS software and click on **Plugins > Manage and install Plugins** in the top menu. Once opened, it is necessary to type the name of the plugin of interest, search among the listed of proposed ones and launch the installation by clicking on **Install Plugin** (or **Reinstall Plugin** to refresh it in case already present in the local computer).

- The QuickMapService is developed by NextGIS and allows to easily add basemaps and geoservices. Details are given on the [QuickMapServices webpage](#).
- Lat Lon Tools is a plugin that facilitates the query, capture and zoom to coordinates of your selected region. Details are given on the [Lon Lat Tools plugin webpage](#).
- Terrain Profile is a plugin that allows you to extract profiles over a raster. This can be extremely useful for a first outlook of the general information provided by a given field or for intercomparing different datasets on the same track. Details are given in the dedicated [Terrain Profile plugin webpage](#).

## 4. How to download Copernicus Marine products

In this section, we illustrate how to download the monthly chlorophyll for Jun 2023 as provided by the [OCEANCOLOUR\\_GLO\\_BGC\\_L4\\_NRT\\_009\\_102](https://data.marine.copernicus.eu/product/OCEANCOLOUR_GLO_BGC_L4_NRT_009_102) product directly from the Copernicus Marine Data Store by using the GUI.

**Step 1:** Access to product main page from the Copernicus Marine Data Store. Visualization of the options for accessing relevant information about the selected product. As shown in Figure 8, the **OCEANCOLOUR\_GLO\_BGC\_L4\_NRT\_009\_102** main page provides an overview of the most relevant information related to the Global Ocean Color L4 satellite product, including the options for accessing the data.

**Option 1:** by clicking on “Data Access” tab, you will be redirected to a second page that gives the list of available datasets with interfaces for downloading associated data (Figure 9):

- **Subset**, which is the new function for interactively selecting total or a portion of the interested region.
- **Files**, that returns the data archive structure of the selected dataset.
- **Maps**, that returns WMTS file that you might export to use in your dedicated webservice.

The screenshot displays the product main page for **OCEANCOLOUR\_GLO\_BGC\_L4\_NRT\_009\_102**. The page title is "Global Ocean Colour (Copernicus-GlobColour), Bio-Geo-Chemical, L4 (monthly and interpolated) from Satellite Observations (Near Real Time)".

**Annotations:**

- 1** (Yellow circle): Points to the "Data access" tab in the sidebar, labeled "Option 1: Tab for visualizing the available options for accessing data."
- 2** (Yellow circle): Points to the "Explore in MyOcean Pro" button at the bottom right, labeled "Option 2: to explore the product through the MyOcean Viewer."
- Link to the GLO-OC-SAT NRT product page after browsing through the Copernicus Marine Data Store.** (Blue box): Points to the URL in the browser address bar.
- Information about the selected product (e.g., documents, overview, etc.).** (Blue box): Points to the "Overview" section in the main content area.

**Overview Section Content:**

For the Global Ocean Satellite Observations, ACRI-ST company (Sophia Antipolis, France) is providing Bio-Geo-Chemical (BGC) products based on the Copernicus-GlobColour processor.

- Upstreams: SeaWiFS, MODIS, MERIS, VIIRS-SNPP & JPSS1, OLCI-S3A & S3B for the "multi" products, and S3A & S3B only for the "old" products.
- Variables: Chlorophyll-a (CHL), Phytoplankton Functional types and sizes (PFT), Primary Production (PP), Suspended Matter (SPM), Secchi Transparency Depth (ZSD), Diffuse Attenuation (KD490), Particulate Backscattering (BBP), Absorption Coef. (CDM) and Reflectance (RRS).
- Temporal resolutions: monthly plus, for some variables, daily gap-free based on a space-time interpolation to provide a "cloud free" product.
- Spatial resolutions: 4 km and a finer resolution based on old 300 meters inputs...

**Navigation Sidebar:**

- Description
- Notifications
- Data access
- Contact
- DOCUMENTATION
- User Manual
- Quality Information Document
- Synthesis Quality Overview
- Licence
- How to cite
- DOI
- 10.48670/mol-00279

Figure 8. *OCEANCOLOUR\_GLO\_BGC\_L4\_NRT\_009\_102* product main page through the Copernicus Marine Service

The screenshot displays the Copernicus Marine Service web interface. On the left, a sidebar contains navigation links, with 'Data access' highlighted. The main panel shows dataset details for 'OCEANCOLOUR\_GLO\_BGC\_L4\_NRT\_009\_102'. A world map is shown with a bounding box over the Atlantic Ocean. Below the map, a table lists datasets with columns for 'Form', 'Browse', and 'WMTS'. Three options are highlighted: a) a subset of data (orange box), b) files (green box), and c) maps (red box). A red box also highlights an XML file download option.

Figure 9. Option 1 for accessing Copernicus Marine data using a) subset (in orange), b) files (in green) or c) maps (in red).

**Option 2:** by clicking on “Explore in MyOcean Pro” tab, you will be redirected to the MyOcean Pro Viewer webpage that shows the 2D map of the selected field (Figure 10). The viewer gives the opportunity to:

- Add any new field as a new layer.
- Download the file by selecting the bounding box and the range of dates.
- Access to information about the product/dataset, customize the map, save, and export for next uses.

Once the spatio-temporal information for the selected variables is inserted into the GUI, you might launch the download of the file.



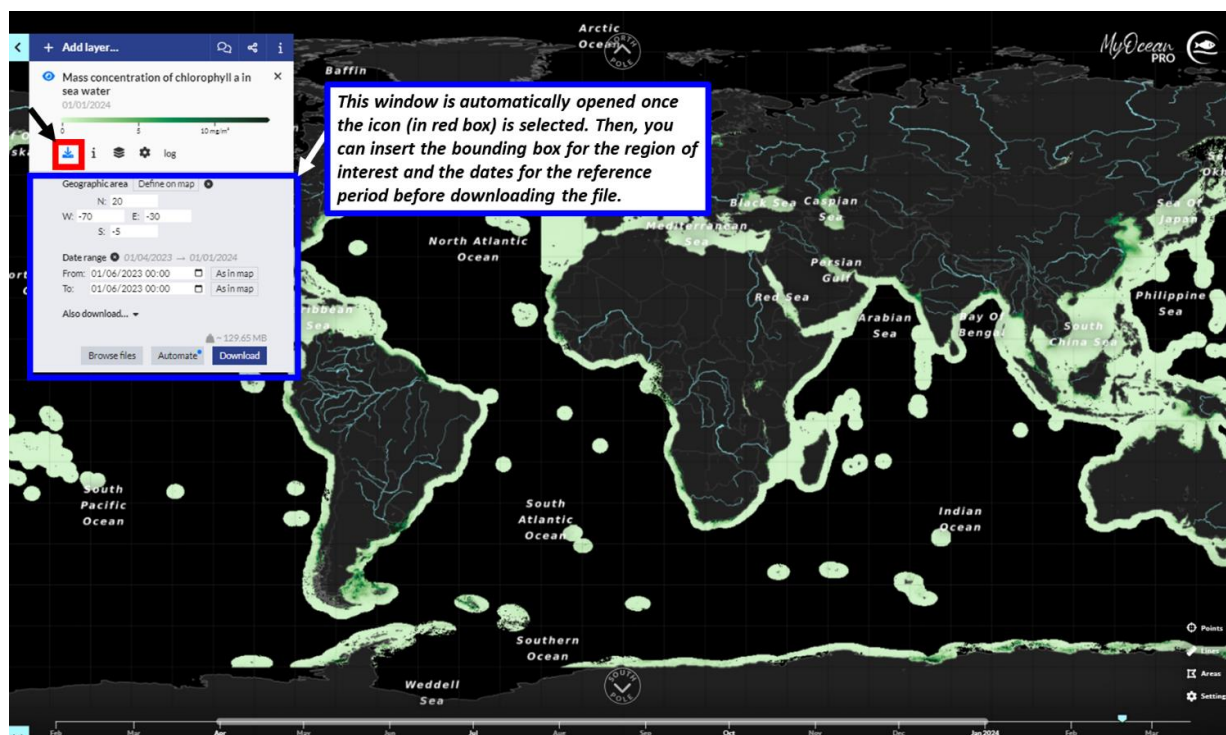


Figure 10. Option 2 for accessing Copernicus Marine data using the MyOcean Pro Viewer functionalities.

Additional information on how to access and download Copernicus Marine data is provided in the Copernicus Marine E-Learning Material (including how to use the Copernicus Marine Toolbox) and at the page dedicated to the specific training event.