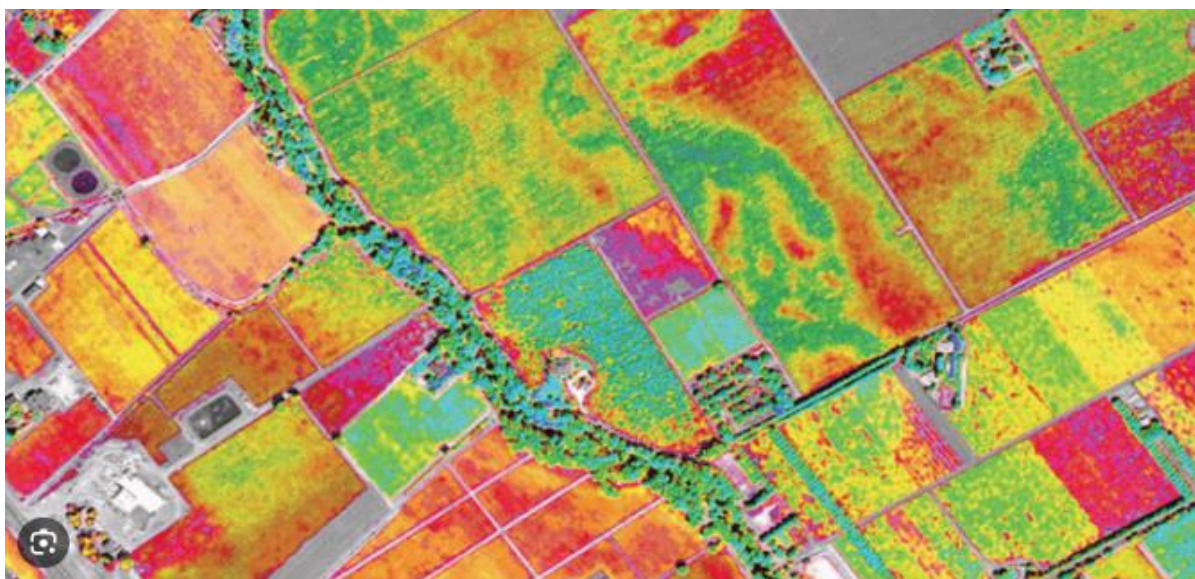


Handling remotely sensed data in QGIS



Practical Manual

Downloading The Sentinel-2 image

The sentinel-2 data can be downloaded from various sources. These include

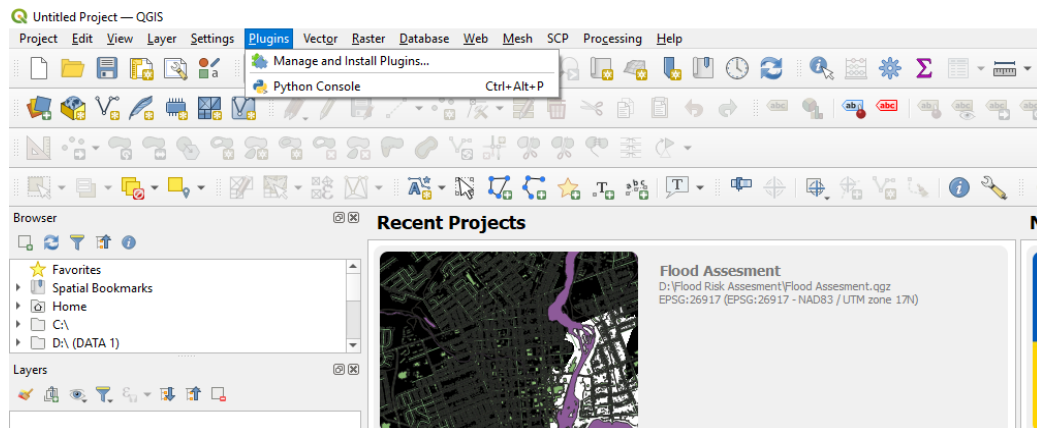
- QGIS Platform: Semi Automated Classification Plugin
 - Copernicus Open Access Hub <https://scihub.copernicus.eu/>.
1. Open the Copernicus Open Access Hub website and register for an account. Select the Open Hub option

The screenshot shows the Copernicus Open Access Hub homepage. The header includes the Copernicus logo and the text 'Copernicus Open Access Hub'. The main content area has a 'Welcome to the Copernicus Open Access Hub' section with text about data access and a 'Reports & Stats' section showing 38,892 products published and 338,550 downloads in the last 24 hours. A 'Resources' section lists links to DHUS, Copernicus Portal, Sentinel Online, and Sentinel Vision Stories. At the bottom, there are four buttons: 'Open Hub' (circled in blue), 'API Hub', 'S-5P Pre-Ops', and 'POD Hub'.

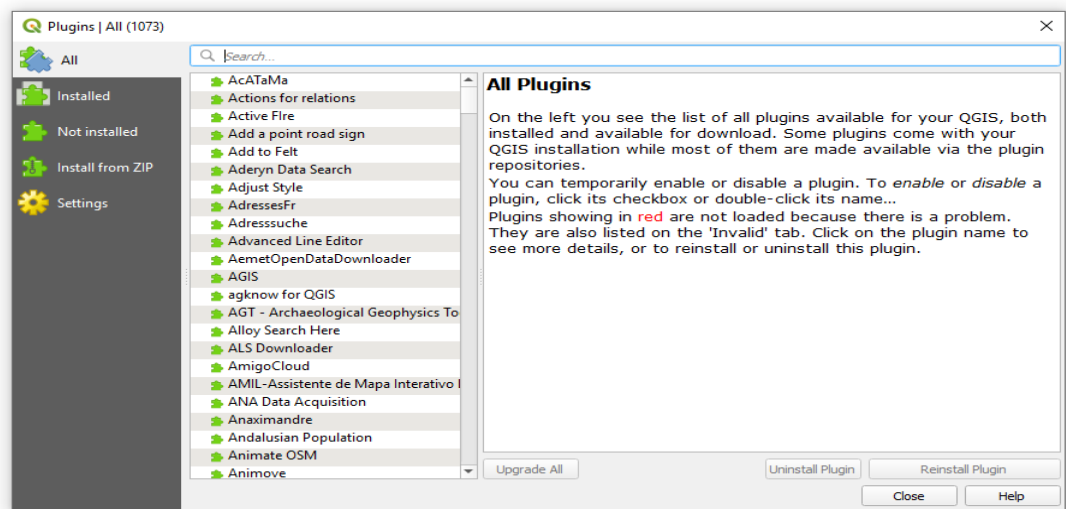
2. Enter the required details and register your account as requested. Keep your logging details as you will use them in QGIS for downloading the Sentinel-2 images.

The screenshot shows the 'Register new account' form on the Copernicus Open Access Hub. The form includes fields for Firstname, Lastname, Username, Password, Confirm Password, E-mail, and Confirm E-mail. There are also dropdown menus for Select Domain, Select Usage, and Select your country. A 'REGISTER' button is at the bottom right. A note at the bottom states: 'By registering in this website you are deemed to have accepted the T&C for Sentinel data use.'

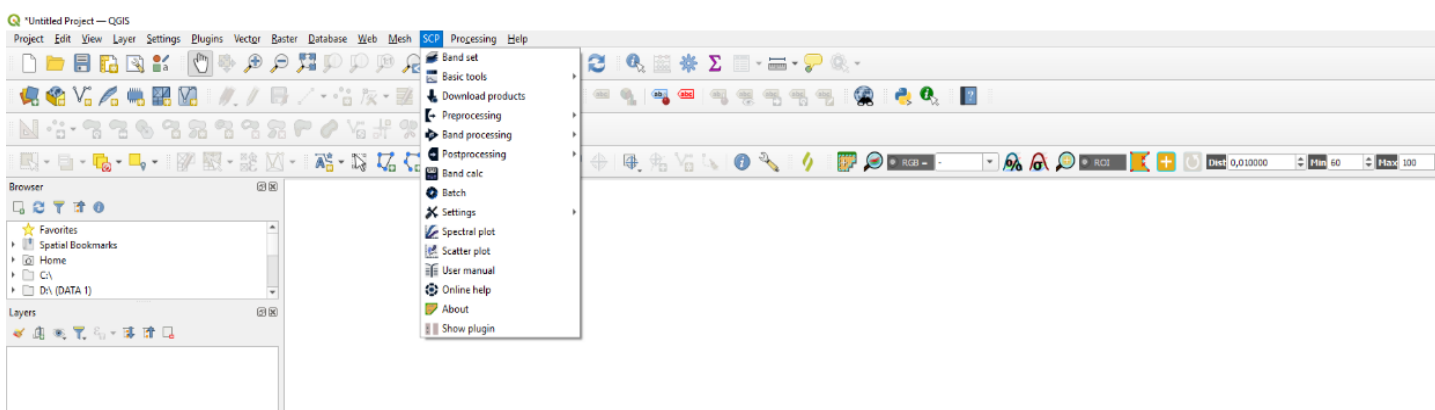
3. Launch the QGIS Desktop Application. From the menu bar, navigate to **Plugins** and select **Manage and install Plugins**.



4. In the Plugins dialogue search box, type Semi-Automatic Classification Plugin and select it, install it once it appears in search results. When the plugin is installed it will appear in the top Menu tool bar as “SCP”



5. Upload your vector file (shapefile) with your region of interest. Make sure the shapefile is displayed in the MapView. NB refer to practical 1 on how to upload a vector data file into QGIS.
6. Open the SCP Plugin and select **Download products**.



7. From the Download products menu, three Tabs will appear: Login data, search and Download options. Lets explore these three Tabs.
 - a) Login data: Since we are downloading Sentinel-2 data enter your Copernicus Open Access Hub credentials under Login Sentinels. Under the Dowload tab, make sure your select Preprocessing images and load bands in QGIS. You must make sure you untick 'Only if preview in Layers' and 'Virtual Download.'

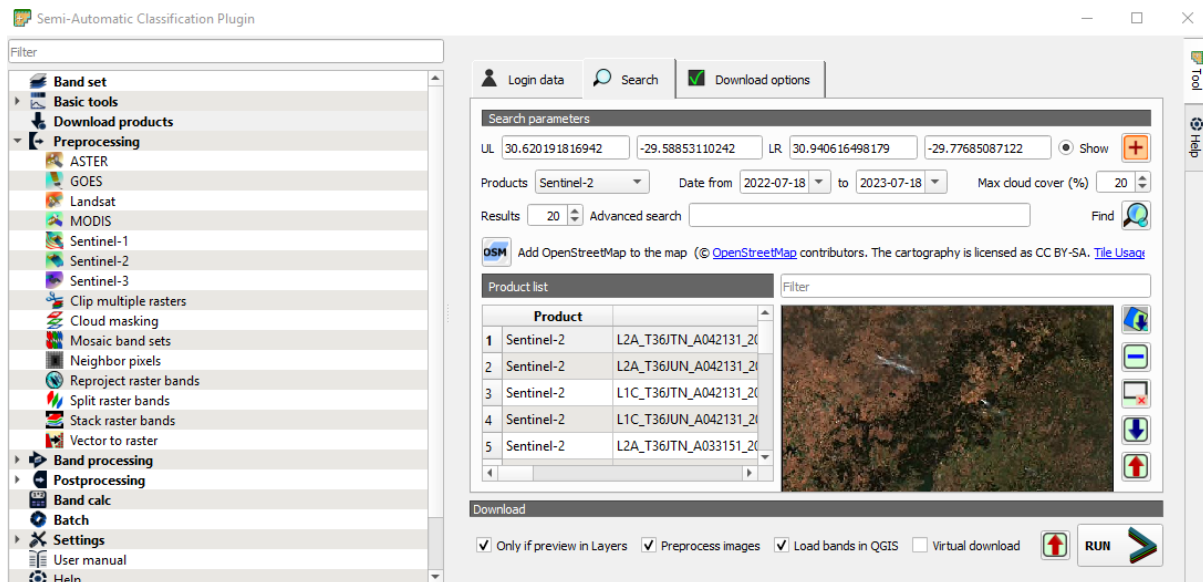
The screenshot shows the 'Login data' tab of the SCP interface. The 'Login Sentinels' section is highlighted with a blue circle. Below it, the 'Download' section is also highlighted with a blue circle, showing checkboxes for 'Only if preview in Layers' (unchecked), 'Preprocess images' (checked), 'Load bands in QGIS' (checked), and 'Virtual download' (unchecked). A 'RUN' button is visible at the bottom right of the Download section.

- b) In the search option, ensure that you have selected "Sentinel" from the products drop-down menu. Choose the desired date range for the images you wish to download. For this practical exercise, let's select images ranging from June 17th, 2023, to June 31st, 2023. Select the OpenStreetMap option (OSM) to bring the open street map to the Mapview.

The screenshot shows the 'Search' tab of the SCP interface. The 'Search' tab is highlighted with a blue circle. The 'Products' dropdown menu is set to 'Sentinel-2'. The 'Date from' and 'Date to' fields are set to '2022-07-17' and '2023-07-17' respectively. The 'Max cloud cover (%)' is set to '100'. The 'OSM' option is selected in the 'Results' section, highlighted with a blue circle. The 'Product list' table is empty. The 'Download' section at the bottom shows the same checkboxes as in the previous screenshot, with 'Preprocess images' and 'Load bands in QGIS' checked, and 'Only if preview in Layers' and 'Virtual download' unchecked. A 'RUN' button is visible at the bottom right.

To select your region of interest on the OpenStreet Layer displayed in the Mapview, click on the Show icon located at the top right corner. Look for the orange plus sign, and click on it. This will enable you to define your desired area. Click on the Find Icon, so search for the Sentinel-2 images.

If the search is successful, the list of available images will show under the Product Tab, click on one tile of your choice and it will display on the preview panel as shown below.



- c) To download the selected image, make sure all the sentinel bands are ticked. You may untick all bands for other sensors such as Landsat and Sentinel-3. Under the Download tab, make sure you select Pre-processing images and load bands in QGIS. You must make sure you untick 'Only if preview in Layers' and 'Virtual Download.' Press Run and select the folder you would like to save the downloaded image.

