



## Data:

<https://myfiles.sbg.ac.at/index.php/s/H4X9zqqABMyfZNS?path=%2FPracticals%2FIntroduction>

Also under: Blackboard > Software & Data > 655352 Datashare > Practicals > Introduction

Please choose any of the “A”, “B”, “C” .zip folders and download it

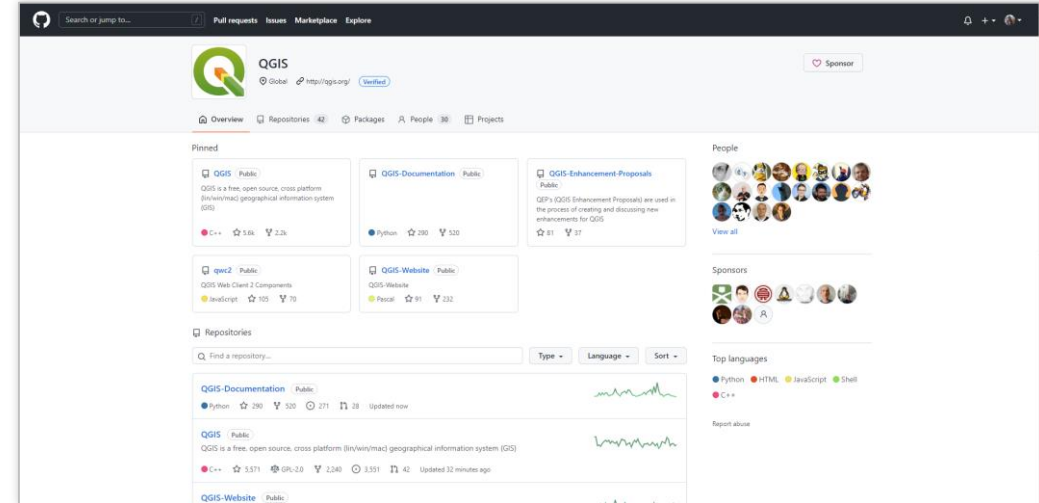




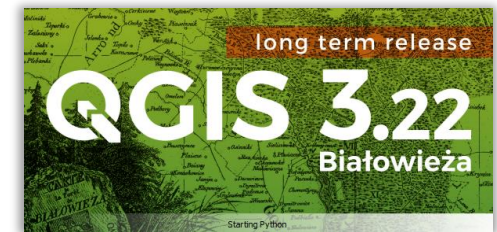
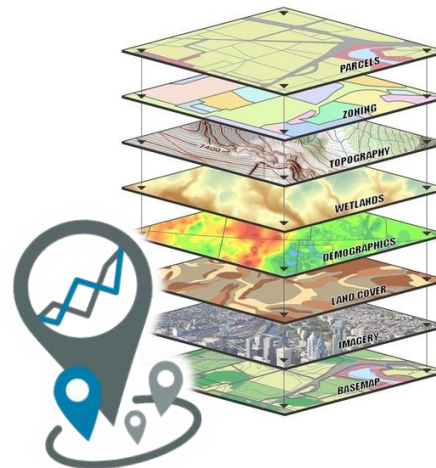
# Hands On: Getting Started with QGIS

## QGIS (A Desktop Geographical Information System)

A free and open source GIS software



Just as we use a word processor to write documents and deal with words on a computer, we can use a GIS application to deal with spatial information on a computer

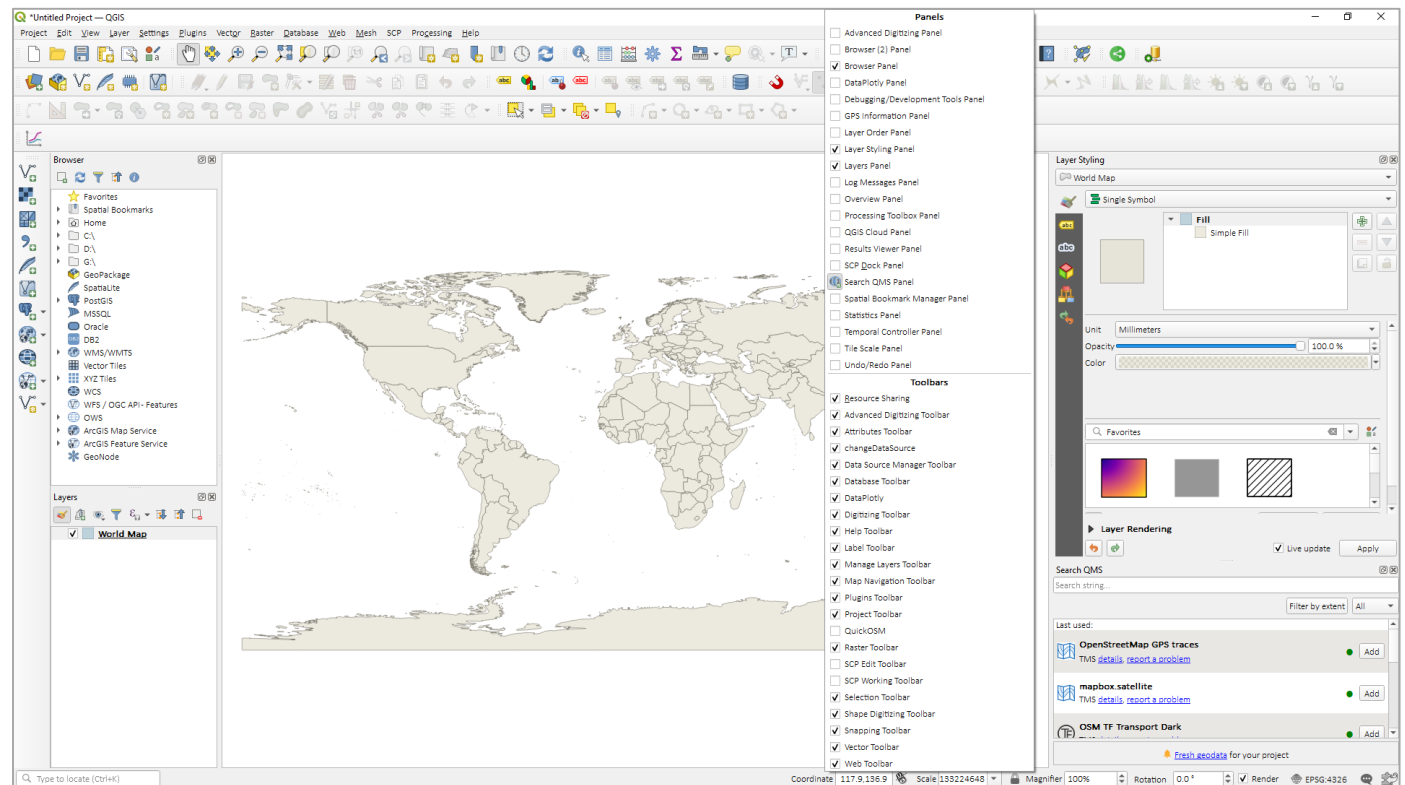




## Hands On: Getting Started with QGIS

With a GIS application you can open digital maps on your computer, create new spatial information to add to a map, create printed maps customised to your needs and perform spatial analysis.

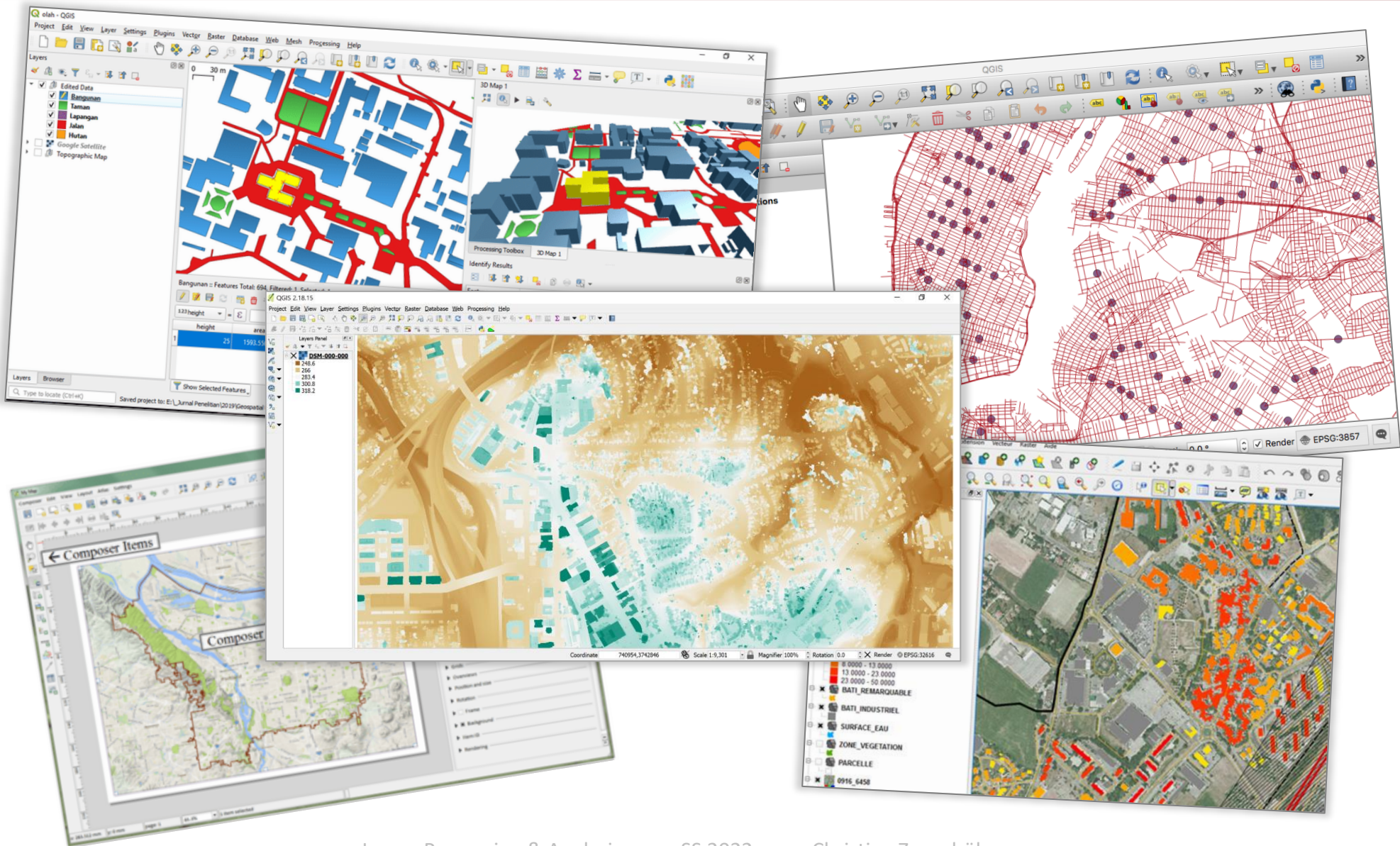
GIS Applications are normally programs with a **graphical user interface** that can be manipulated using the mouse and keyboard. The application provides **menus** near to the top of the window (Project, Edit etc.) which, when clicked using the mouse, show a panel of actions. **Toolbars** (rows of small pictures that can be clicked with the mouse) normally sit just below the menus and provide a quicker way to use frequently needed actions.







# Hands On: Getting Started with QGIS

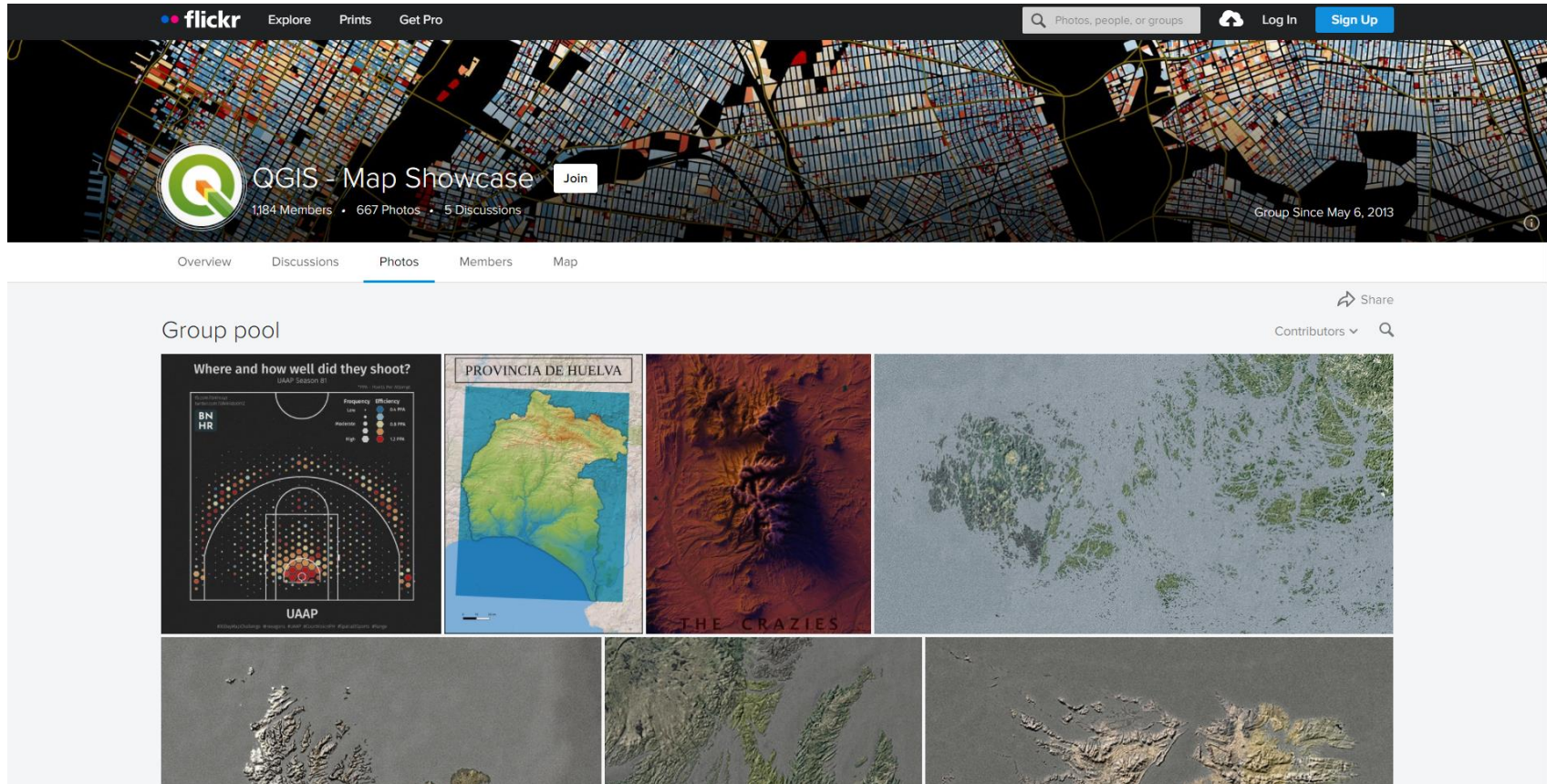






# Hands On: Getting Started with QGIS

If you are interested in seeing more examples of maps and information products created with QGIS go to:  
<https://www.flickr.com/groups/2244553@N22/pool/with/50355460063/>









Let's get started!

## Installation





1. Go to <https://qgis.org/en/site/forusers/download.html>
2. Scroll down to the “long term release (most stable)” and click on it to download (Version 3.22 since Feb. 18 2022)
3. Follow the instructions to install it properly

Standalone installers (MSI) from OSGeo4W packages (recommended for new users)

Latest release (richest on features):

		<a href="#">QGIS Standalone Installer Version 3.24</a>	
	<a href="#">sha256</a>		

Long term release (most stable):

		<a href="#">QGIS Standalone Installer Version 3.22</a>	
	<a href="#">sha256</a>		






Let's get started!


## Installation

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[sha256](#) 

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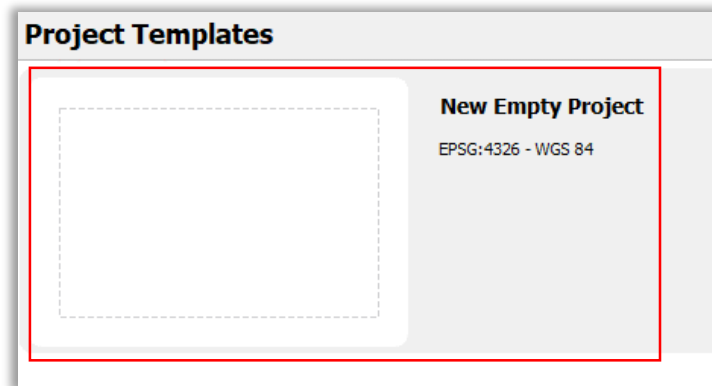
  **QGIS Standalone Installer Version 3.22** 

[sha256](#) 



## Opening a new Project

- Start QGIS
- Once the interface has opened, find the “Project Templates” section and simply click on “New Empty Project”. This will open up a blank project.

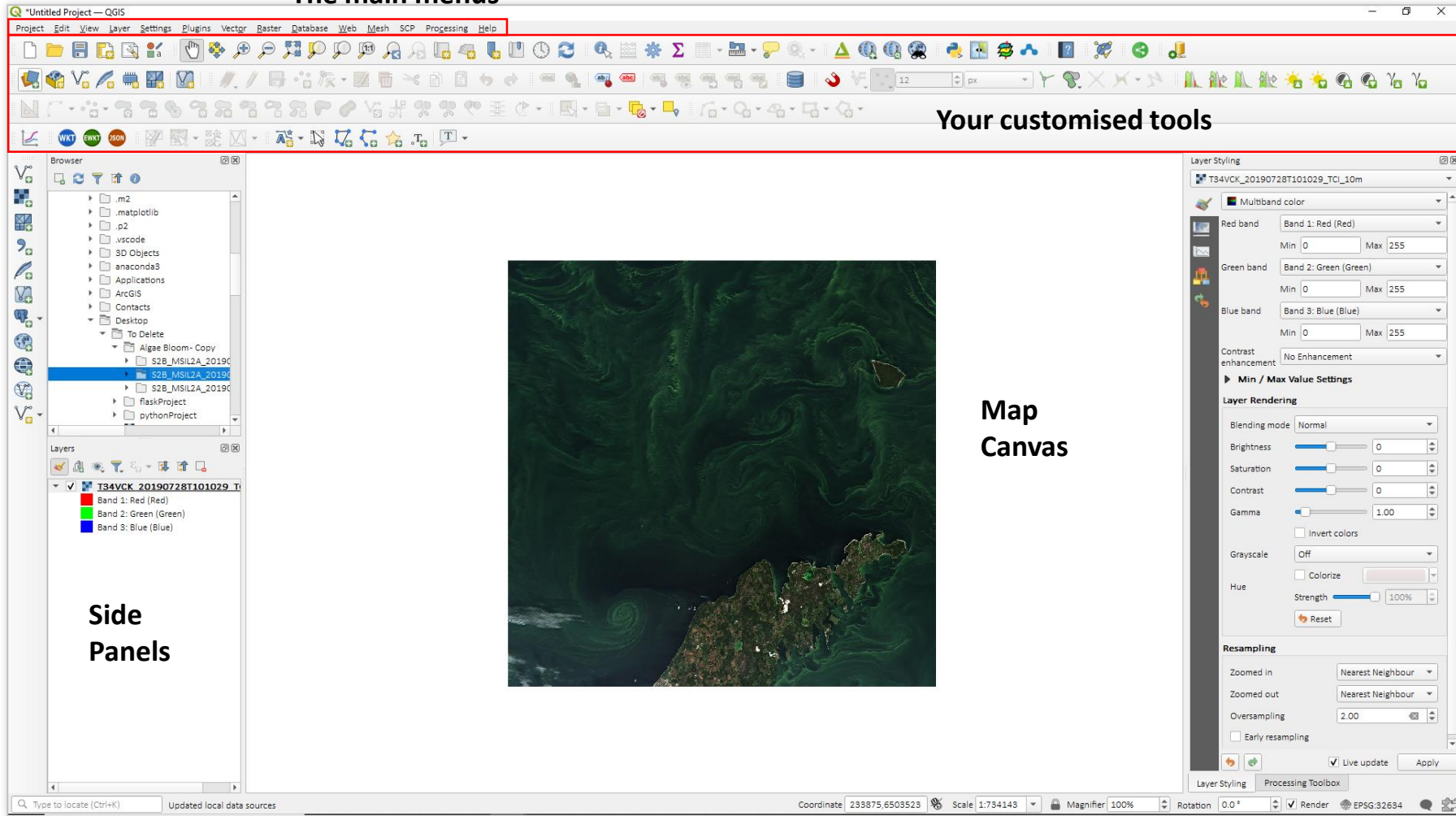






## The Interface

### The main menus



Your customised tools

Map  
Canvas

Side  
Panels

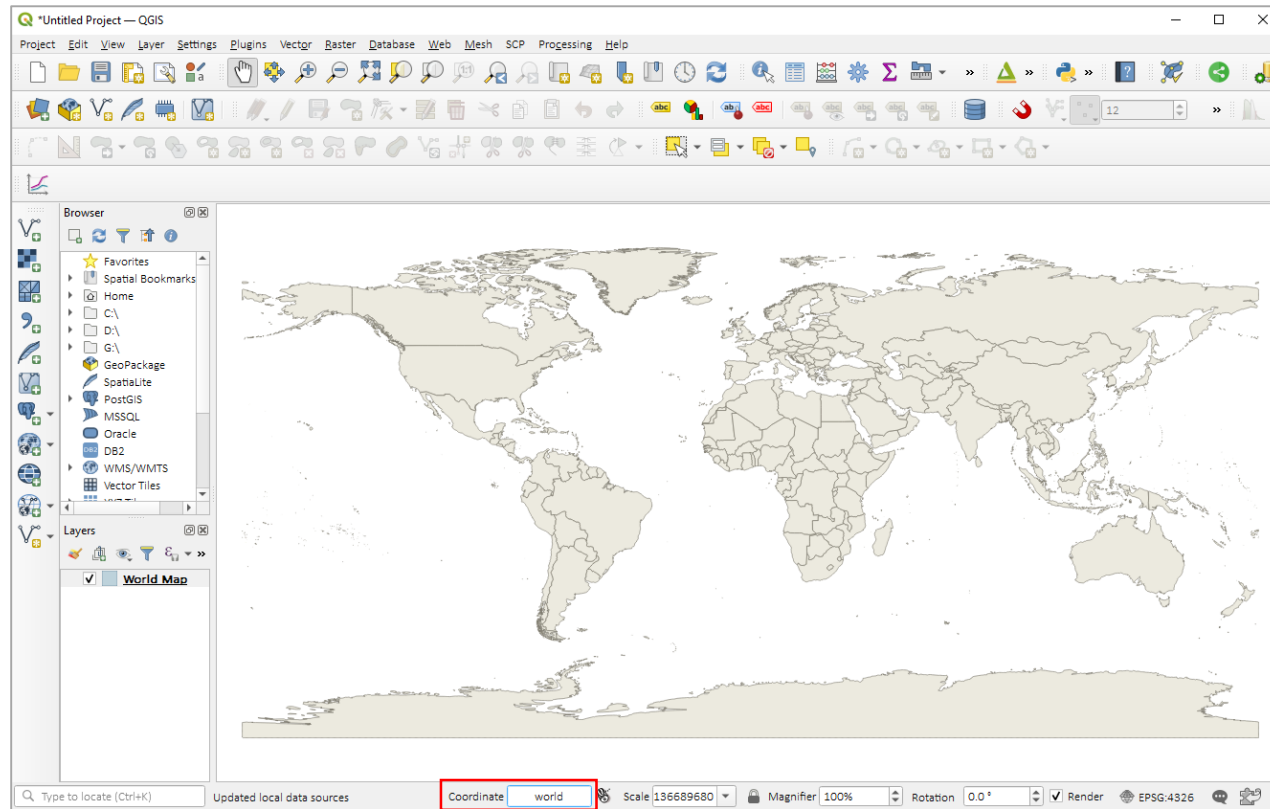
Side  
Panels



## Base Maps

There are many different ways of adding base maps into QGIS

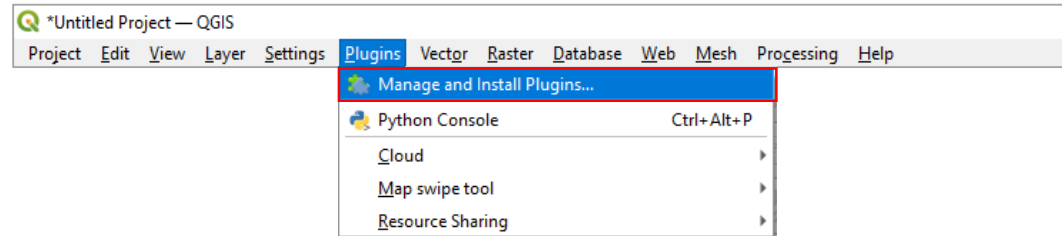
- The most basic option is to write “world” into the coordinate field at the bottom of the QGIS interface. This will load a very simple world map.



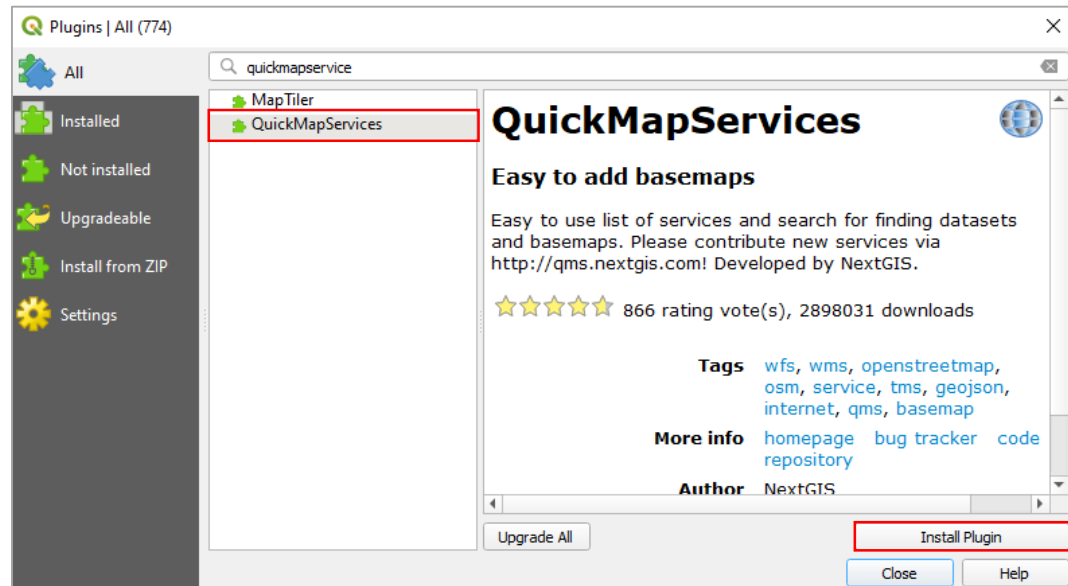


Another option is to use a plugin

- Open the Plugin Manager:



- Search for “QuickMapServices”
- Once you’ve found it, click “Install Plugin”





# Hands On: Getting Started with QGIS

- If the plugin doesn't open automatically, search for its icon and click on it to open the search panel:
  - In the drop down box on the right hand side, change “All” to “Valid”.
  - Search for base maps that you want to add (some examples below)!



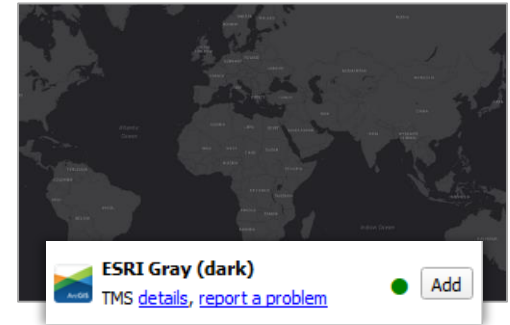
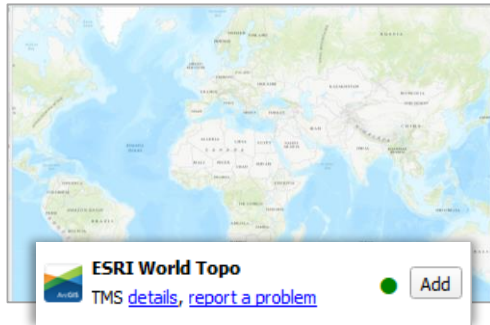
The screenshot shows the QGIS desktop environment. The main window is titled "Untitled Project - QGIS". The interface includes a menu bar (Project, Edit, View, Layer, Settings, Plugins, Vector, Raster, Database, Web, Mesh, Processing, Help), a toolbar, and a main canvas area. On the left, there is a "Browser" panel showing a file system tree and a "Layers" panel with two layers: "World Imagery" and "Mapbox Satellite". On the right, the "Search QMS" panel is open, displaying a search for "Mapbox". The search results are filtered by "Valid" and include the following items:

Item	Filter	Action
Locator Overlay	Valid	Add
mapbox.satellite	Valid	Add
Mapbox Satellite	Valid	Add
Mapbox Satellite Streets v9	Valid	Add
Mapbox Satellite v9	Valid	Add
Mapbox Streets v10	Valid	Add



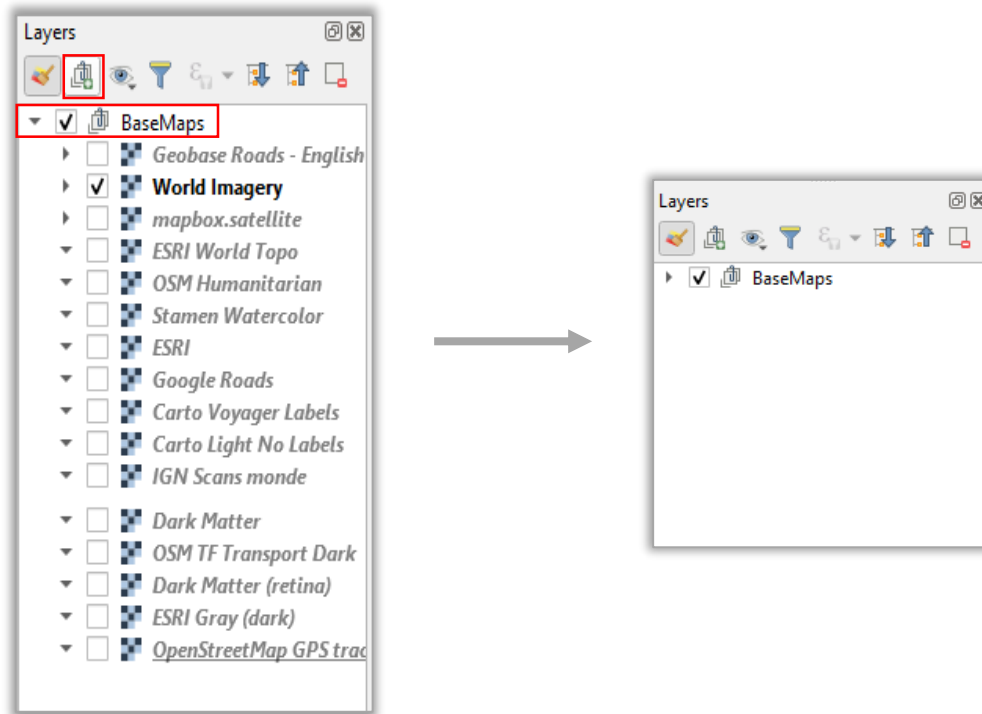


# Hands On: Getting Started with QGIS





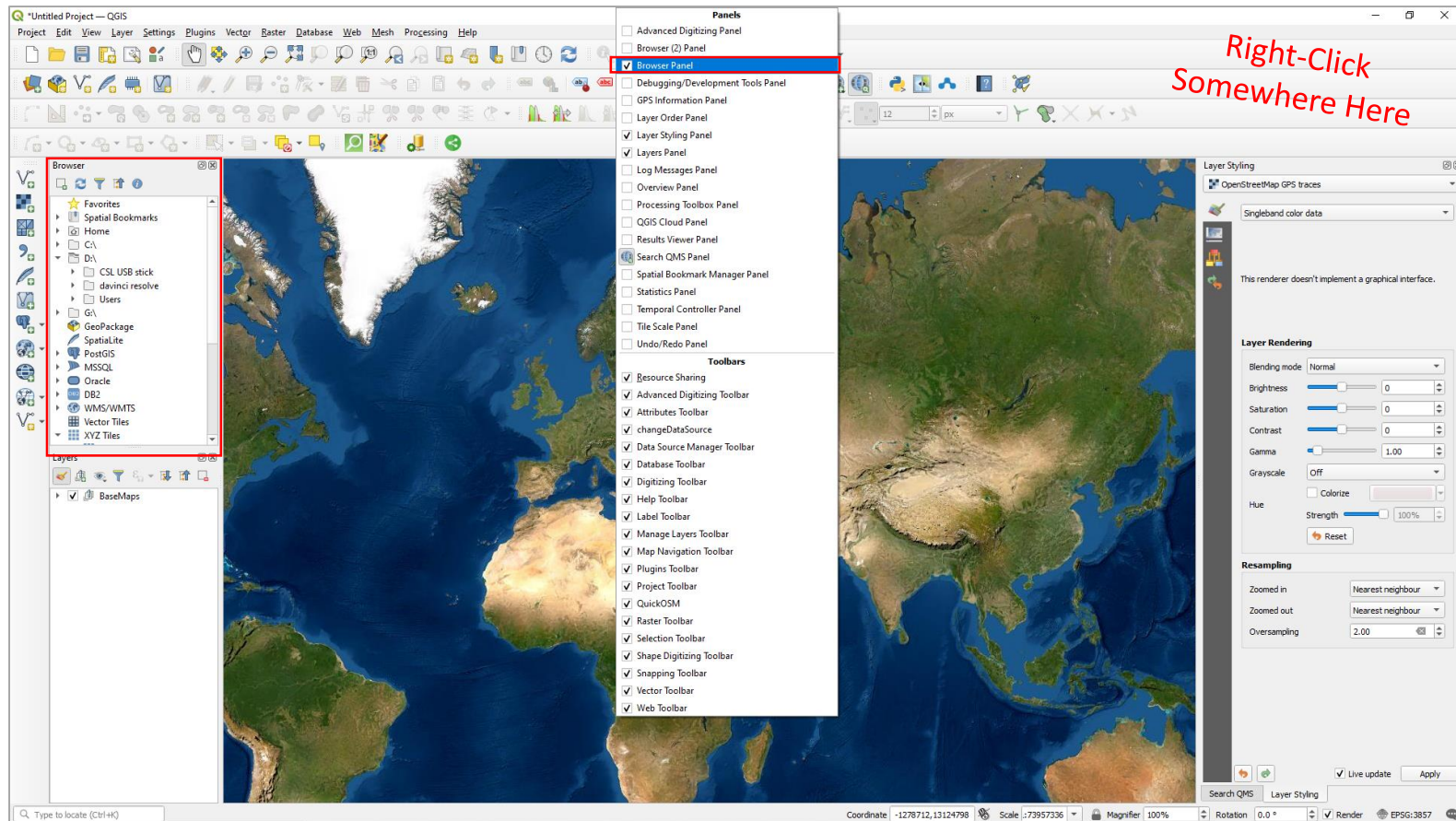
- Tip: If you have added as many base maps as I have ;- ) its useful to put them in a group so we can manage our layers better:
  - Click on the “Add Group” icon in the layers-panel.
  - Give the group a name like “BaseMaps”
  - Move all base maps into the group. Now you can collapse the group and not worry about your basemap obsession 😊





## Add a satellite image.

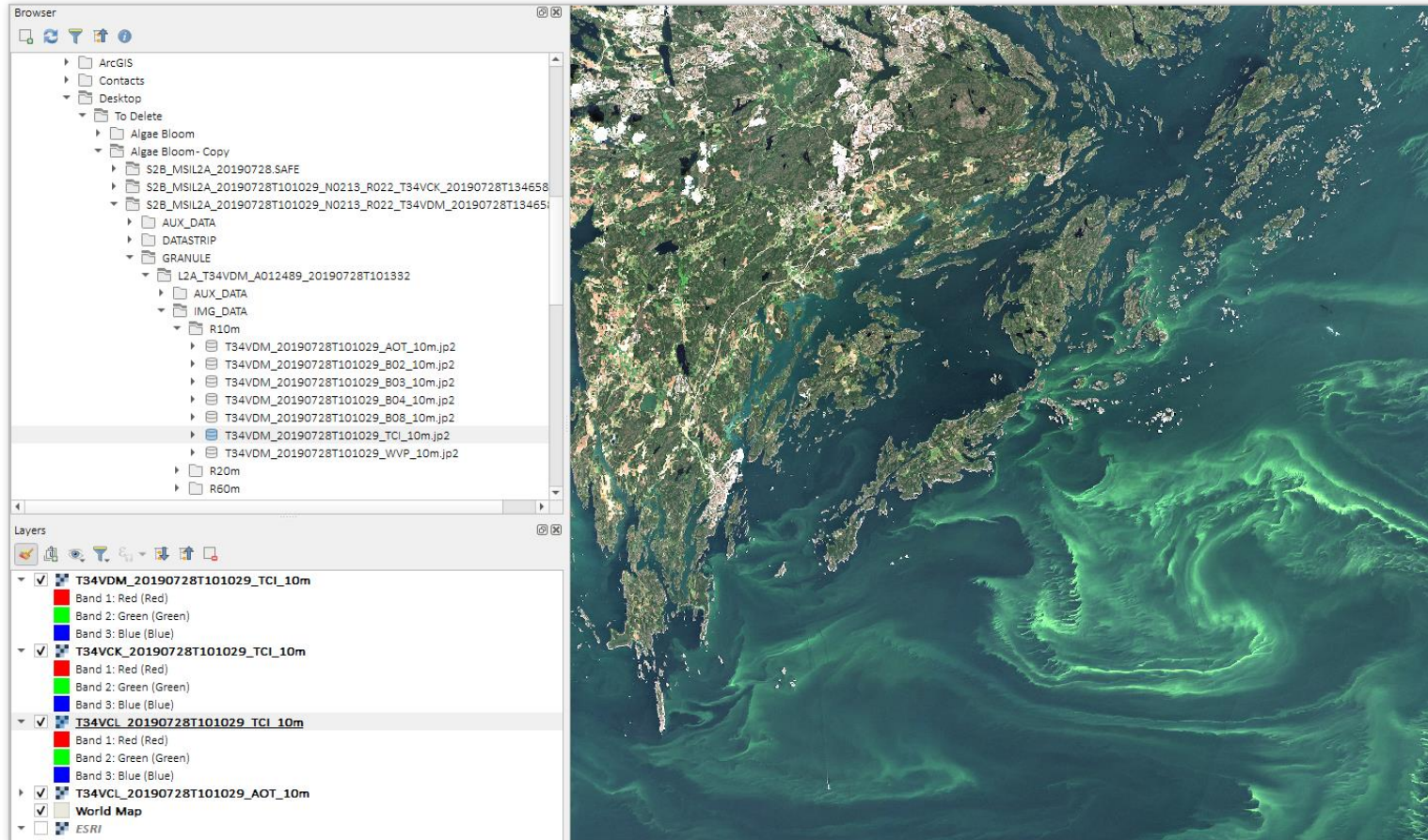
- Open the browser panel if it isn't already open (right-click in the top-section of the QGIS interface and select browser panel so that it is turned on).







- Navigate to the location of your downloaded satellite images “S2B\_...” > Granule > IMG\_Data > R10m > TCI
- Simply drag them into the map.

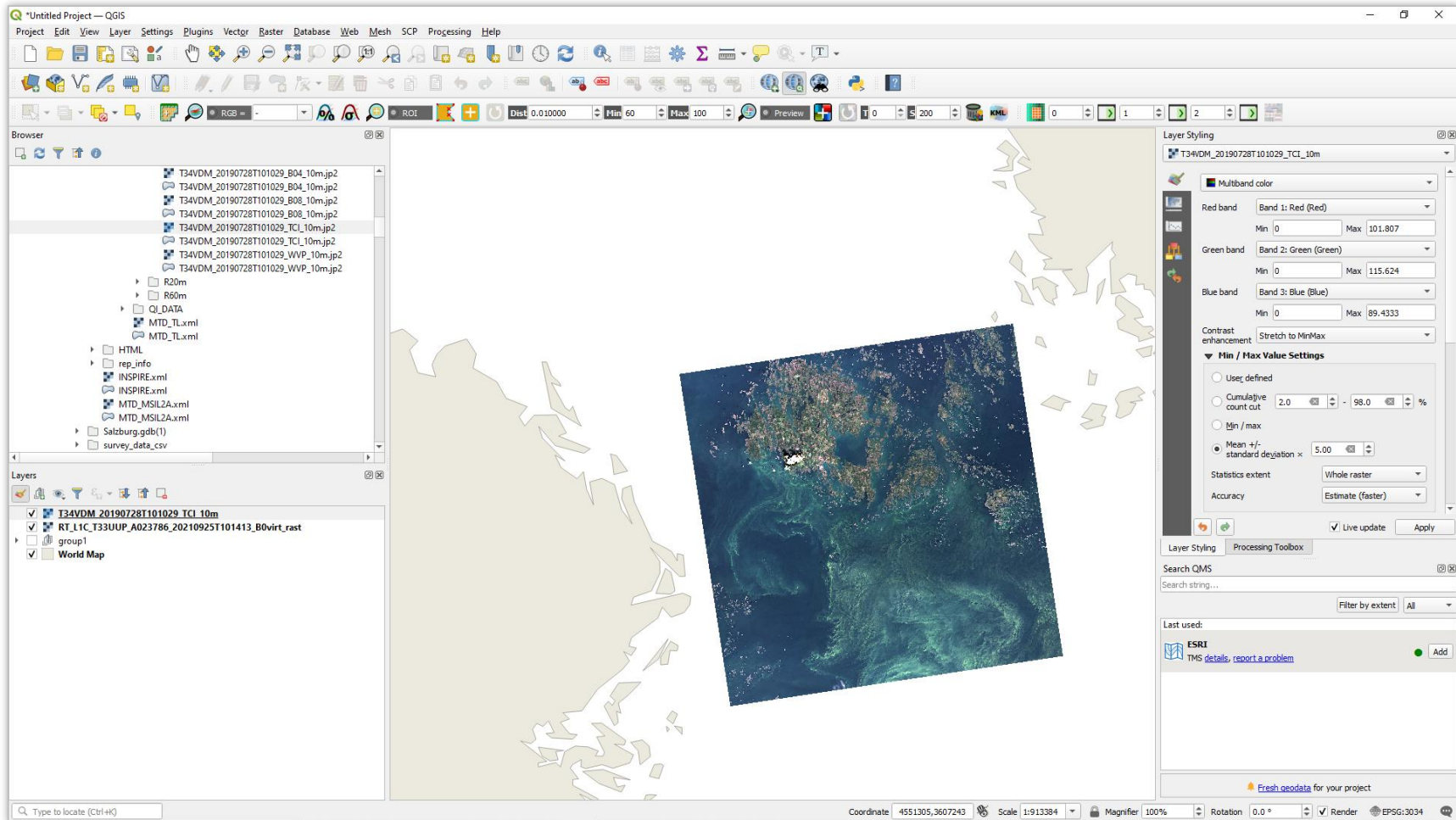


- (Images downloaded from [Copernicus Open Access Hub](#))





- The Layer Styling Panel gives us some immediate options for visualisation of the image (NOT editing!)





## More On Plugins...

■ <https://plugins.qgis.org/plugins/?sort=-downloads>

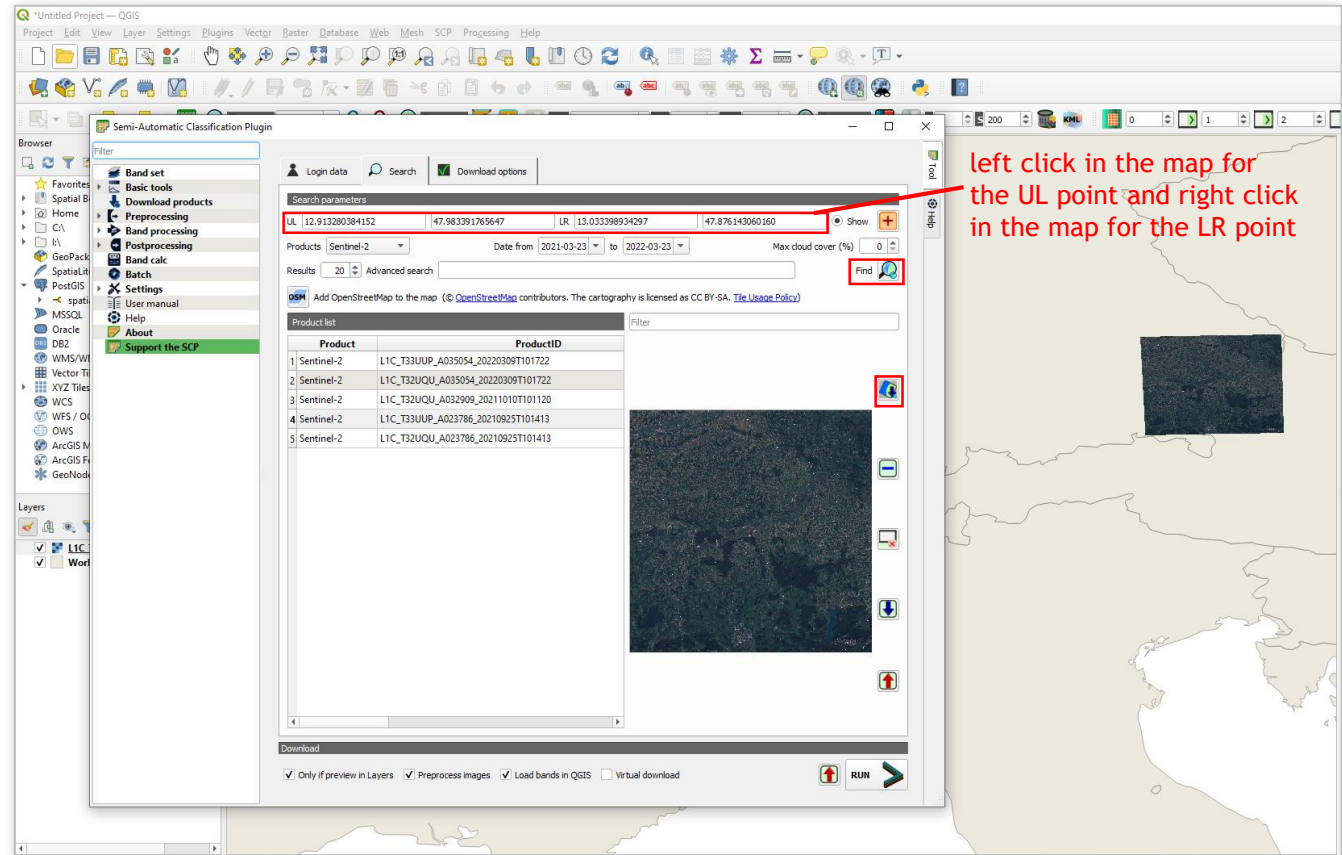
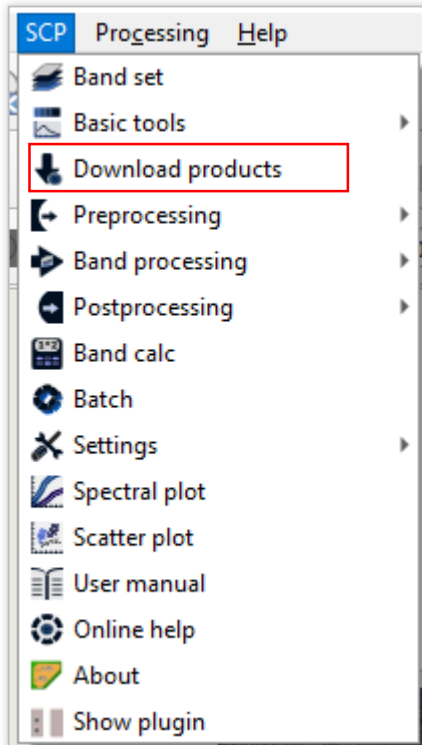
The screenshot shows the QGIS Python Plugins Repository website. The page title is "QGIS Python Plugins Repository" and it displays "All plugins" with 1606 records found. The table lists various plugins with their respective authors, versions, and ratings.

Name	Stars (votes)	Author	Latest Plugin Version	Created on	Stars (votes)	Stable	Exp.
OpenLayers Plugin	— 3465784	Sourcepole	April 9, 2018	Oct. 4, 2012	★★★★★ (2131)	1.4.8	2.0.0
QuickMapServices	✓ 3287006	NextGIS	March 15, 2022	Jan. 11, 2015	★★★★★ (878)	0.19.29	—
Semi-Automatic Classification Plugin	✓ 1131609	Luca Congedo	March 15, 2022	Feb. 14, 2013	★★★★★ (466)	7.10.6	—
mmqgis	— 1097601	Michael Minn	Sept. 10, 2021	May 6, 2012	★★★★★ (366)	2021.9.10	2013.3.23
QuickOSM	✓ 905745	Etienne Trimaille	Feb. 7, 2022	July 31, 2014	★★★★★ (230)	2.0.1	2.0.0-beta1
MetaSearch Catalogue Client	— 825083	Tom Kralidis	March 5, 2017	Feb. 18, 2014	★★★★★ (109)	0.3.5	—
qgis2web	✓ 782725	Tom Chadwin, Riccardo Klinger, Victor Olaya, Nyall Dawson	June 15, 2020	April 23, 2015	★★★★★ (450)	3.16.0	—
Profile tool	— 731341	Borys Jurgiel - Patrice Verchere - Etienne Tourigny - Javier Becerra	Jan. 31, 2022	March 10, 2012	★★★★★ (370)	4.2.2	3.5.0
Qgis2threejs	✓ 654150	Minoru Akagi	yesterday	Dec. 23, 2013	★★★★★ (353)	2.7	—
Lat Lon Tools	✓ 517385	C Hamilton	March 4, 2022	June 9, 2016	★★★★★ (198)	3.6.3	—
OSMDownloader	— 507675	Luiz Andrade	March 28, 2020	April 9, 2015	★★★★★ (180)	1.0.3	0.1



## Semi-Automatic Classification Plugin

- One of the most used plugins, which features a large set of tools for handling remote sensing data



Set AOI > Chose Products ("Sentinel-2") > Dates > Cloud cover > Results > "Find" > Preview in Map > Highlight one and click "Run" to download product



## Semi-Automatic Classification Plugin

The screenshot displays the QGIS interface with the Semi-Automatic Classification Plugin (SCP) open. The plugin window is titled "Semi-Automatic Classification Plugin" and contains the following elements:

- Search parameters:** A search bar with coordinates (UL: 12.913280384152, LR: 13.033398934297, UR: 47.876143060160) and a "Show" button.
- Products:** A dropdown menu set to "Sentinel-2".
- Date from:** A date range from "2021-03-23" to "2022-03-23".
- Max cloud cover (%):** A slider set to "0".
- Results:** A search bar and a "Find" button.
- Product list:** A table with columns "Product" and "ProductID". The table contains five rows, with the second row highlighted in blue and the third row highlighted in red.
- Download options:** A section at the bottom with checkboxes for "Only if preview in Layers", "Preprocess images", "Load bands in QGIS", and "Virtual download". A "RUN" button is located at the bottom right of this section.

Product	ProductID
1 Sentinel-2	L1C_T33UUP_A035054_20220309T101722
2 Sentinel-2	L1C_T32UQU_A035054_20220309T101722
3 Sentinel-2	L1C_T32UQU_A032909_20211010T101120
4 Sentinel-2	L1C_T33UUP_A023786_20210925T101413
5 Sentinel-2	L1C_T32UQU_A023786_20210925T101413





## Semi-Automatic Classification Plugin

Filter

- Band set
- Basic tools
- Download products
- Preprocessing
- Band processing
- Postprocessing
- Band calc
- Batch
- Settings
- User manual
- Help
- About
- Support the SCP

Multiband image list

Single band list

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B02

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B03

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B04

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B05

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B06

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B07

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B08

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B11

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B12

RT\_L1C\_T33UUP\_A023786\_20210925T101413\_B8A

Band set definition

Band name	Center wavelength	Multiplicative Factor	A
1 RT_L1C_T33UUP_A023786_20210925T101413_B02	0.49	1	0
2 RT_L1C_T33UUP_A023786_20210925T101413_B03	0.56	1	0
3 RT_L1C_T33UUP_A023786_20210925T101413_B04	0.665	1	0
4 RT_L1C_T33UUP_A023786_20210925T101413_B05	0.705	1	0
5 RT_L1C_T33UUP_A023786_20210925T101413_B06	0.74	1	0
6 RT_L1C_T33UUP_A023786_20210925T101413_B07	0.783	1	0
7 RT_L1C_T33UUP_A023786_20210925T101413_B08	0.842	1	0
8 RT_L1C_T33UUP_A023786_20210925T101413_B8A	0.865	1	0

Wavelength quick settings: Sentinel-2 [bands 1, 2, 3, 4, 5, 6, 7, 8, 8A, 9, 10, 11, 12]

Wavelength unit:  $\mu\text{m}$  (1 E-6m) Date: 2021-09-25

Band set tools

Create virtual raster of band set  Create raster of band set (stack bands)  Build band overviews  Band calc expressions

RUN



## Semi-Automatic Classification Plugin

