African Drone and Data Academy (ADDA)
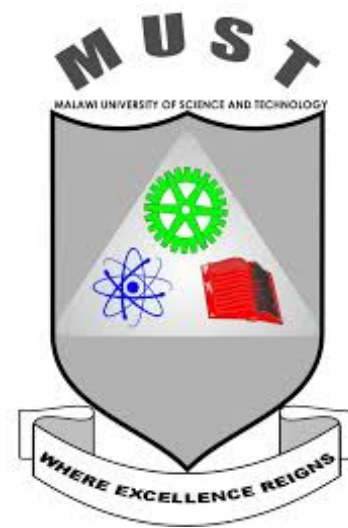
Data Visualization and Cartography

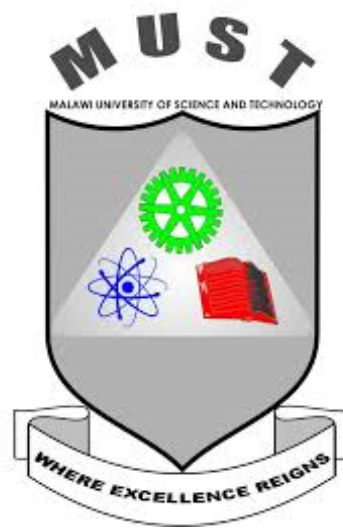## Day 1

DATA VISUALIZATION AND CARTOGRAPHY

Download and Install QGIS

Download and Install QGIS

- Go to Moodle Page and click on the link provided to download QGIS for your computer.

- QGIS is compatible with Windows, Mac, and Linux operating systems
  - On windows computers, you can download either a 64-bit or 32-bit version depending on your computer
  - You can download the current LTR version or the latest version. However, this lab was developed using QGIS version 3.16.1. For best experience, we recommend you download the same version (click "All releases" tab to find this version download).

- Once the software download completes, click the installation file and go through the standard installation. You can accept default values for all installation process.
  - On Mac, make sure to read the instructions provided to get installation done in the right sequence. You may have to install multiple packages that are provided in the install folder.

- You don't need the sample data set that is provided as an option during installation.
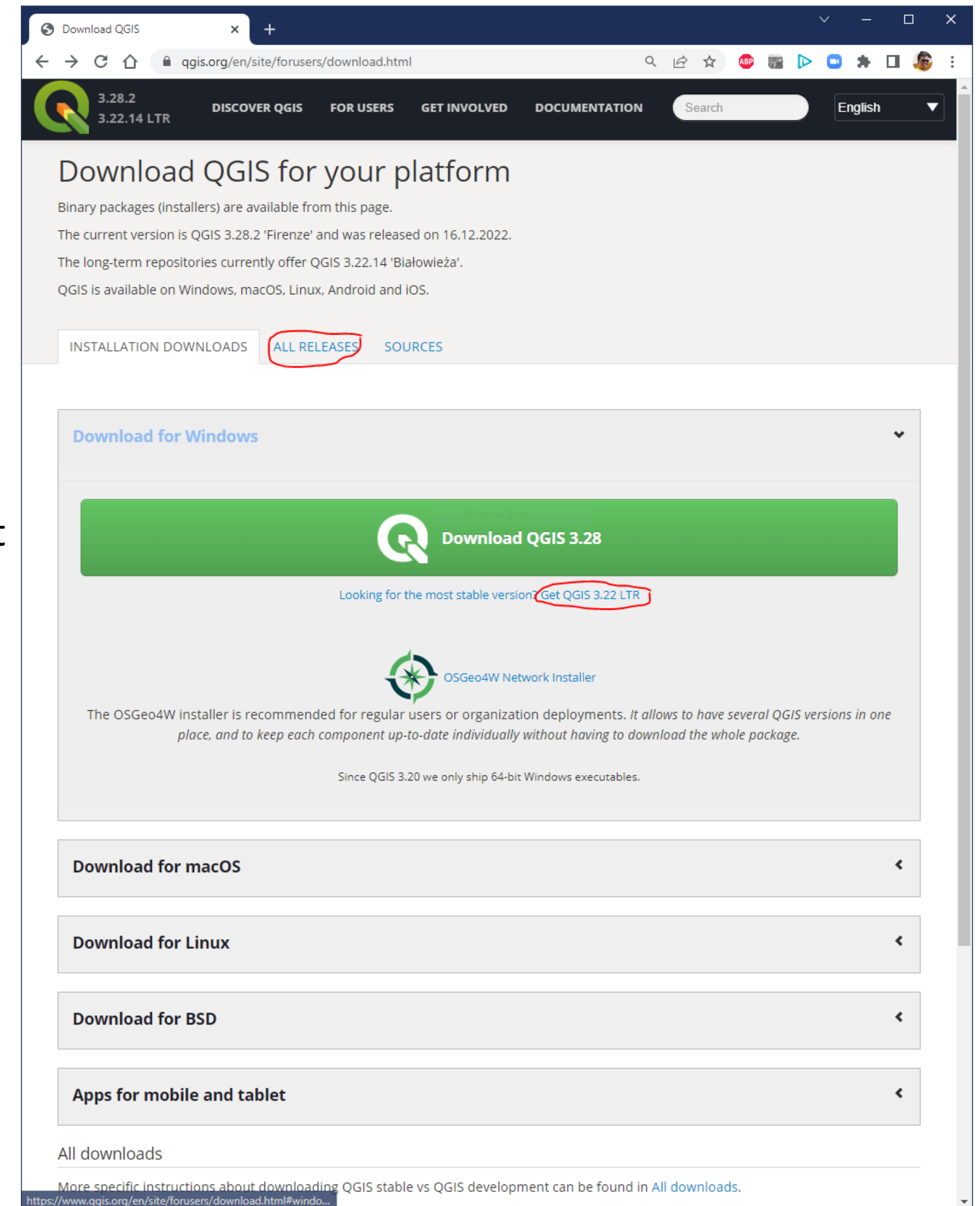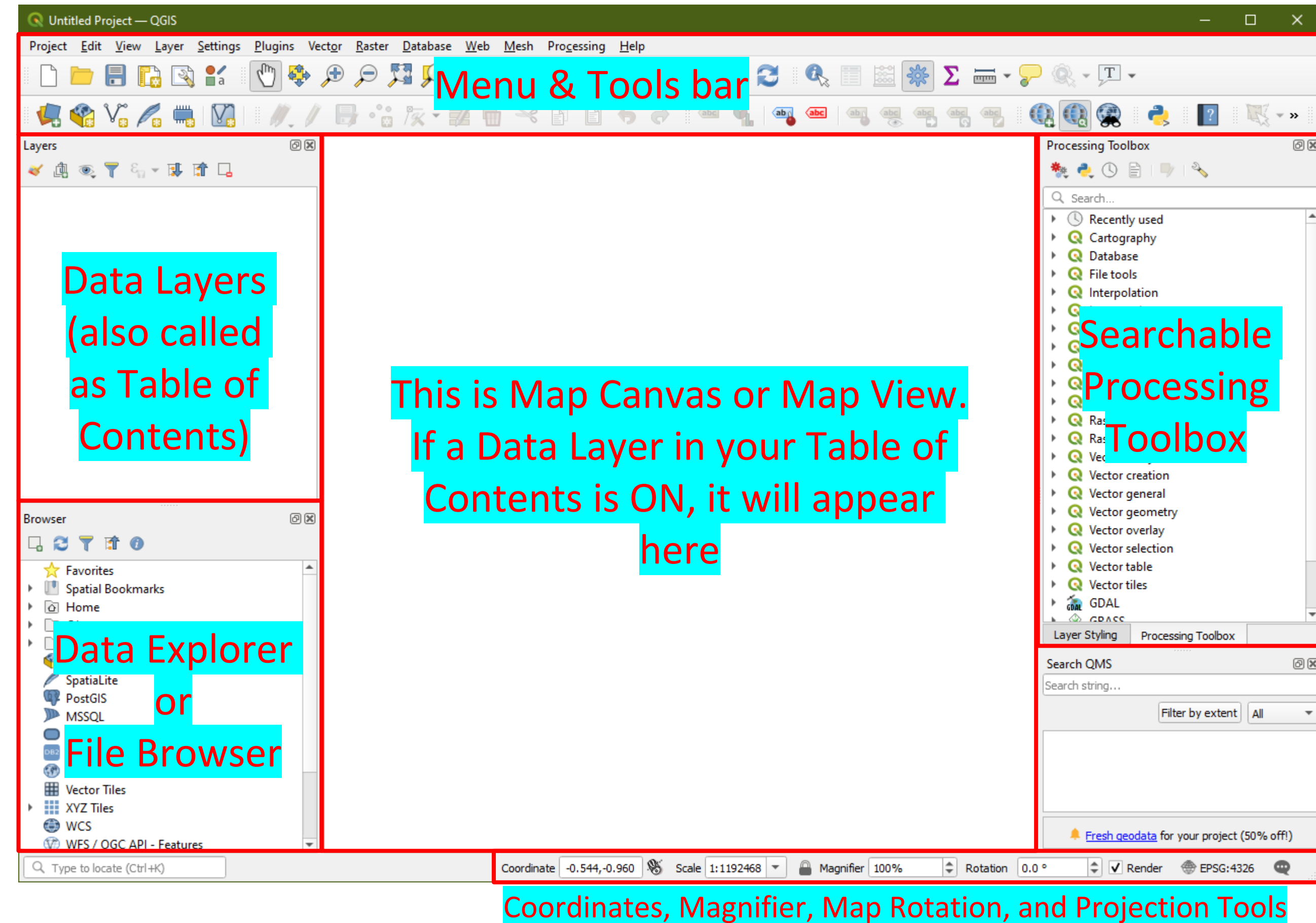
Installing Plugins

- As an open-source software platform, QGIS allows anyone to write codes (using Python) and develop new tools that can be downloaded and used

- These additional tools are provided as plugins that can be downloaded directly from within QGIS.

- For the next step, make sure you are connected to the Internet

- Click on **Plugins** Menu and select **Manage and Install Plugin**
  – This will open a new window that will show what is already installed and what can be searched and downloaded

- For today, go ahead and search for plugin "**QuickMapServices**"
  – When you find it, select the plugin and click **Install Plugin** button on the bottom right corner of the plugins window.
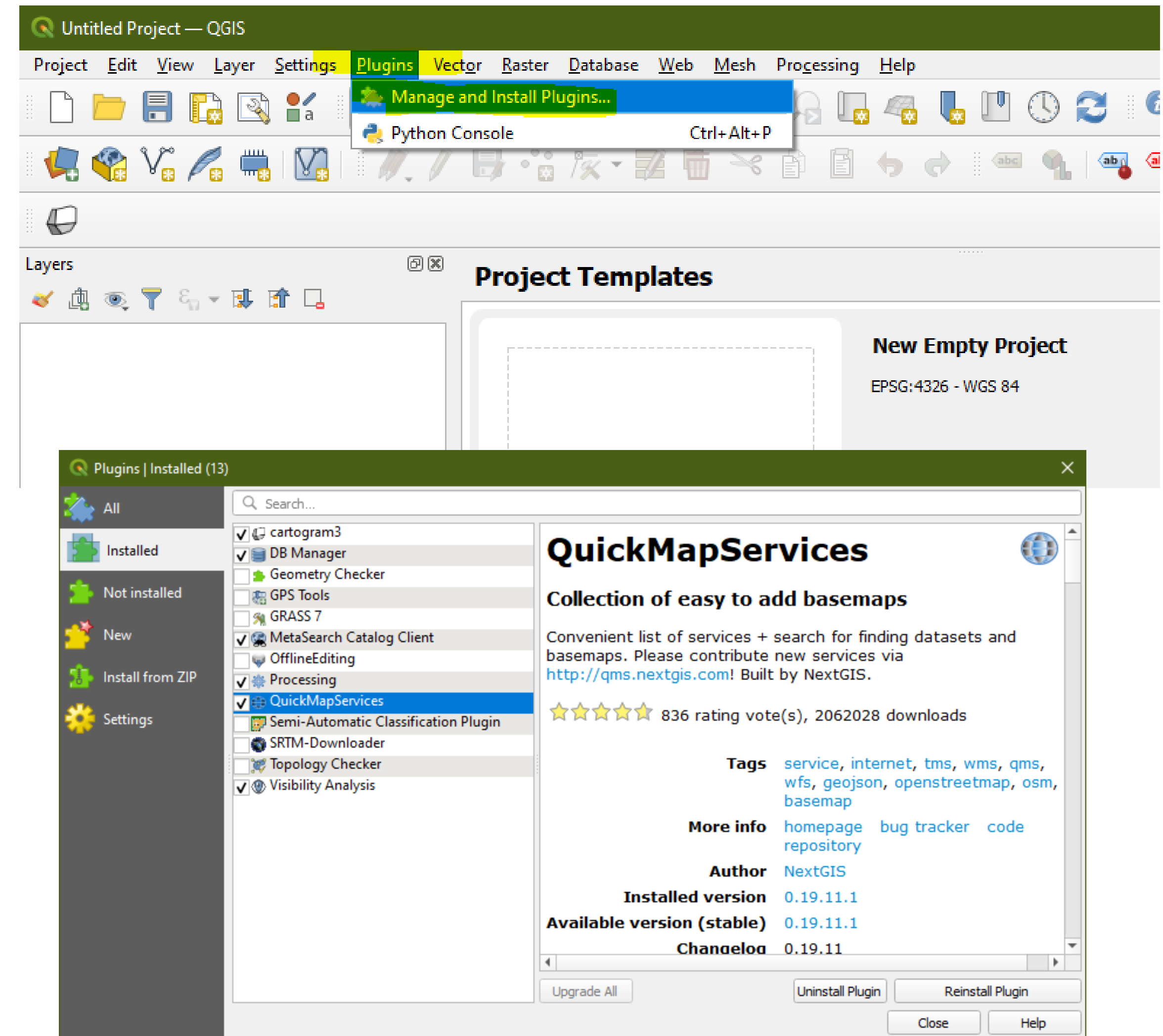
QGIS User Interface

- When you open QGIS, you will get a window that resembles the image to the right

- Get yourself familiarized with various parts of this. Learn the terminologies used to refer to them. This will make your life easy when you are talking to someone and trying to get help solve your problems

  - If you point your mouse cursor over any of the buttons within the toolbar, you will see a popup text that describes what that button does. Explore.

- <u>Restoring Toolbars or Panels</u>: If you accidentally closed any of these, then all you do is click **View → Toolbars** or **View → Panels** and look for the one that you need to restore.

- You can learn more about configuration and customization for QGIS using the QGIS user guide

  - https://docs.qgis.org/3.16/en/docs/user_manual/introduction/qgis_configuration.html#

Menu & Tools bar

Data Layers (also called as Table of Contents)

Searchable Processing Toolbox

This is Map Canvas or Map View. If a Data Layer in your Table of Contents is ON, it will appear here

Data Explorer or File Browser

Coordinates, Magnifier, Map Rotation, and Projection Tools

File Storage and Management

- Lab Data Storage
  - You should create a folder "ADDA_DVAC" on your C drive (or on your desktop on Mac) and organize your labs within this folder. Make sure to keep each day's activities separate in their own folder (Day1, Day2 etc.) under the above folder.
  - As you progress through the week, make sure to remember and keep your data organized well

- Saving Your Work
  - GIS activities usually take longer to complete. It is a good idea to keep saving your project work every few minutes. In case of computer crash or power failure, this will come handy since you would not have restart from the beginning. If you forgot to save, you do have to restart from the beginning!

- Downloading and Uncompressing .ZIP files
  - Most of the data needed for your work will be provided on Moodle as a compressed file (zip file) with a file extension of .zip
  - On Windows Computers, there is a built-in option to uncompress a zip file. Alternately, you can also download and use freely available software 7-Zip (https://www.7-zip.org/download.html)
  - Once you have downloaded the zip file from Moodle, find it and move it to your lab folder. Then open the lab folder and **Right Click** and then select **Extract All...** option to extract the contents into a new folder. Make sure it is getting saved within your lab folder.
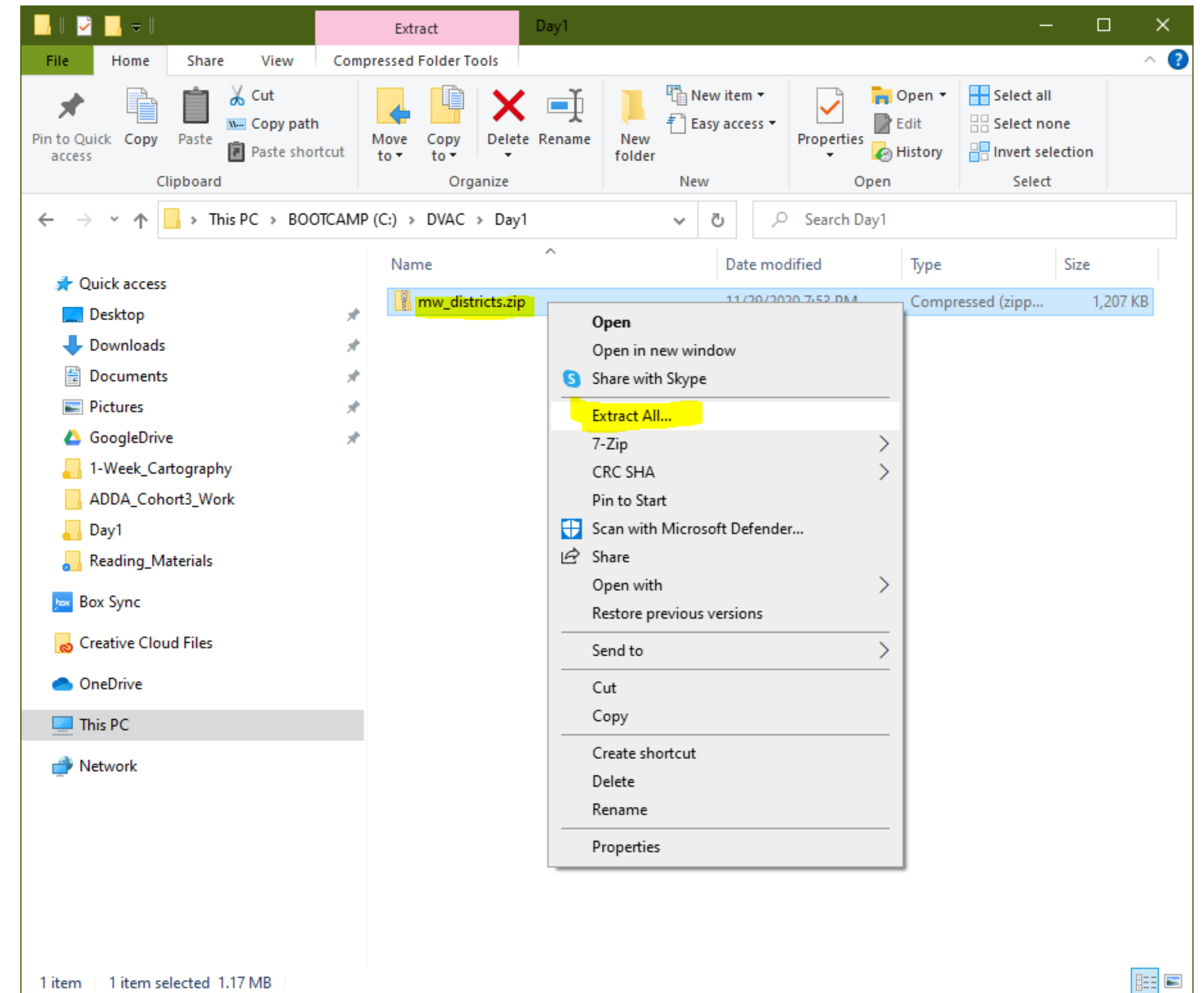
# Practice Downloading & Extracting Data

- On Moodle, look for "**GIS Data for Practice**" link under Day 1 and click to download it.

- It should download **mw_districts.zip** file to your **Downloads** folder

- Move the zip file from **Downloads** folder to your **Day1** folder.

- Go to **Day1** folder and **Right Click → Extract All**
  - This folder contains GIS data that represents **Malawi District Boundaries**

- We need to be able to see the file name extensions for all files. If you don't see the file name extensions as highlighted in the image here, you can click **View → Turn ON File Name Extensions** option.
  - We will learn about these file extensions later

- If you got this successfully, you have done well!
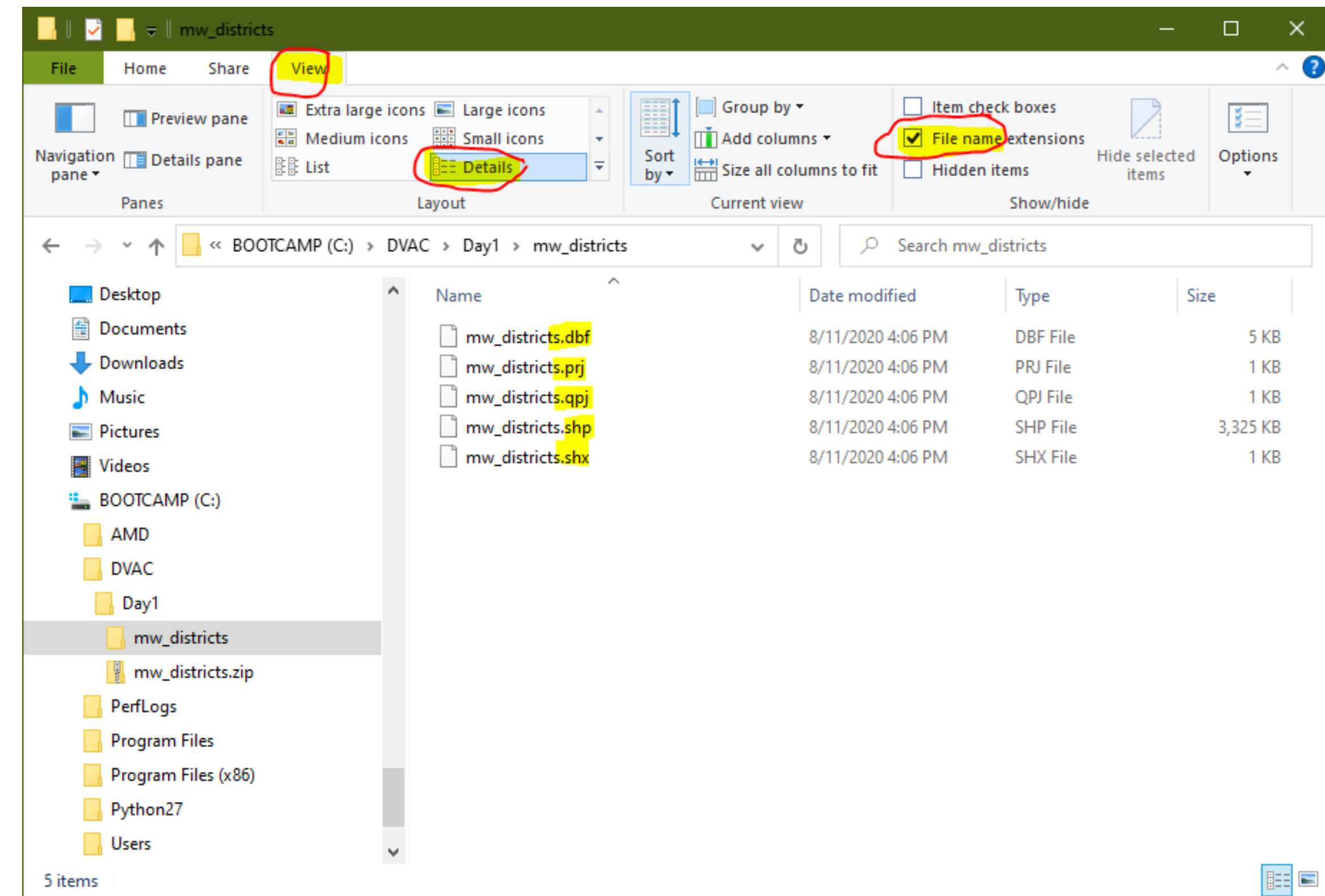
# Opening and Exploring Data in QGIS

- Open QGIS software (on windows, click start menu and type QGIS – then open "QGIS Desktop 3.X.X" – X.X refers to the actual version number you have downloaded

- Refer to the previous slide explaining the User Interface

- Now, under browser window, click and expand the folders until you get to your Day1 folder.

- If you did downloading and extracting correctly, you should see **mw_districts** folder in there. Expanding that folder will show you one file with .**shp** file name extension.

- Drag **mw_districts.shp** file from the browser area to the **Map Canvas** area

- You should see Malawi district boundaries polygon appear in map format. It is filled with default color.
  - We will learn to manipulate the colors later

- If you succeeded in these steps, congratulations!



Drag and drop the File Here
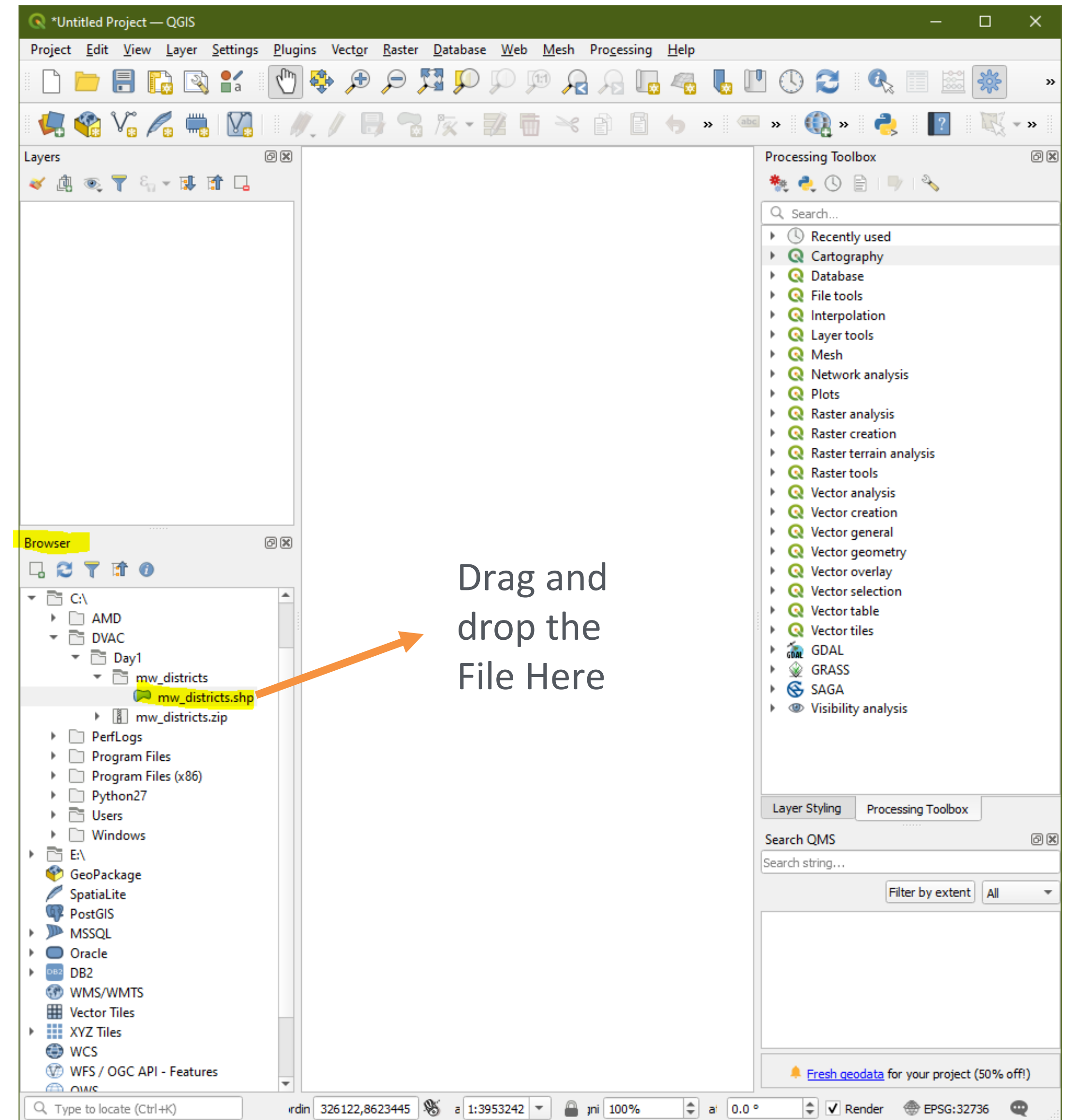
Adding Background Map Using A Plugin

- For this step, make sure you are connected to the Internet

- We have already downloaded **QuickMapServices** plugin, which needs to be tweaked first.

- Click QGIS menu **Web → QuickMapServices → Settings**

- In the Settings Window, click on **More Services** tab

- At the bottom, look for **Get Contributed Pack** button and click on it
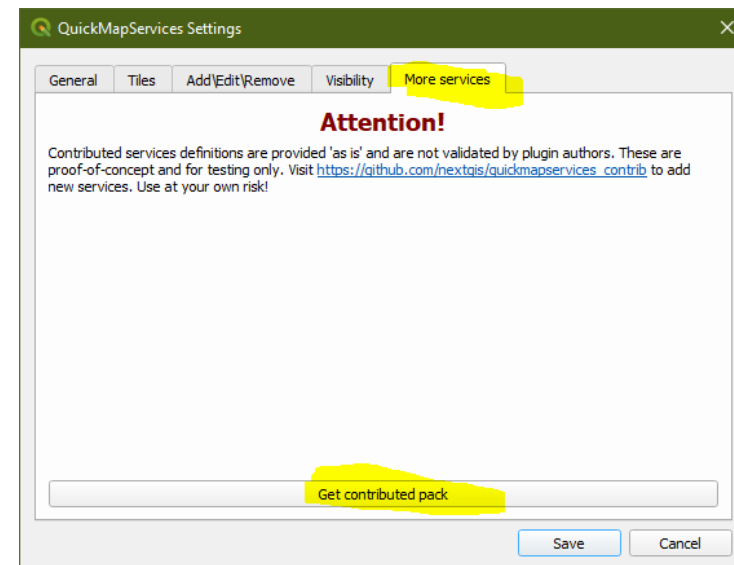
- QGIS would take few seconds and when done, it will confirm if the package was downloaded and updated successfully

- In QGIS, click **Web → QuickMapServices → Google → Google Terrain** and you will see a topographic map is added as background to your map.
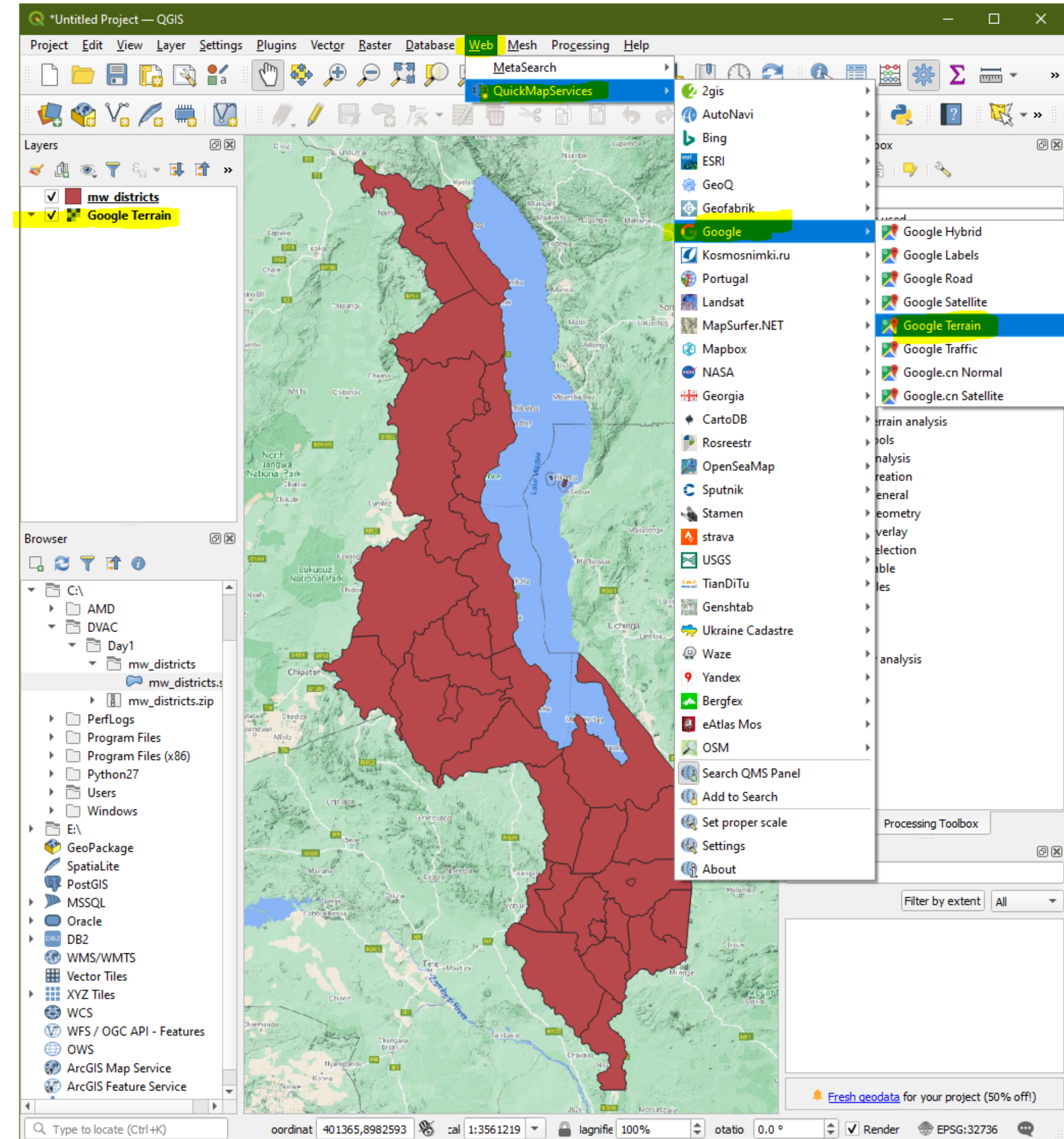
Removing Color Fill for Districts Boundary Data

- Now that we have successfully made Malawi district boundaries have a background (also called as base map), let's remove the colors filling the districts.

- On the **Layers** Panel, **Right Click** on **mw-districts** layer. Then select **Properties**

- In the **Properties** window that pops up, select **Symbology** tab and then select **Outline Red**

- Click **Apply**

- Click **OK** to close the properties window

- Result should be pleasing, much like the image on the right.

- Save your project by clicking **Project → Save** under your Day1 folder.

Final Result Image
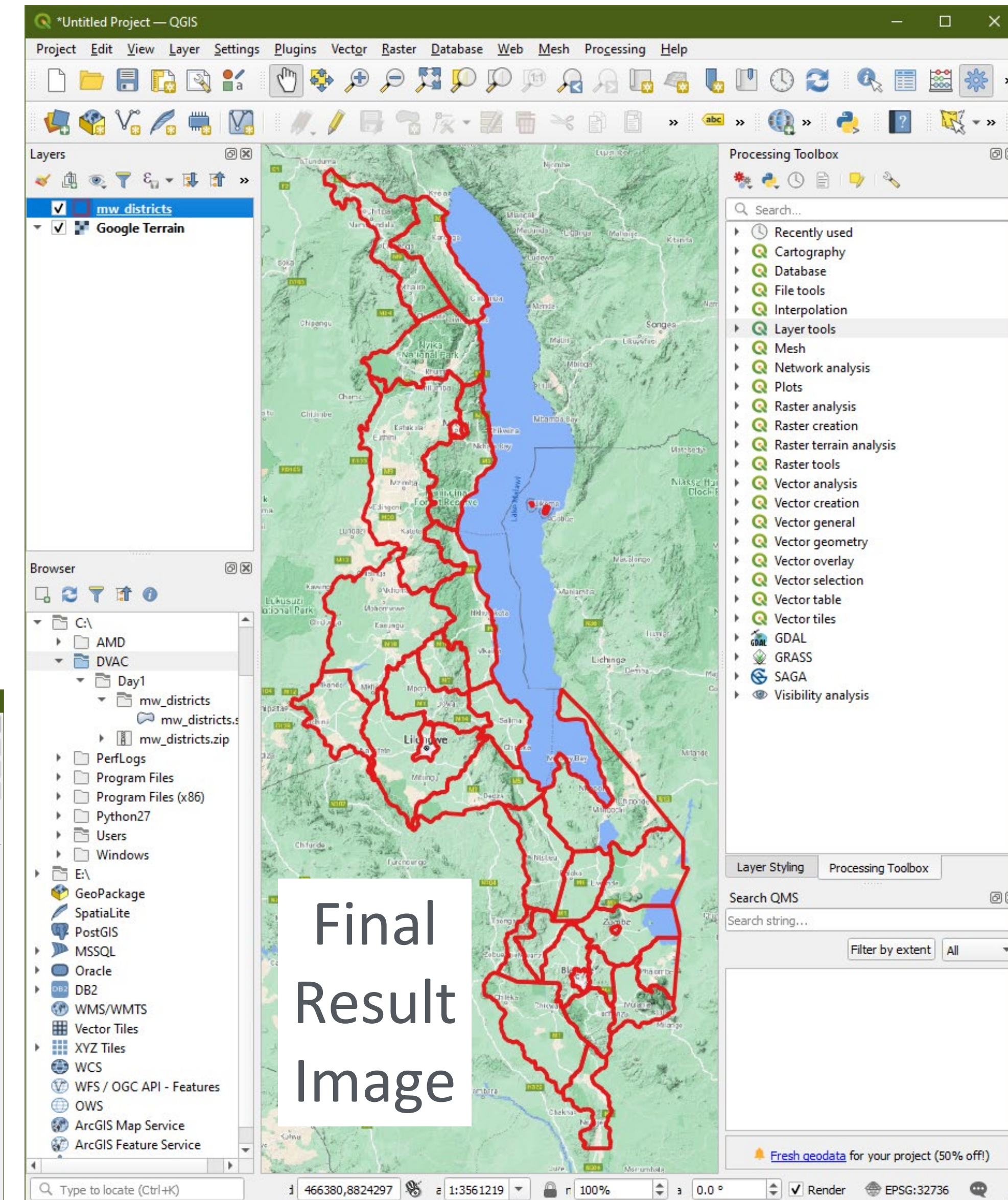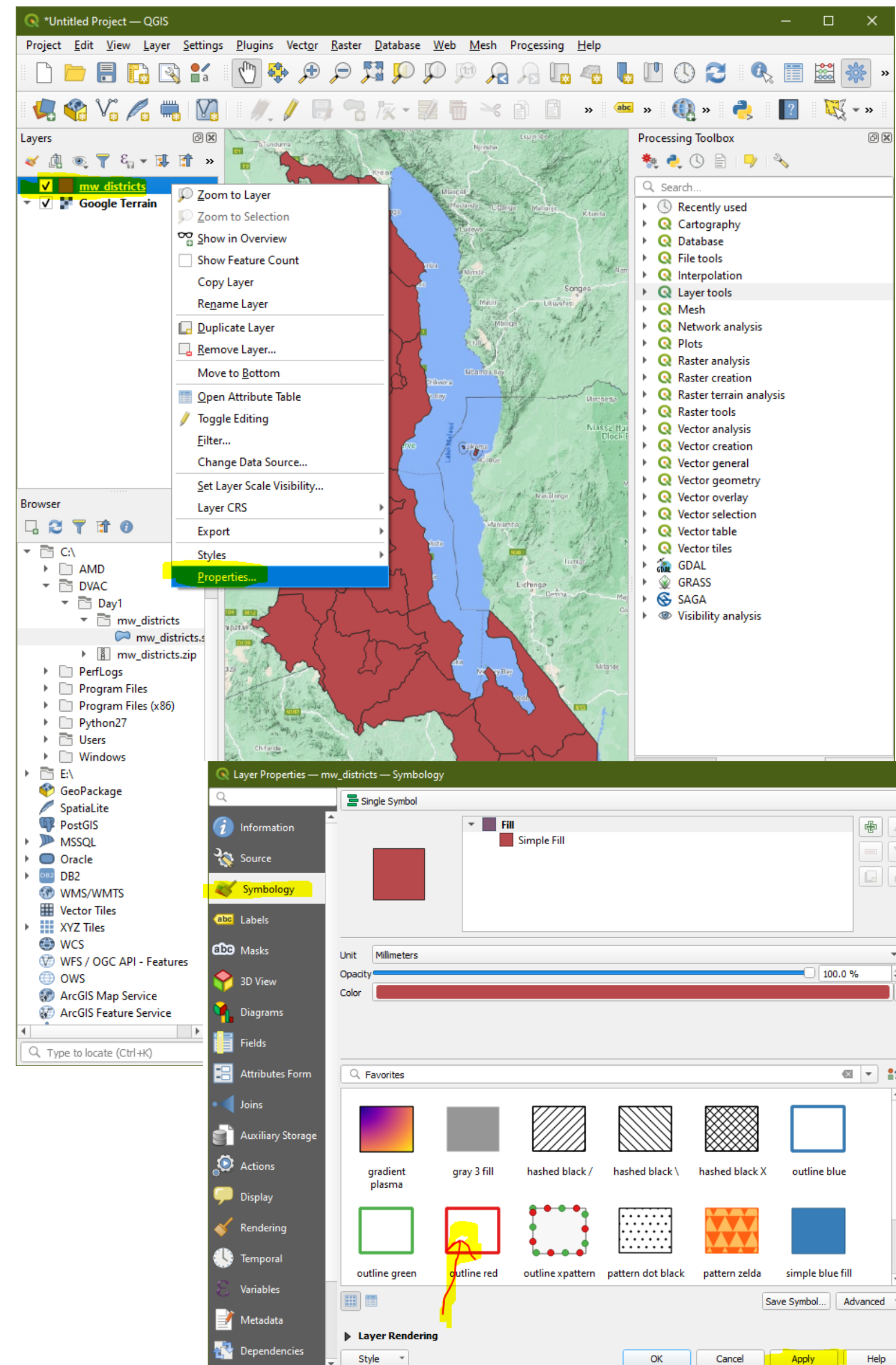
End of Basic QGIS Session

Hurrah!