# CERTIFICATE

**Class-**TYBSCIT **YEAR-**2022-2023

This is to certify that the work entered in this journal is the work of

Shri/kumara-

Of **TYBSCIT** division- Roll no-

Has satisfactorily completed the required number of practical and worked for term of the year 2022 to 2023 in the college laboratory as laid down by the university

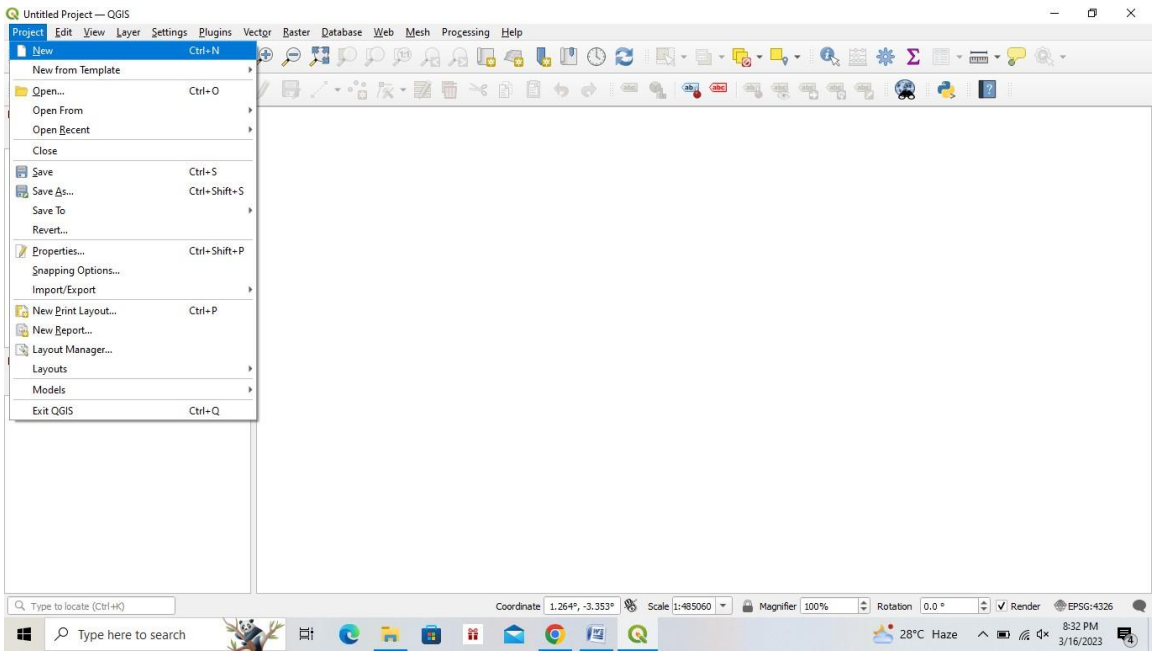
| | | |
|---|---|---|
| Head of the Department | External Examiner | Internal Examiner Subject teacher |

# INDEX

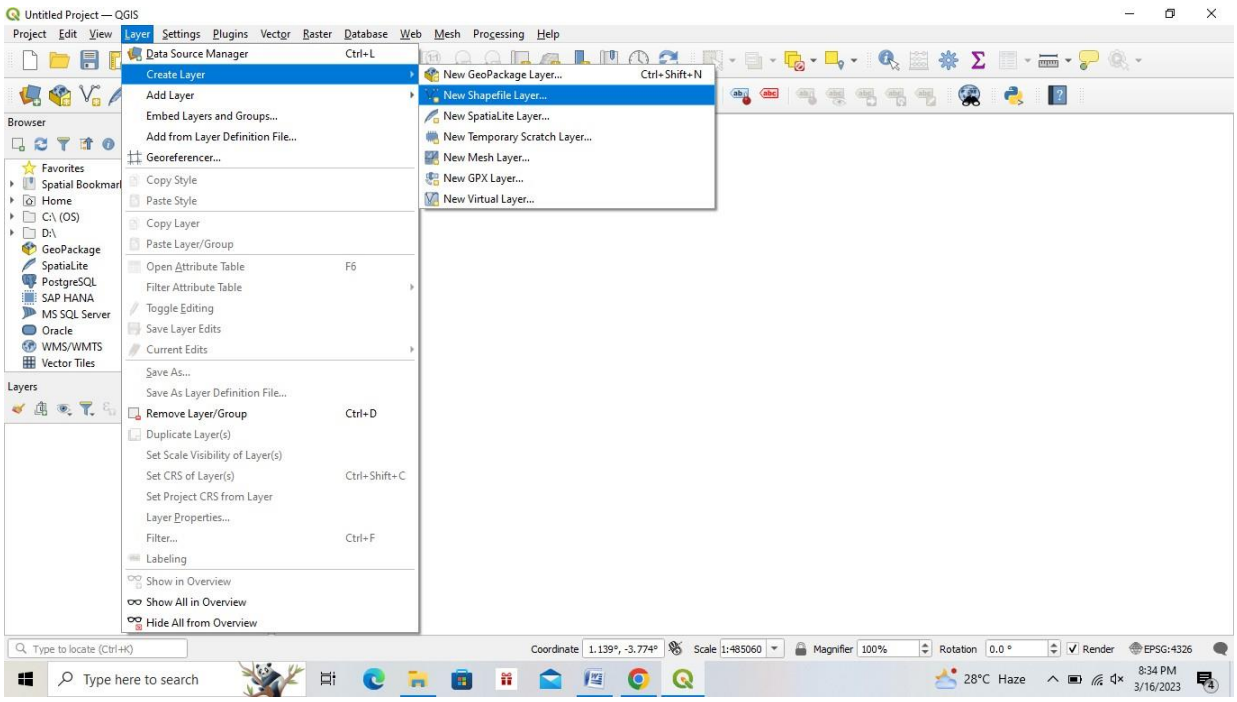
# Practical 1: Creating and Managing Vector Data: Adding vector layers, setting properties, formatting, calculating line lengths and statistics.

Aim: The aim of this practical is to create a map step-by-step using various vector layers (polygon layer, linelayers and point layers)

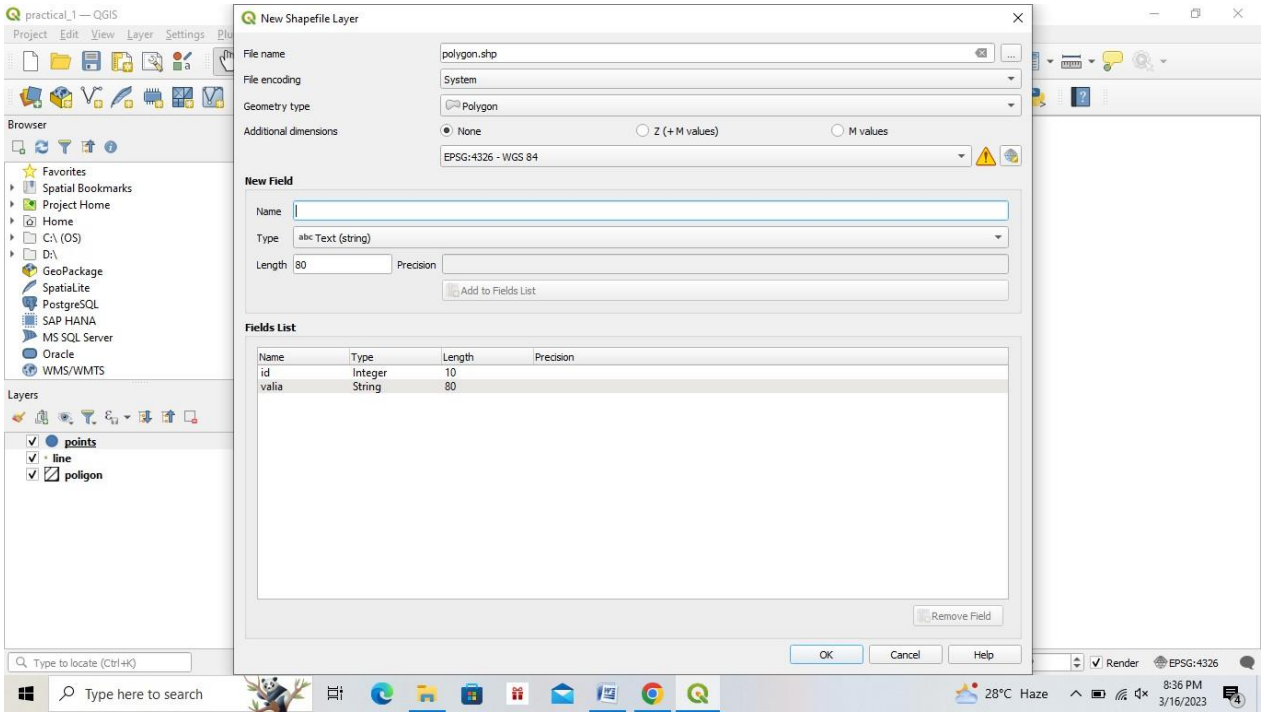
Step 1: Open a new project in QGIS Software



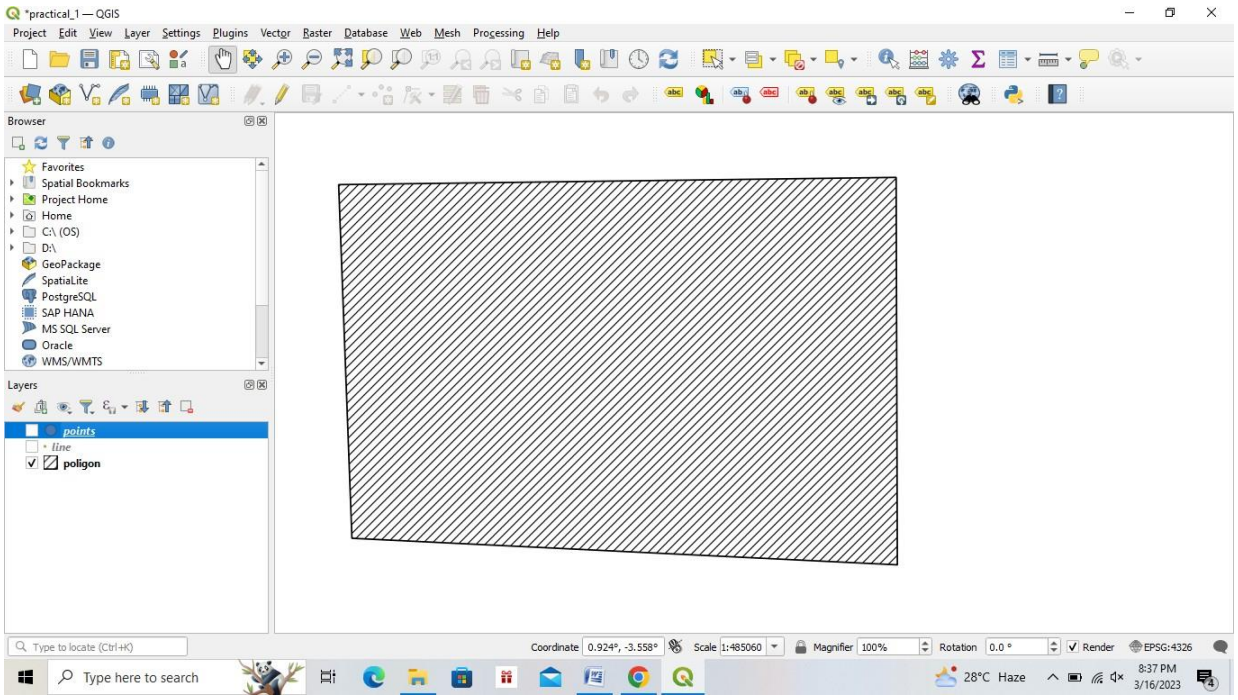

Step 2: Create a Shape File Layer



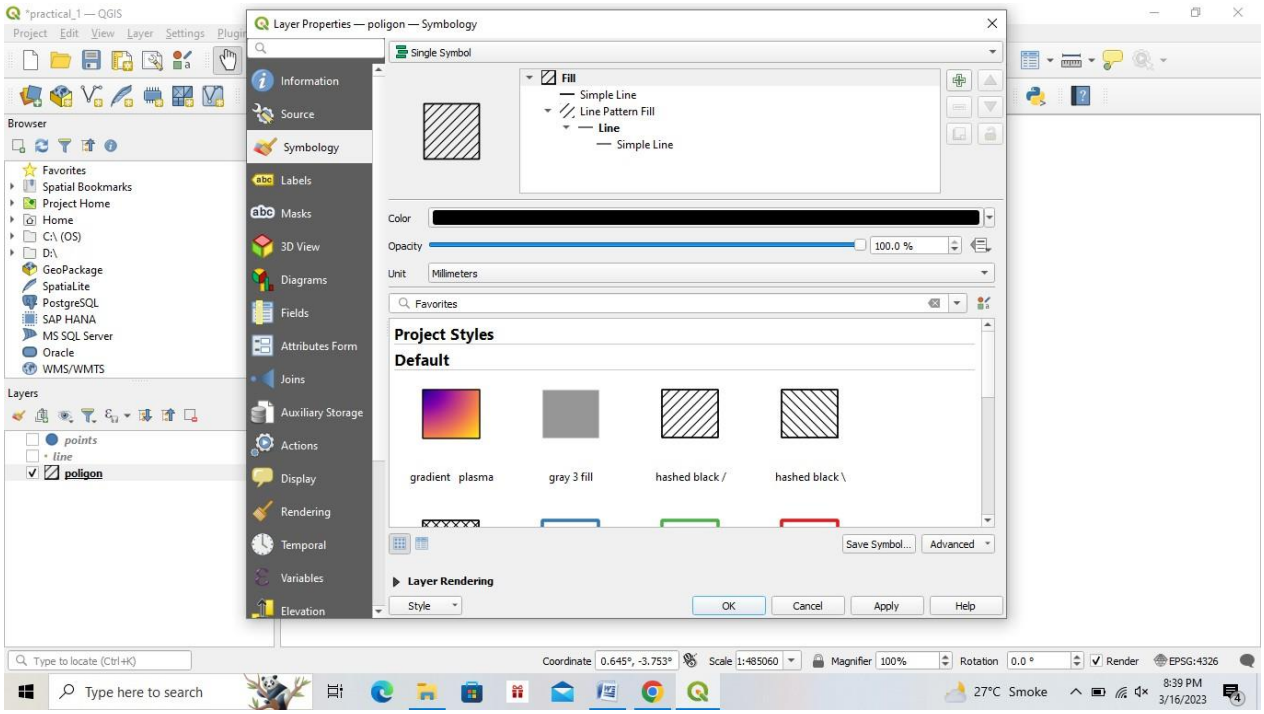
Step 3: Fill in the appropriate details in the dialog box.



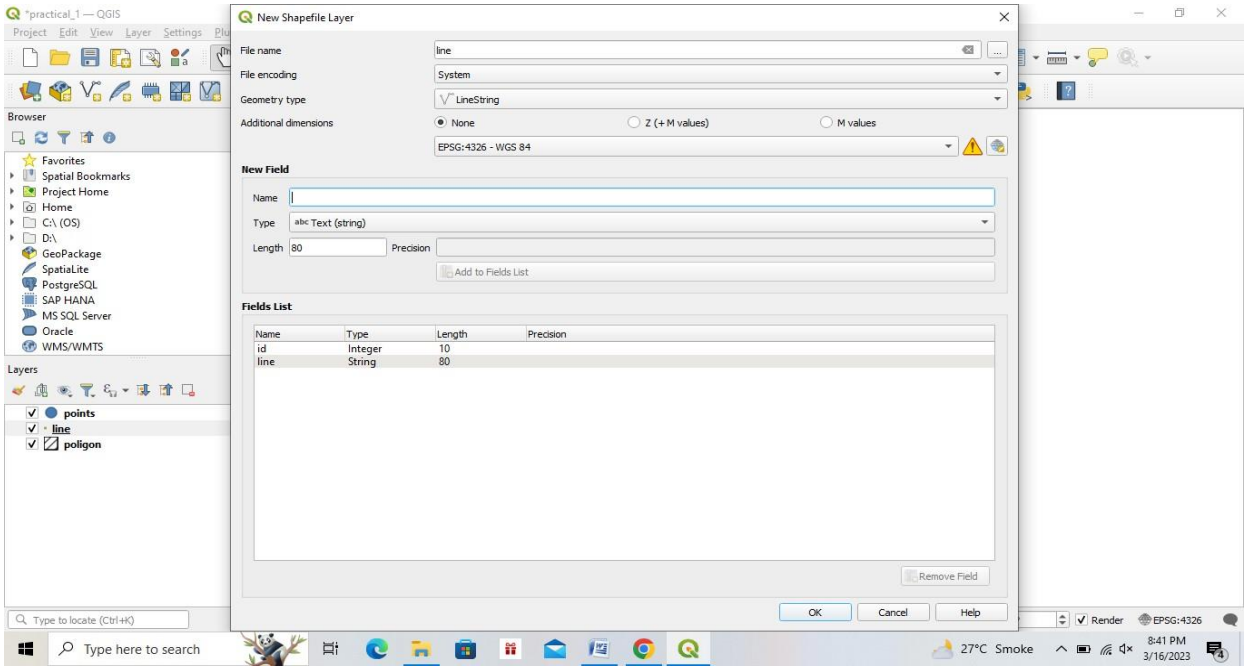

Step 4: With the help of the pen (Toggle Editing), make a polygon as you require

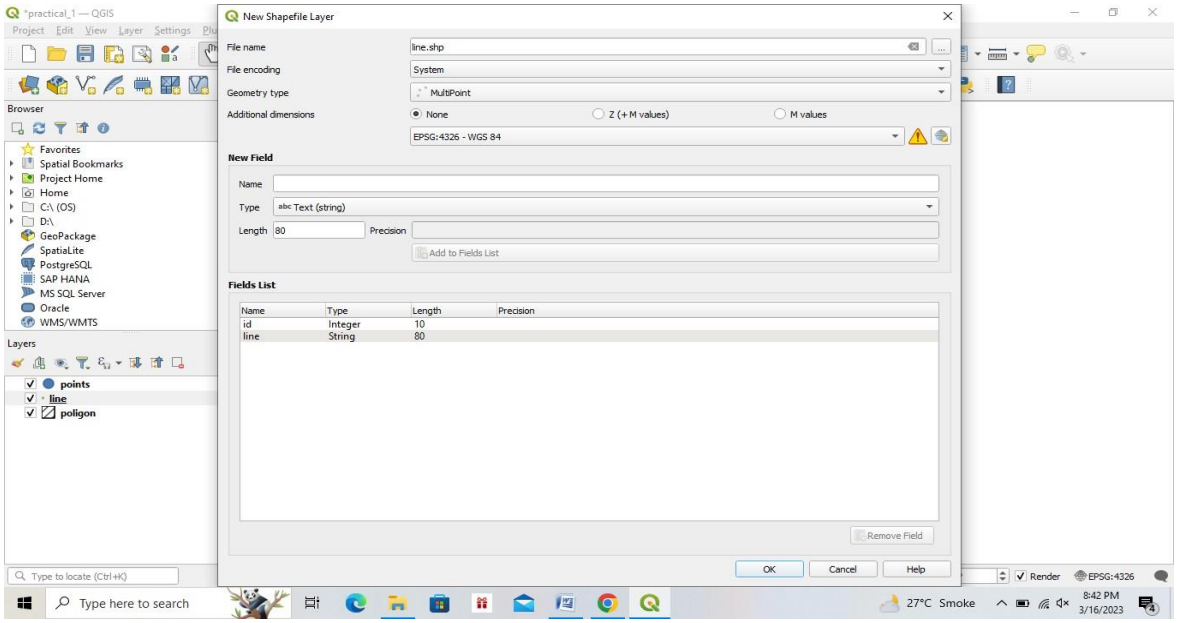


Step 5: You can change the color of the area. Right click on the layer (Practical1), go to Properties and change the color. You can change many things which are given in the Properties.

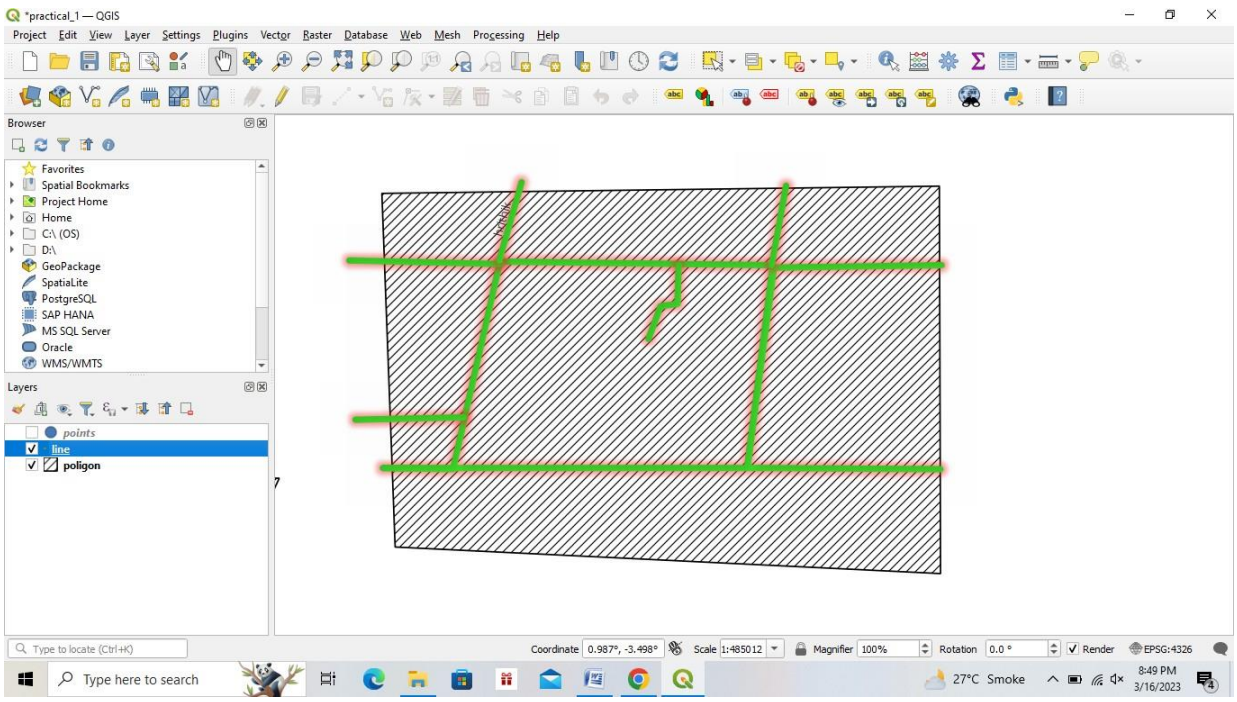


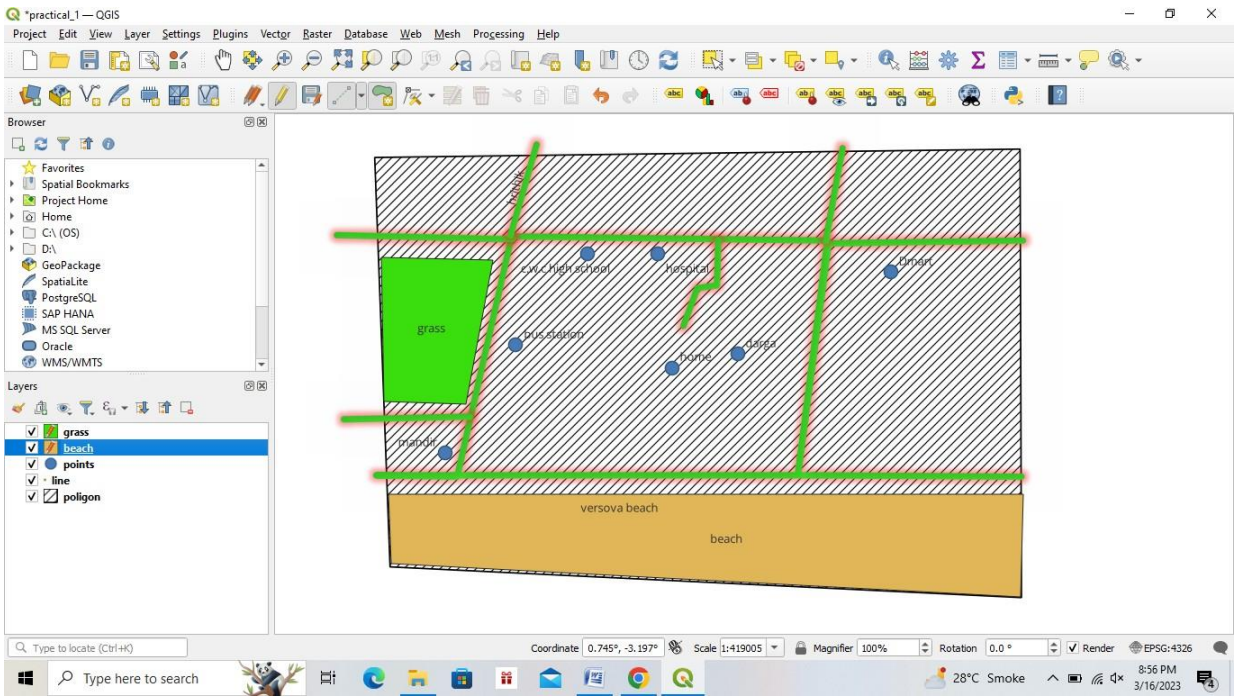

Step 6: Create a new Shape File Layer for Roads as Line, Bank, School, Buildings as Points and Garden as Polygons.






Step 7: After creating Shape Files for each one them as in Step 6, make the components wherever required.

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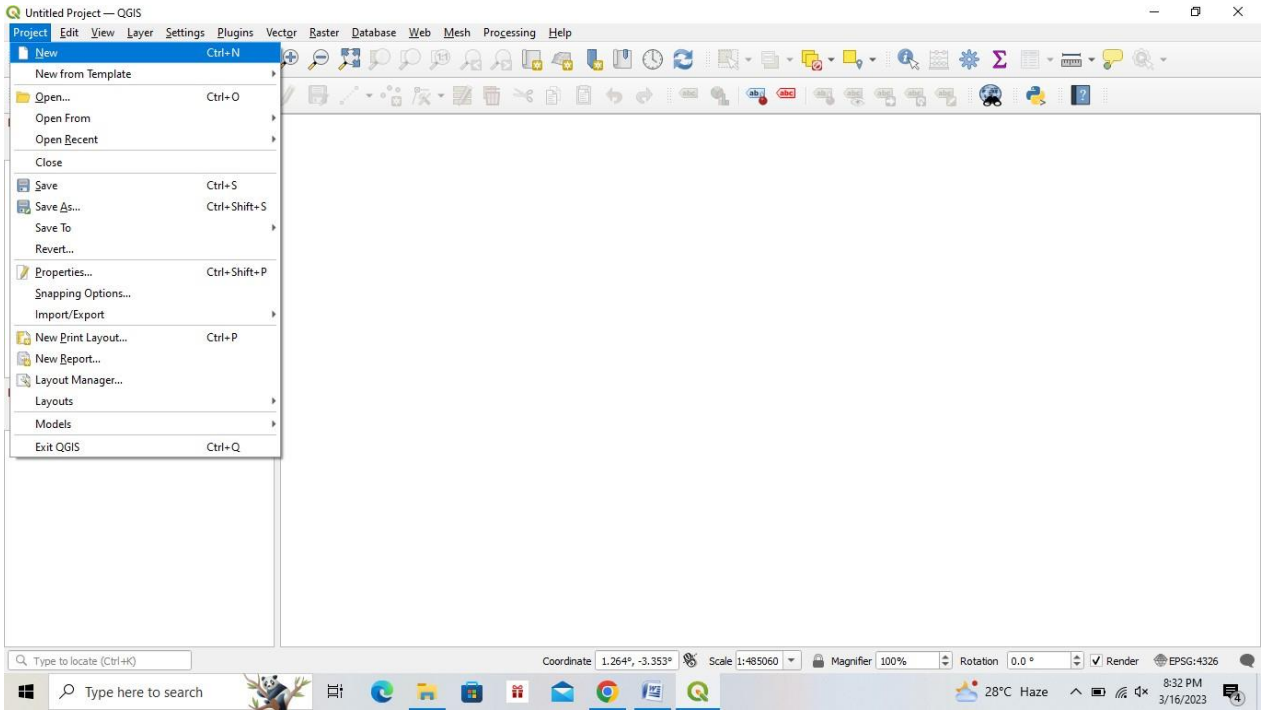
3/16/2023

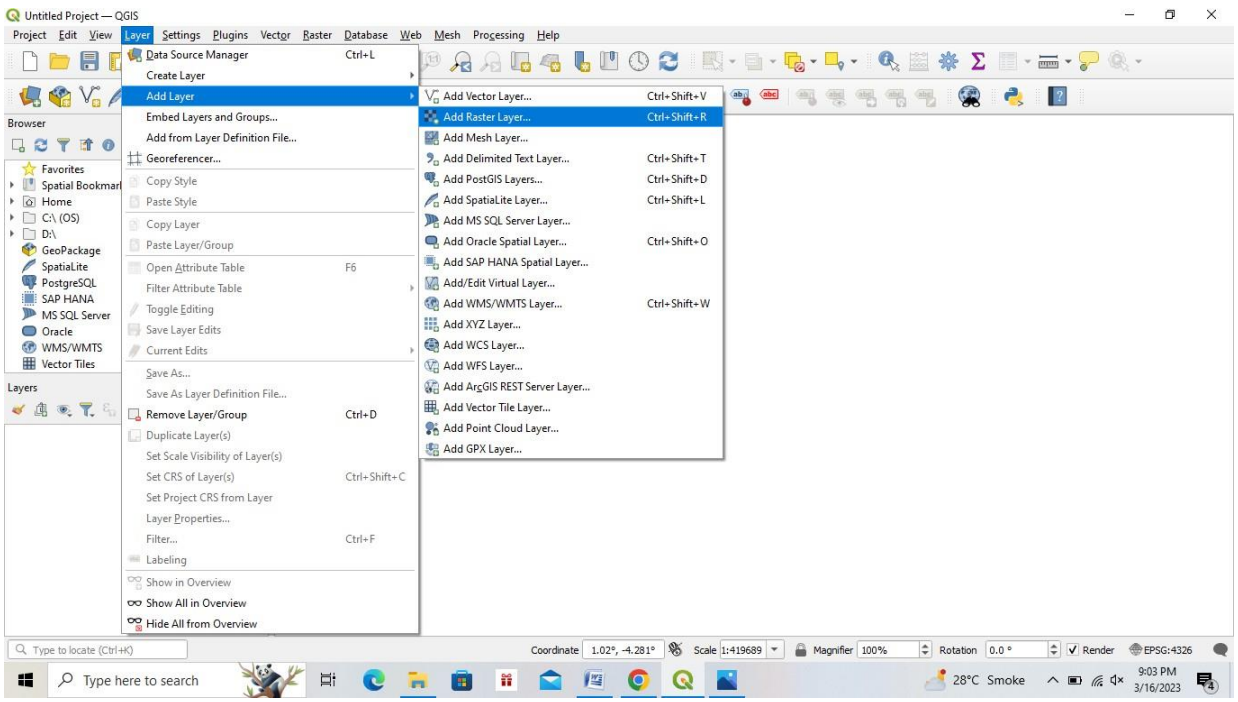
## Practical 2: Exploring and Managing Raster Data: Adding raster layers, raster styling and analysis, raster mosaicking and clipping

Aim: The aim of this practical is to create a map step-by-step using various raster layers.

Step 1: Open a new project in QGIS Software

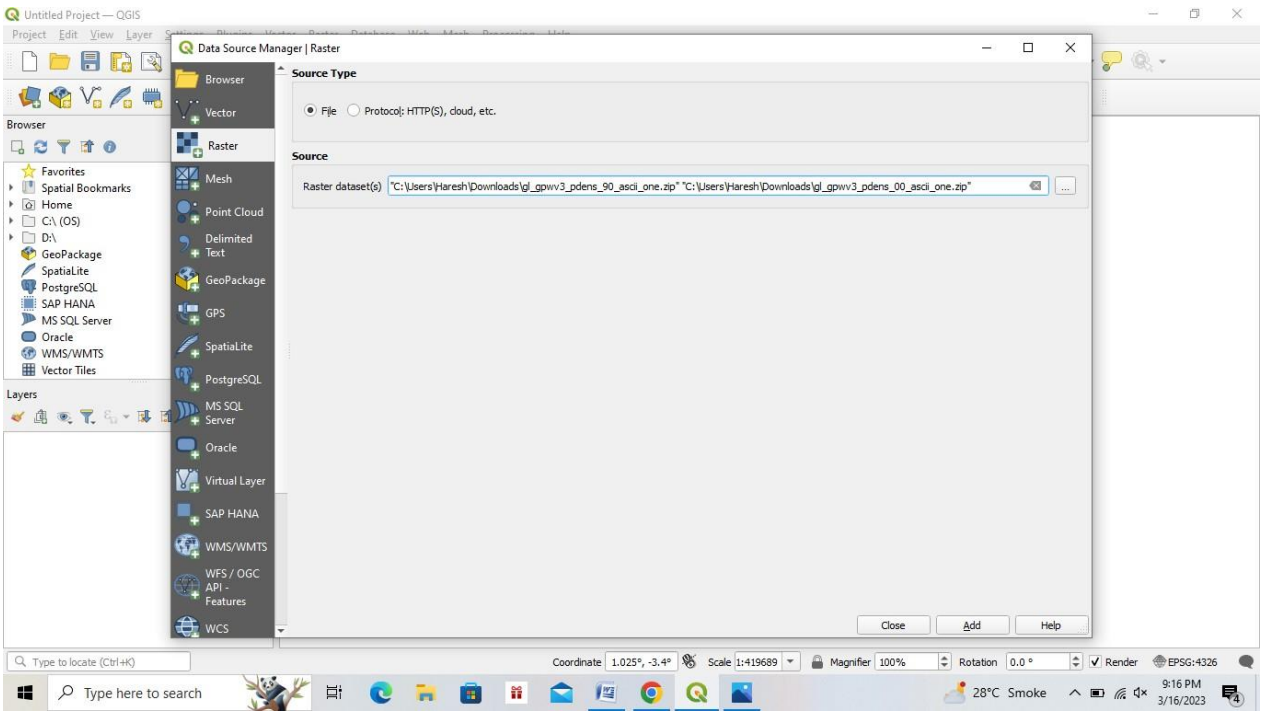



Step 2: Adding raster layers Add Raster Layer◊ Add Layer ◊From menu bar select Layer

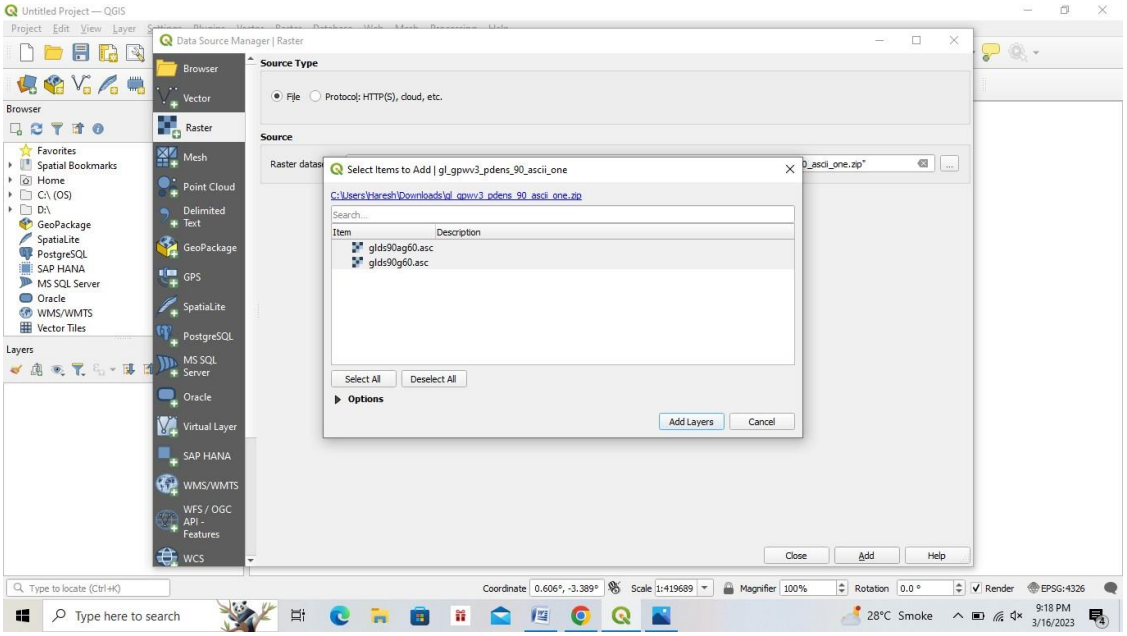


Step 3: Raster Styling and Analysis)

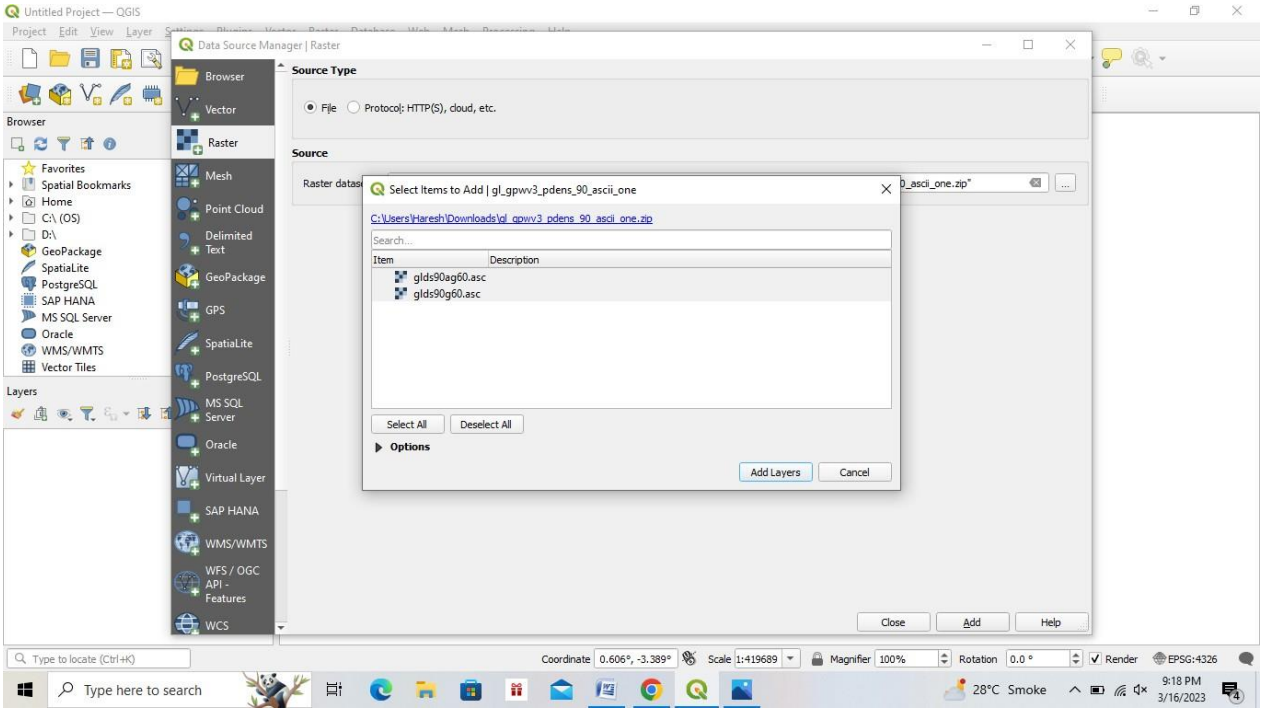
1. Locate the downloaded zip files. Hold down the Ctrl key and click on both the zip files to select them. This way you are able to load both the files in a single step.



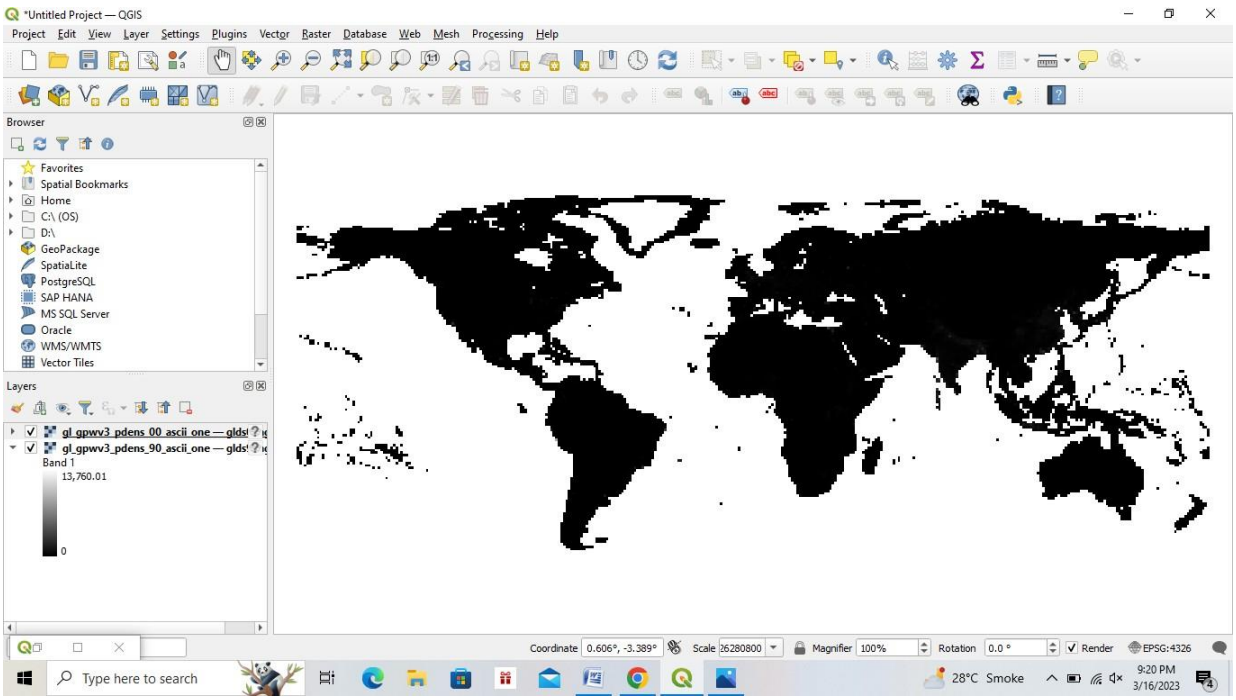

Step 4: Each zip file contain 2 grid files. The in the filename suggests that the population counts were adjusted to match the UN totals. We will use the adjusted grids for this tutorial. Select glds90ag60.asc as the layer to add. Click OK.



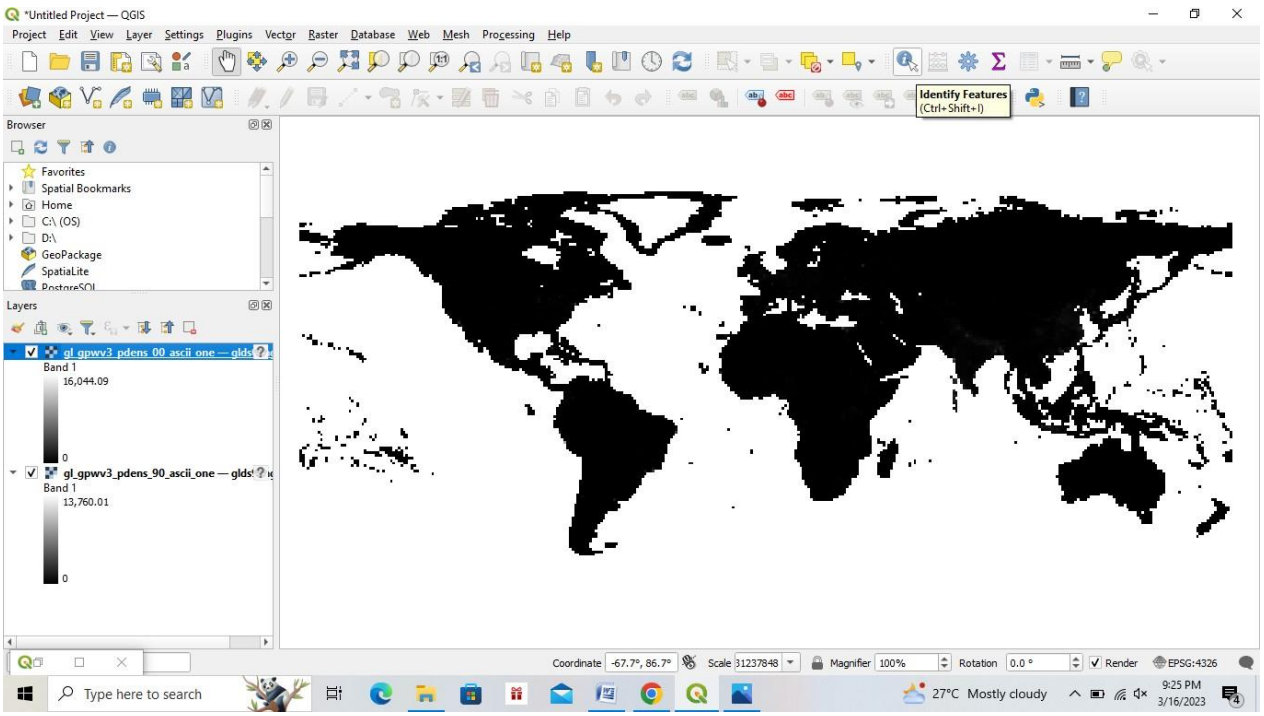
Step 5: Since we selected both the zip files, you will see similar dialogs once again. Repeat the process and select glds00ag60.asc grid as the layer to add. Click OK.

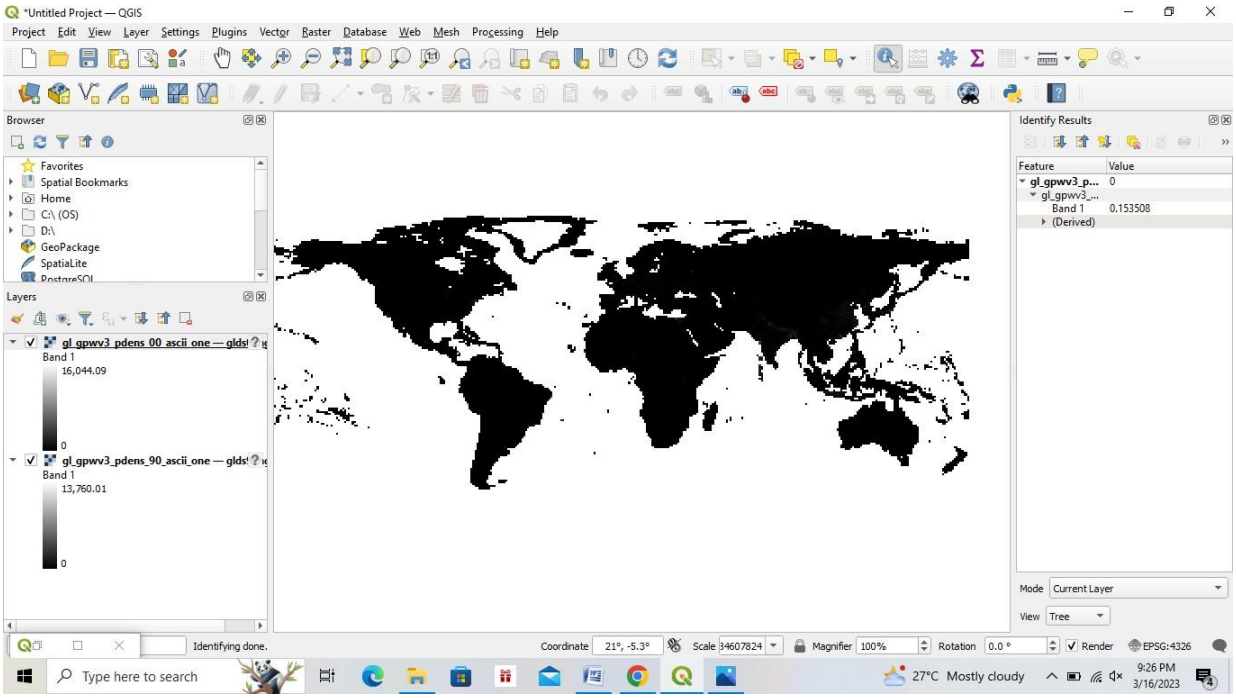



Step 6: Now you will see both the rasters loaded in QGIS. The raster is rendered as in grayscale, where darker pixels indicate lower values and lighter pixels indicate higher values.

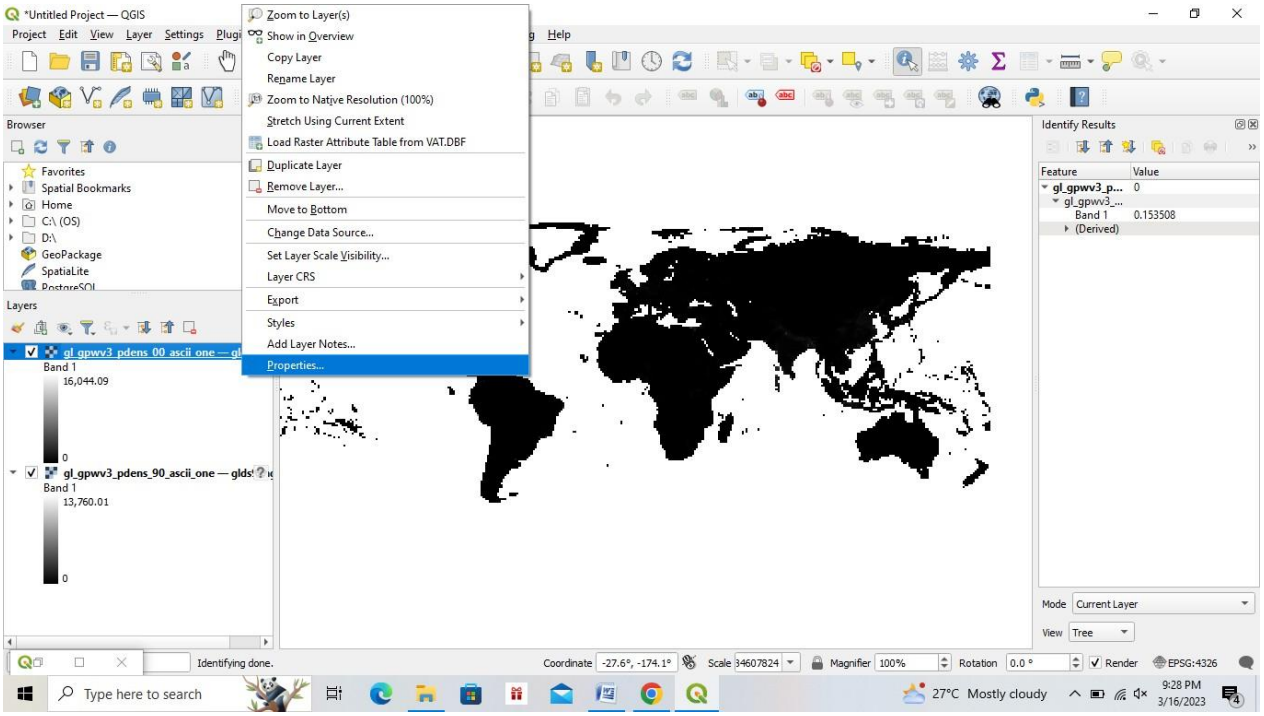


Step 7: Each pixel in the raster has a value assigned. This value is the population density for that grid. Click on Identify Features button to select the tool and click anywhere on the raster to see the value of that pixel.

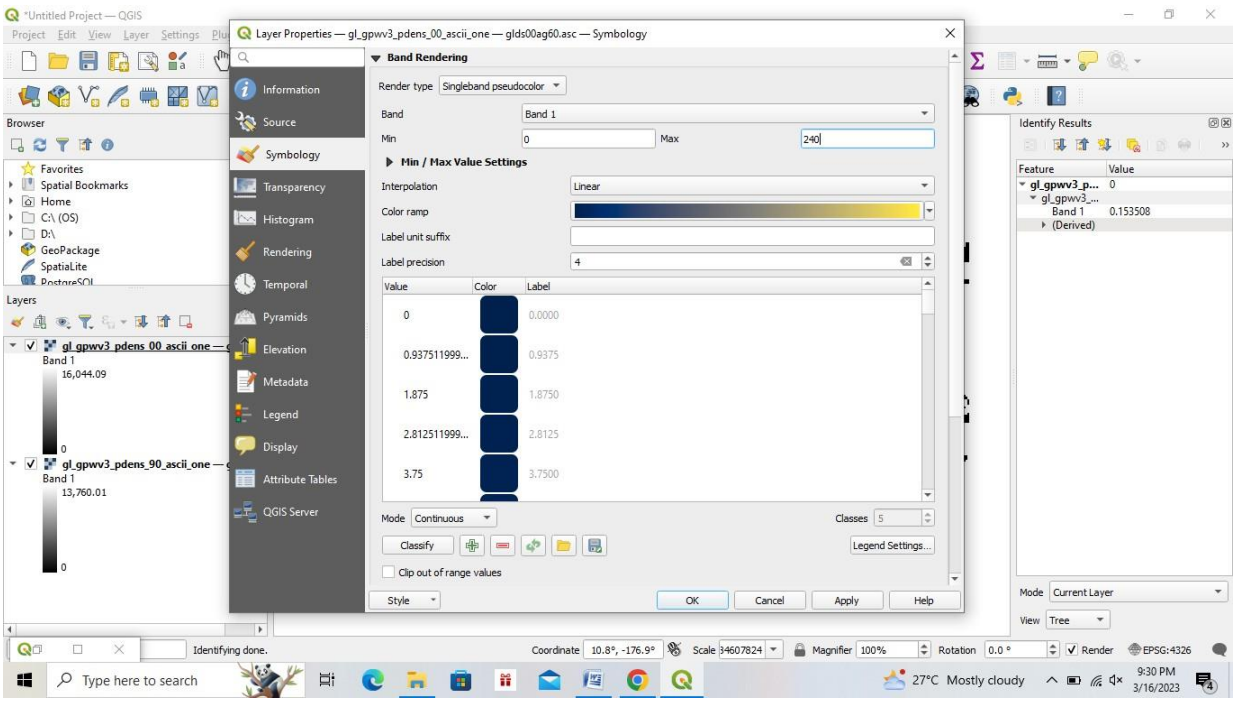


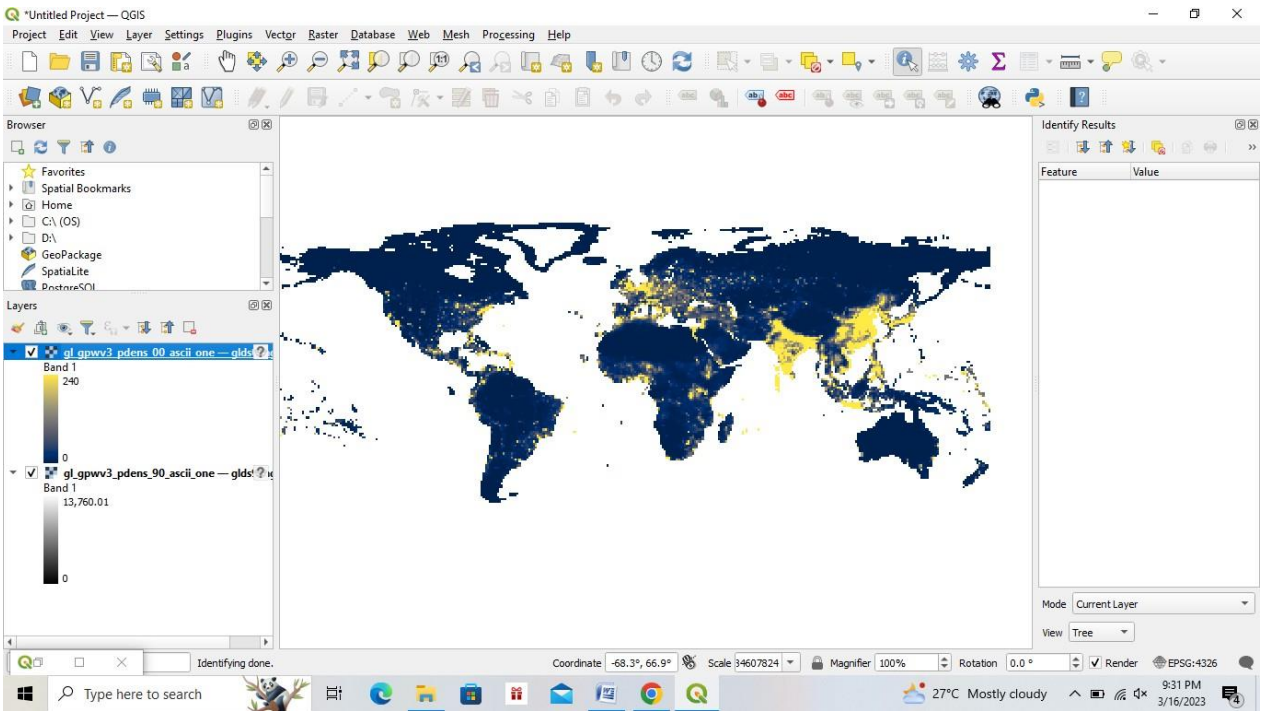



Step 8: To better visualize the pattern of population density, we would need to style it. Right-click on the layer name and select Properties. You can also double-click on the layer name in the TOC to bring up the Layer Properties dialog.




Step 9: Under the Symbology tab, change the Render type to Singleband pseudocolor. Next, click Classify under Generate a new color map. You will see 5 new color values created. Click OK.

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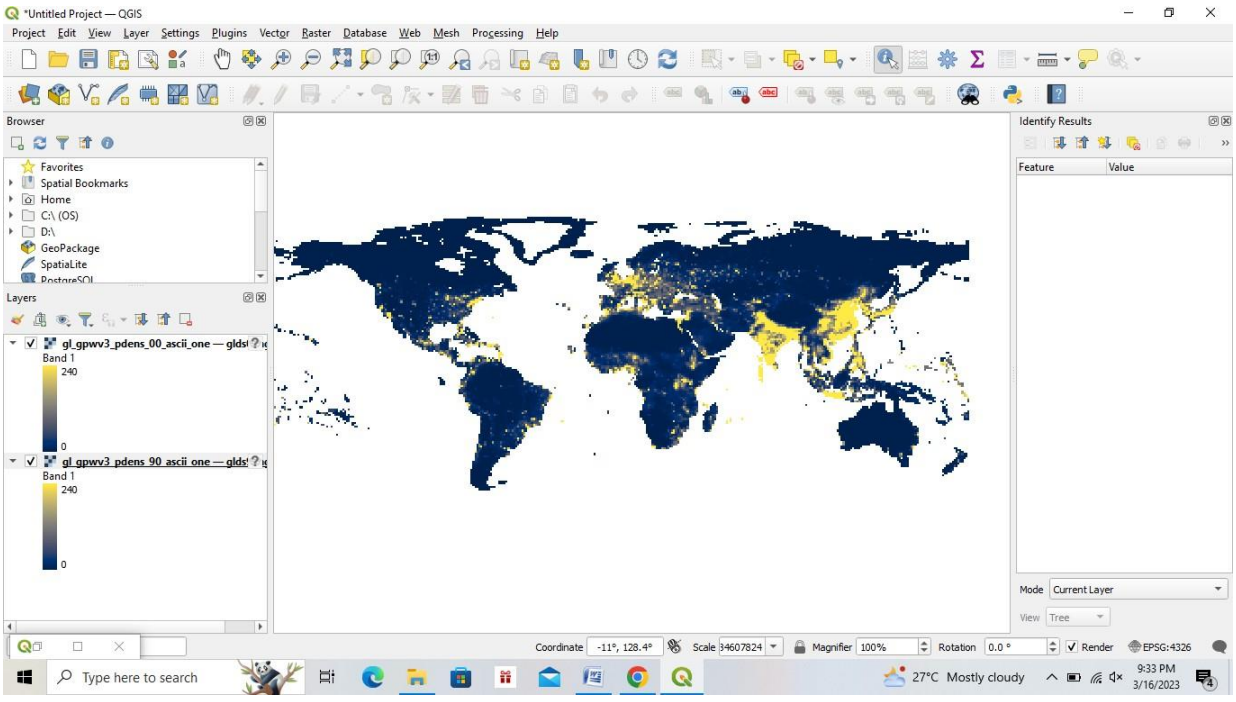
3/16/2023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Band 1
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Tree
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Magnifier 100%
Rotation 0.0 °
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27°C Mostly cloudy
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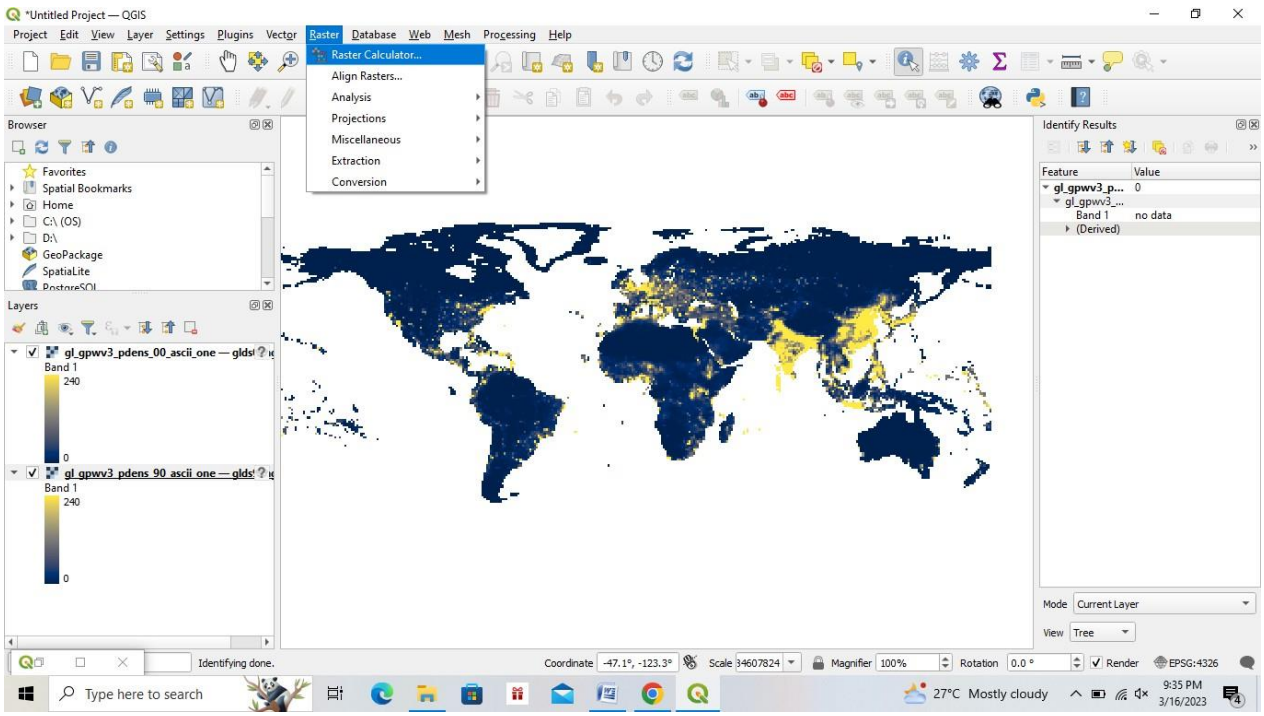
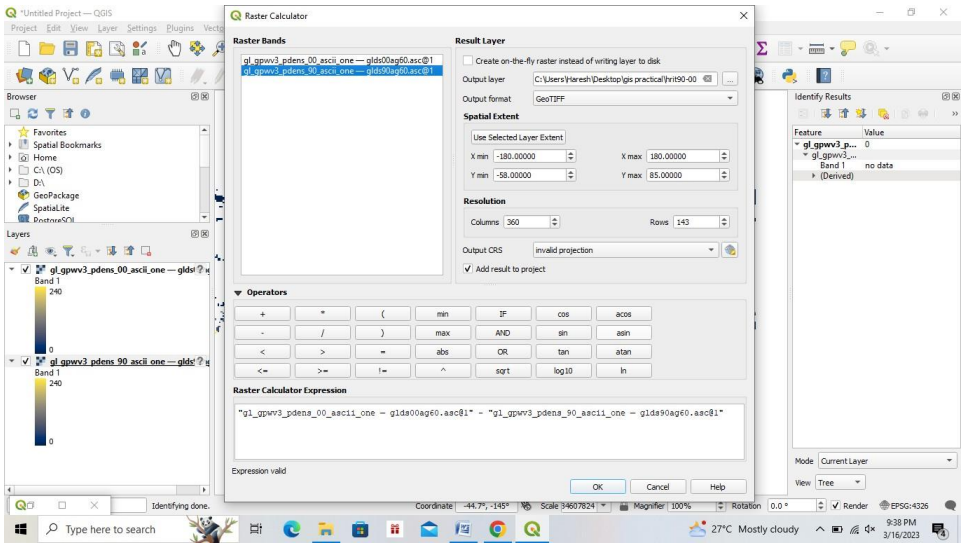
3/16/2023

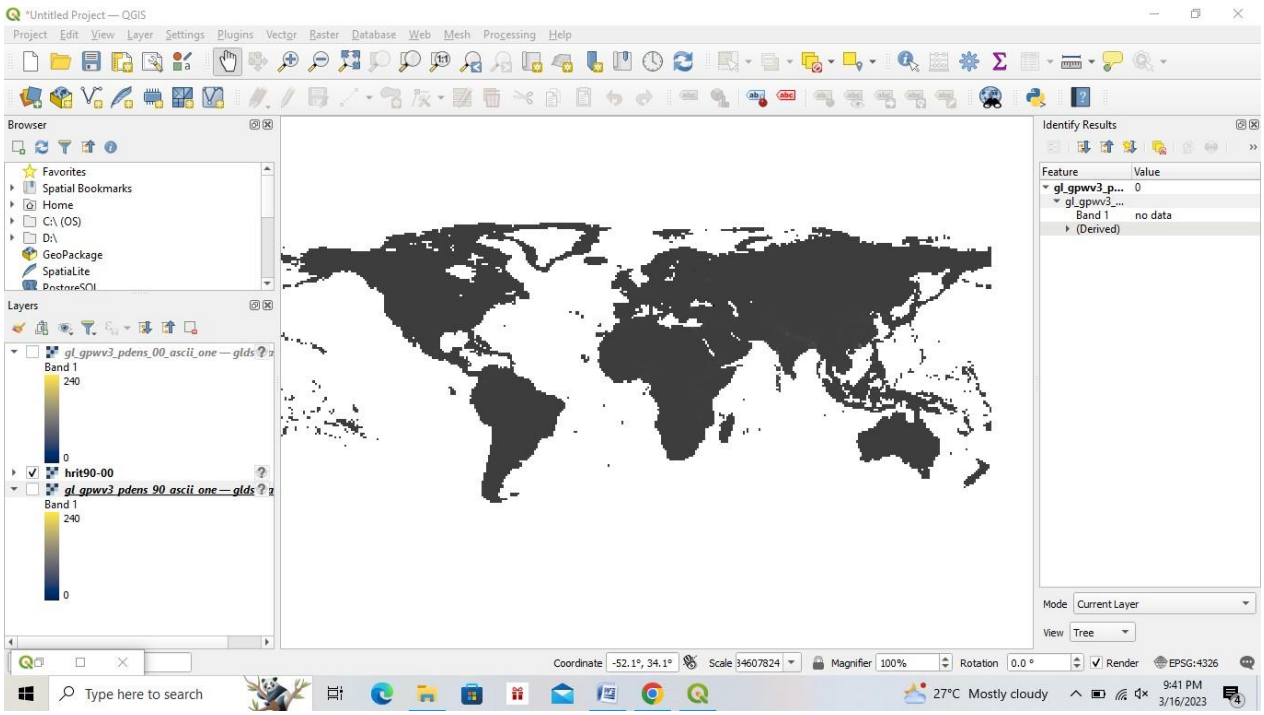
Step 10: For our analysis, we would like to find areas with largest population change between 1990 and 2000. The way to accomplish this is by finding the difference between Raster Calculator each grid's pixel value in both the layer. Select Raster

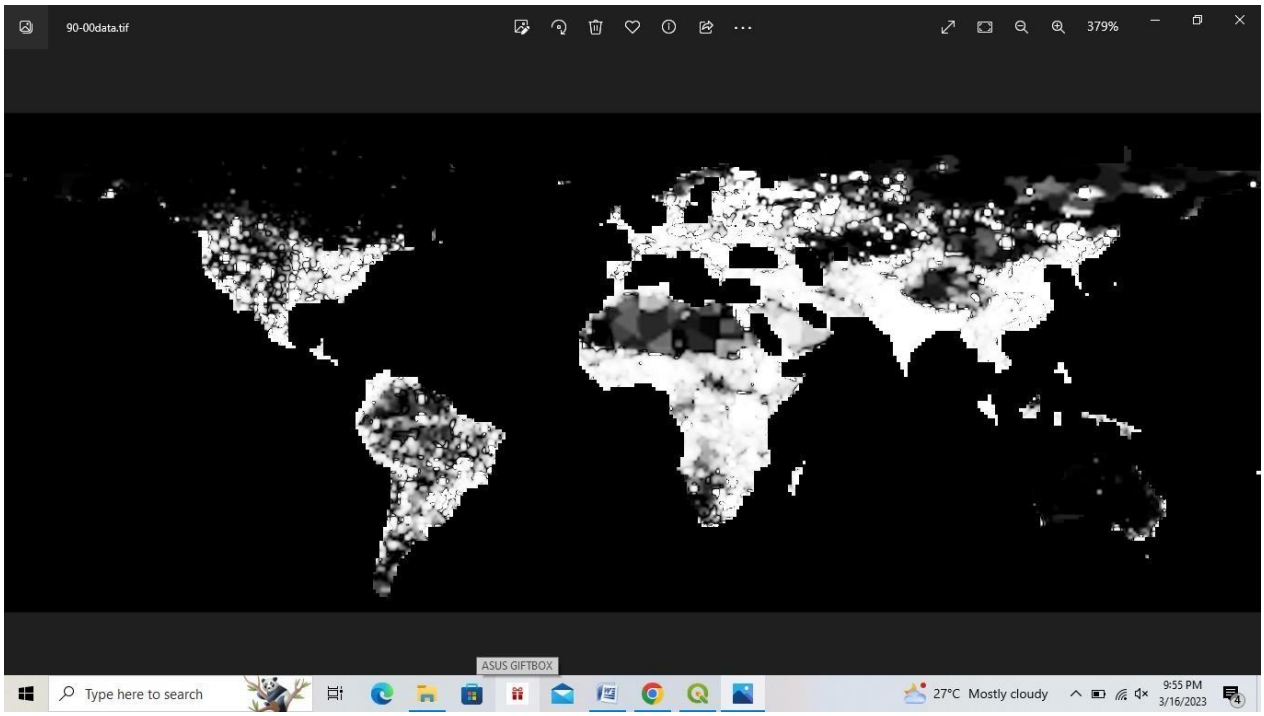



Step 11: In the Raster bands section, you can select the layer by double-clicking on them. The bands are named after the raster name followed by @ and band number. Since each of our rasters have only 1 band, you will see only 1 entry per raster. The raster calculator can apply mathematical operations on the raster pixels. In this case we want to enter a simple formula to subtract the 1990 population density from 2000. Enter "glds00ag60@1" – "glds90ag60@1" as the formula. Name your output layer as pop_density_change_2000_1990.tif and check the box next to Add result to project. Click OK.

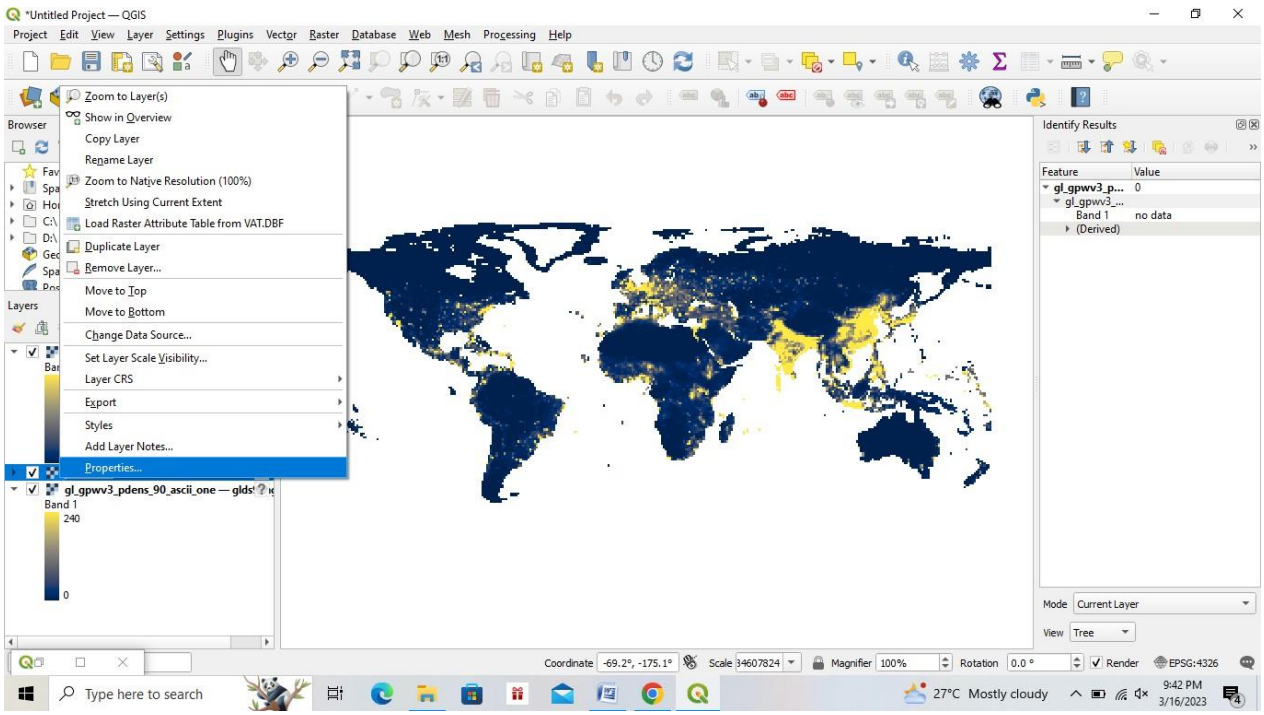



Step 12: Once the operation is complete, you will see the new layer load in QGIS.



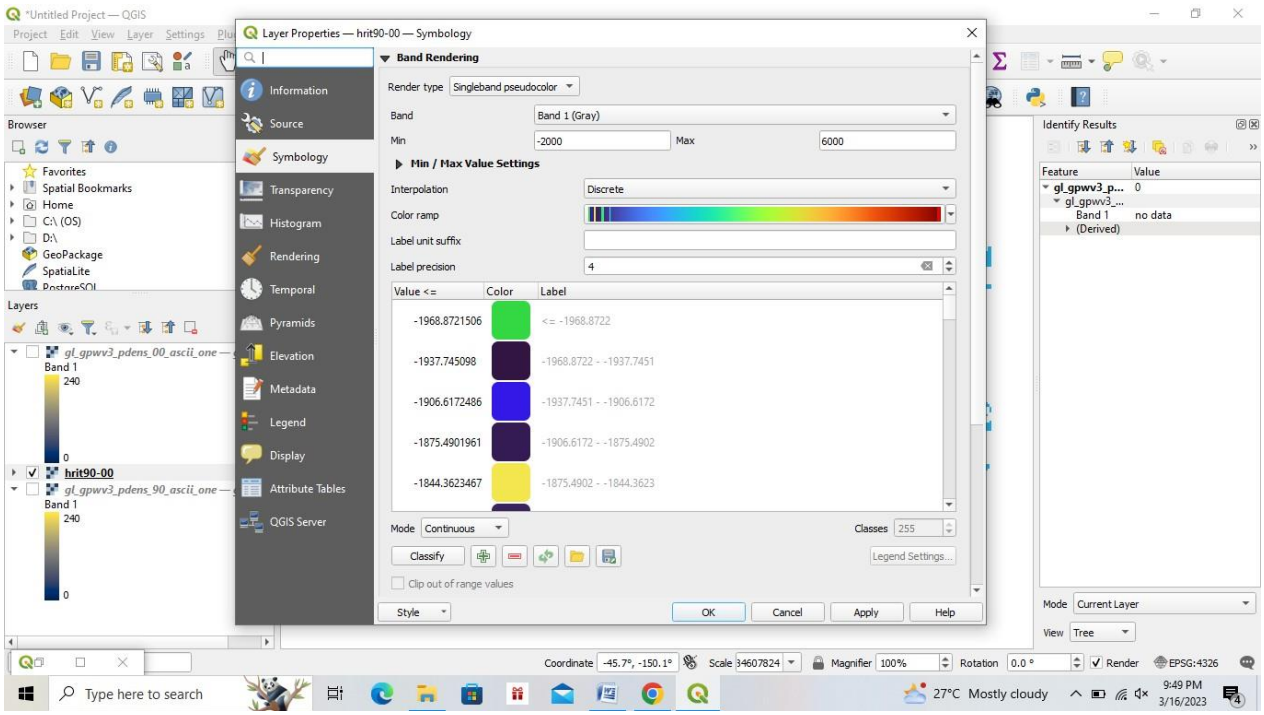




Step 13: This grayscale visualization is useful, but we can create a much more informative output. Right-click on the pop_density_change_2000_1990 layer and select Properties.

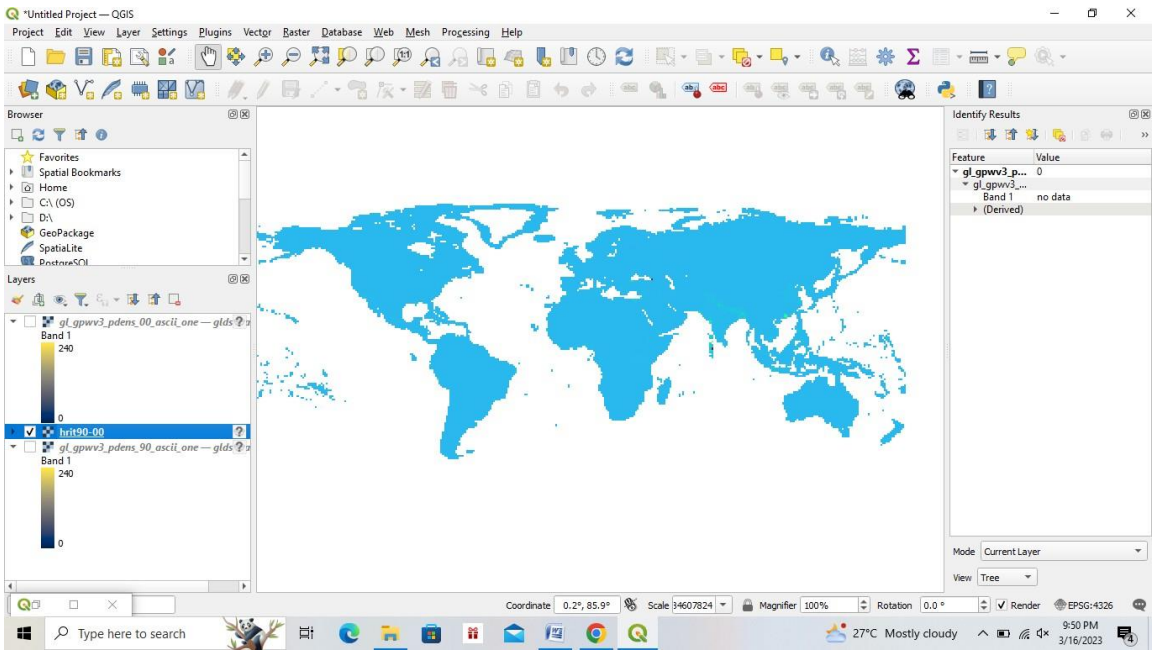



Step 14: We want to style the layer so pixel values in certain ranges get the same color. Before we dive in to that, go to the Metadata tab and look at the properties of the raster. Note the minimum and maximum values of this layer

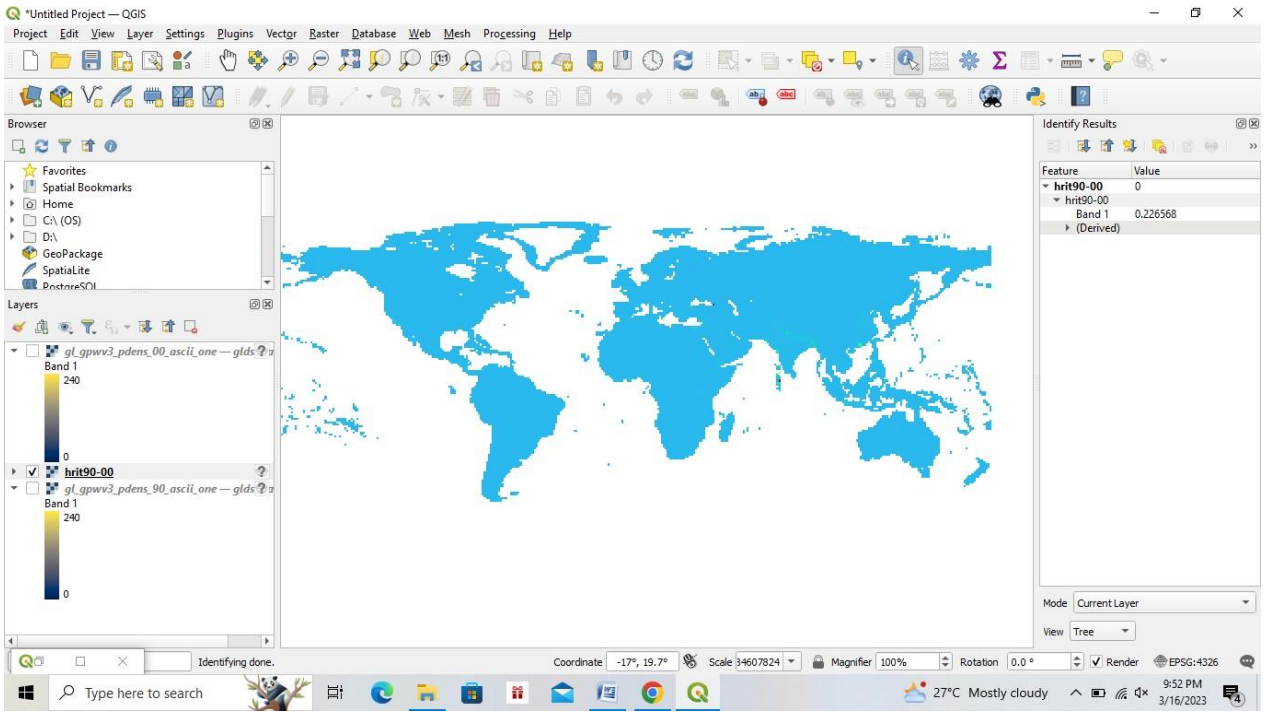
Step 14: Now go to the Symbology tab. Select Singleband pseudocolor as the Render type under Band Rendering. Set the Color interpolation to Discrete. Click the Add entry button 4 times to create 4 unique classes. Click on an entry to change the values. The way color map works is that all values lower than the value entered will be given the color of that entry. Since the minmum value in our raster is just above -2000, we choose -2000 as the first entry. This will be for the No Data values. Enter the values and Labels for other entries as below and click OK.



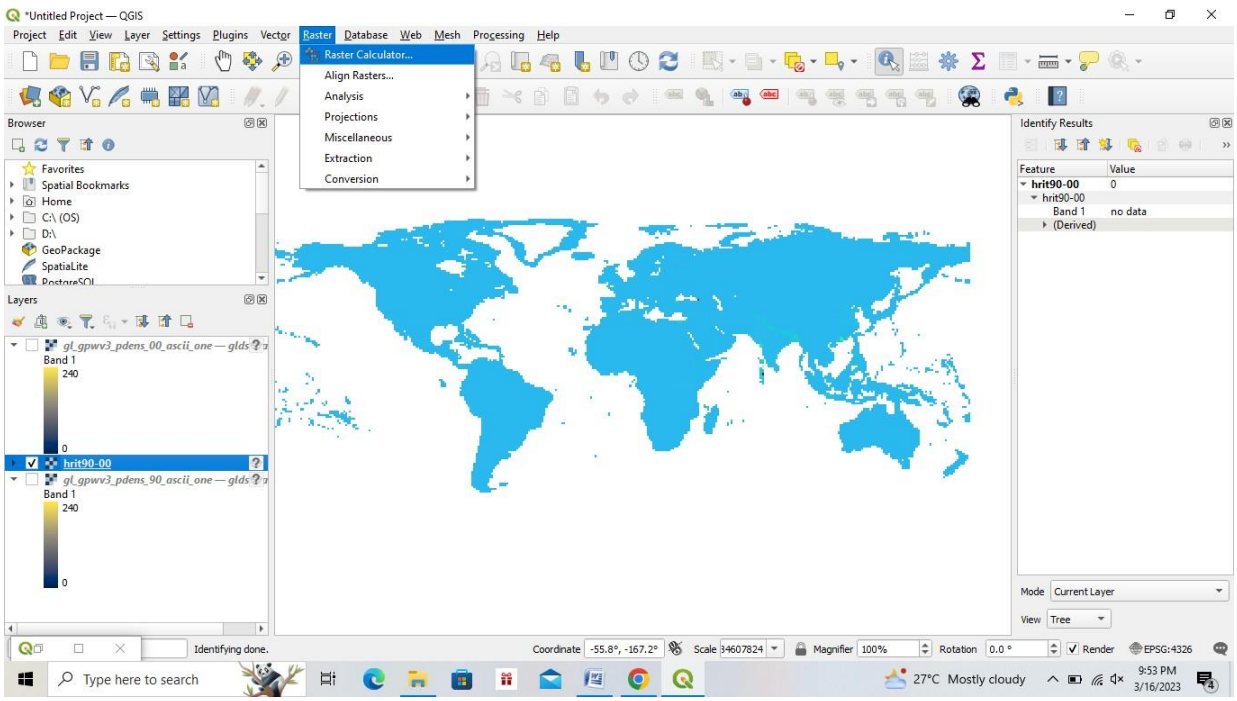

Step 15: Now you will see a much more powerful visualization where you can see areas which has seen positive and negative population density changes. Click on Zoom In button and draw a rectangle around Europe to explore the region in more detail.



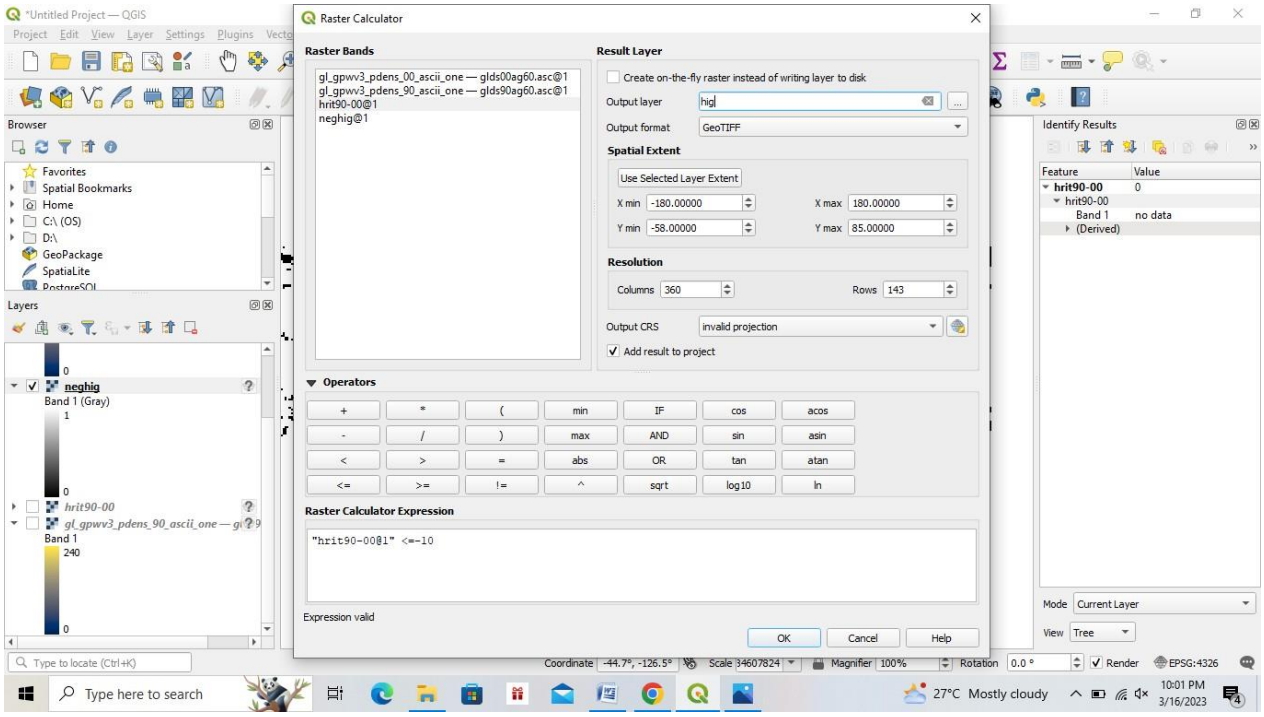
Step 16: Select the Identify tool and click on the Purple and Yellow regions to verify that your styling rules worked as intended.



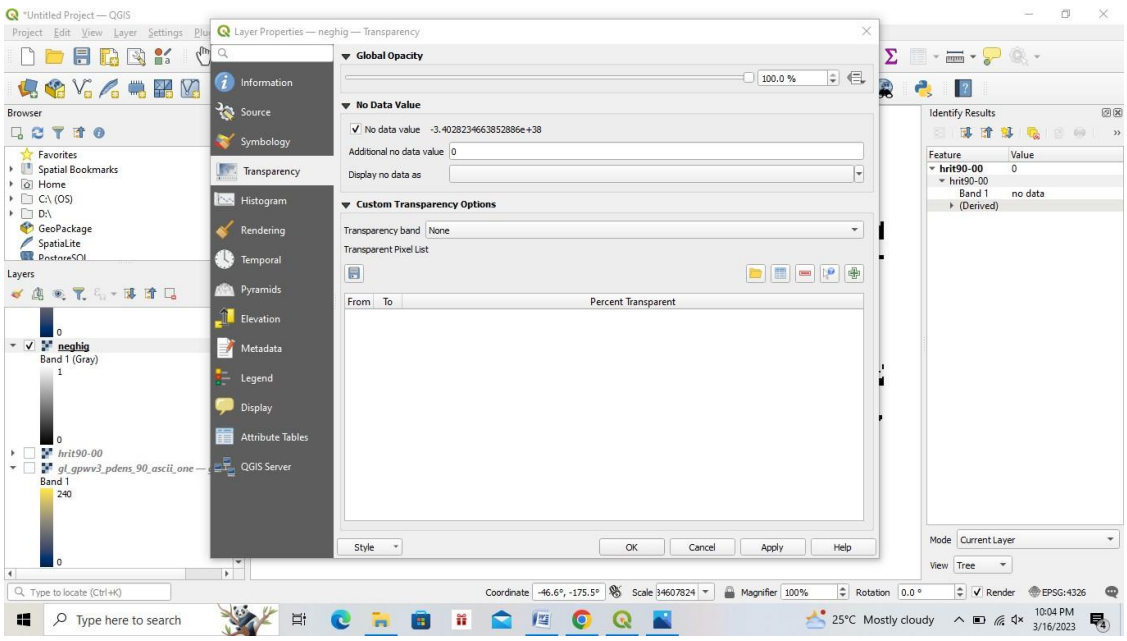

Step 17: Now let's take this analysis one-step further and find areas with only negative population density change. Open Raster ▸ Raster calculator



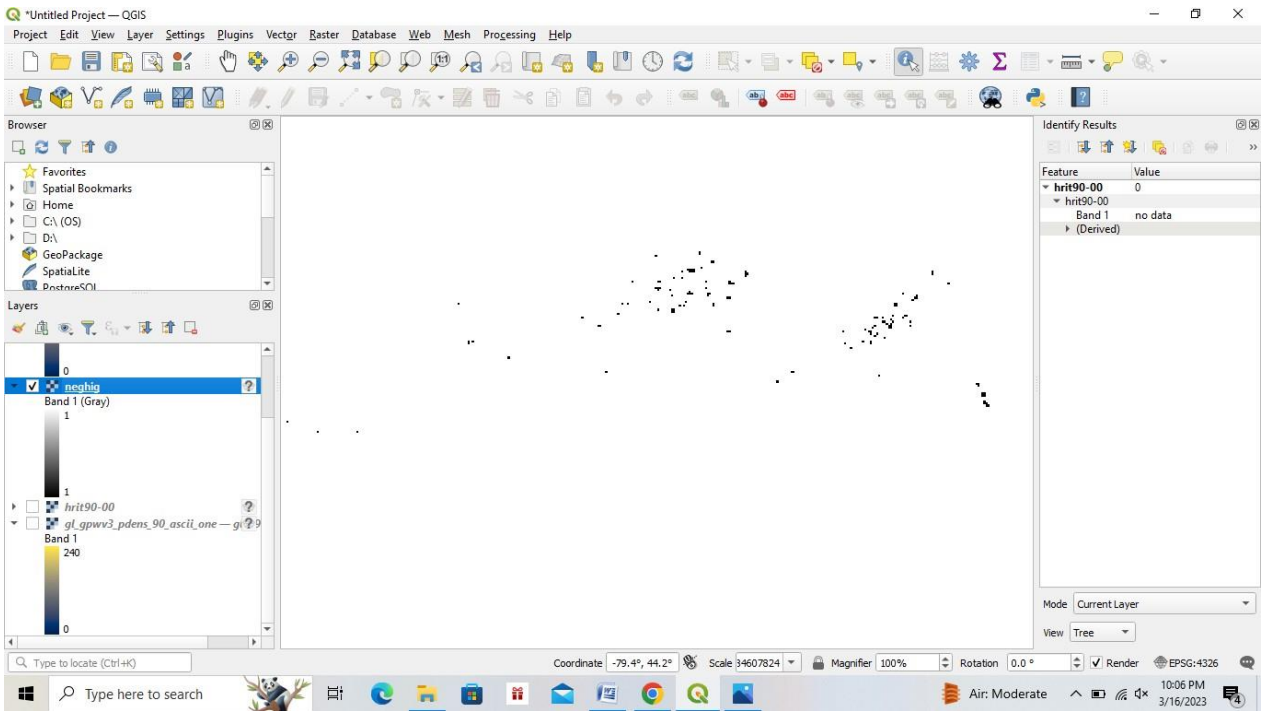
Step 18: Enter the expression as shown below What this expression will do is set the value of the pixel to 1 is if matches the expression and 0 if it doesn't. So we will get a raster with pixel value of 1 where there was negative change and 0 where there wasn't. Name the output layer as pop_negative_change_2000_1990 and check the box next to Add result to project. Click OK.




Step 19: Once the new layer is loaded, right-click on it and select Properties. In the Transparency tab, add 0 as the Additional no data value. This setting will make the pixels with 0 values also transparent. Click OK.




Step 20: Now you will see the areas of negative population density change as gray pixels.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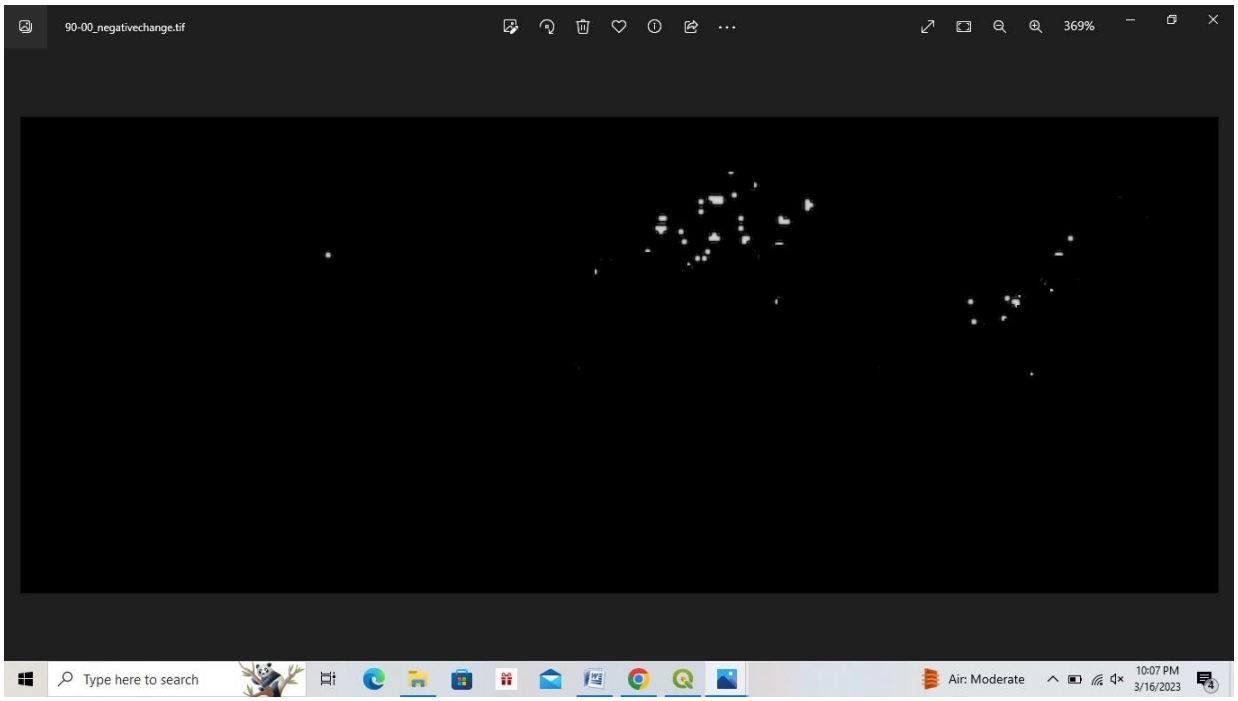
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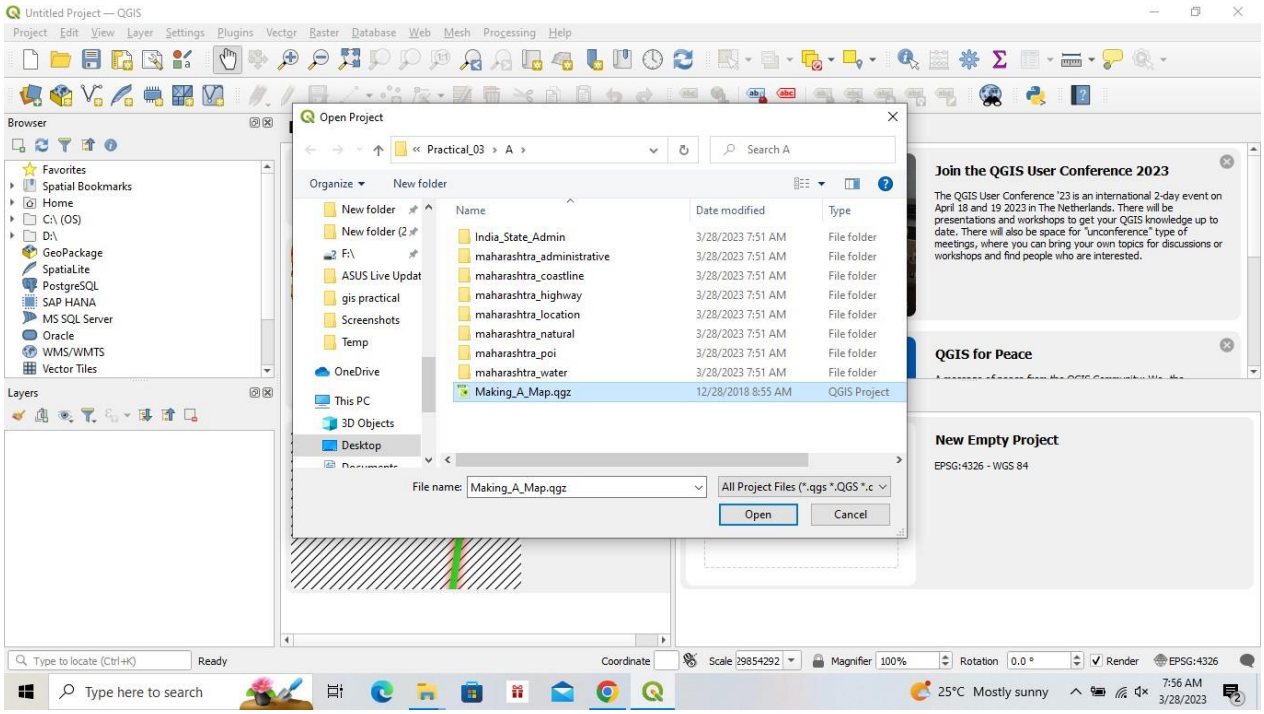
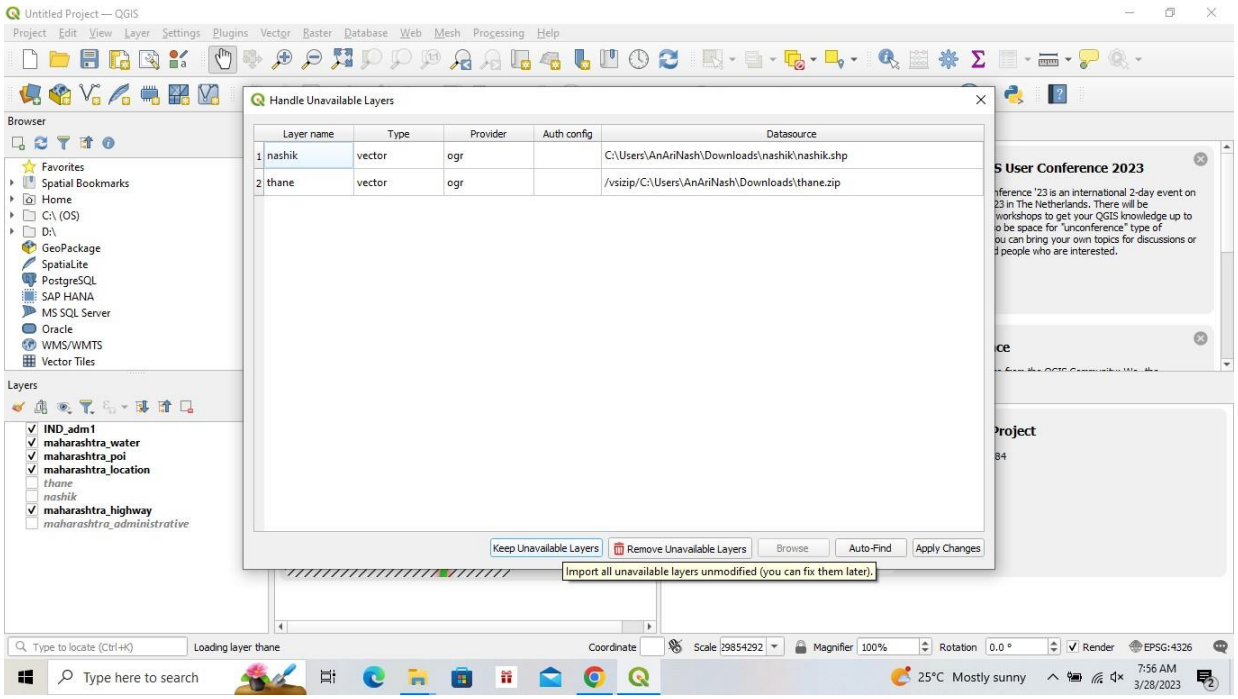
**Practical 3: Making a Map, Working with Attributes, Importing Spreadsheets or CSV files Using Plugins, Searching and Downloading Open Street Map Data.**

**Aim:** The aim of this practical is to create a map step-by-step using OpenStreetMap Data.

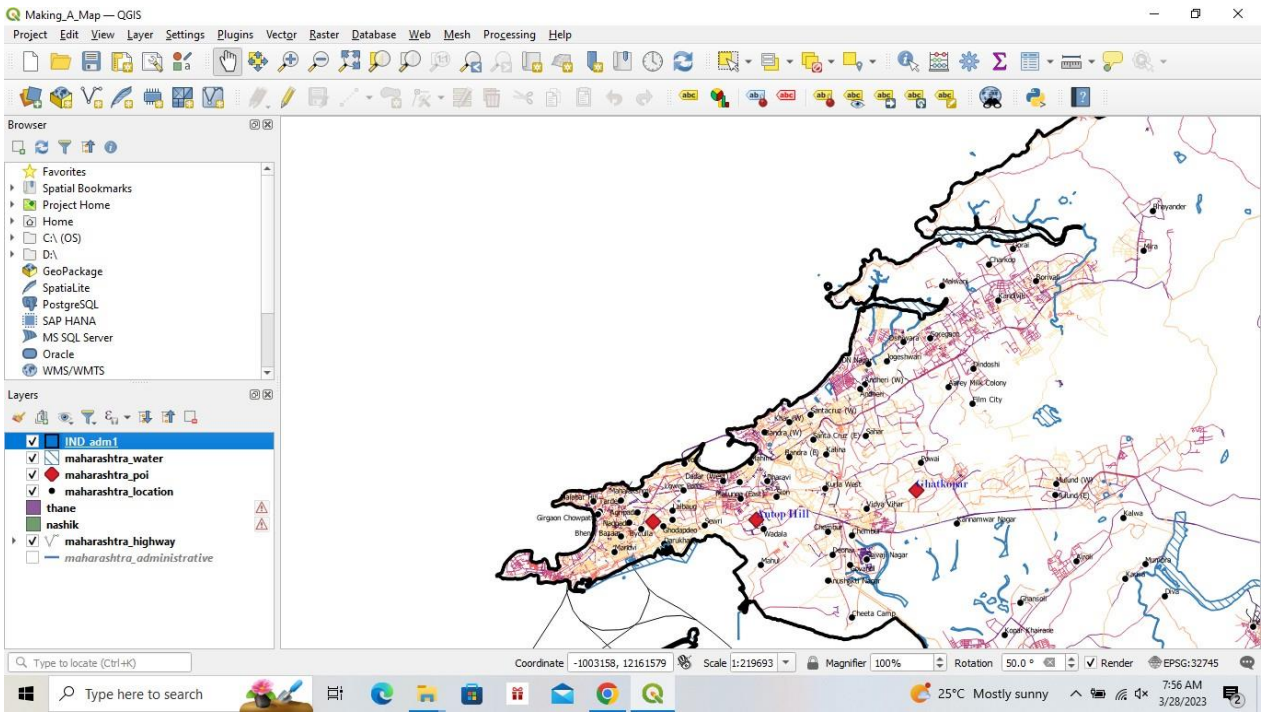
a) Making a Map

Step 1: Create a new Thematic Map or open an existing one by clicking on Project ,Open

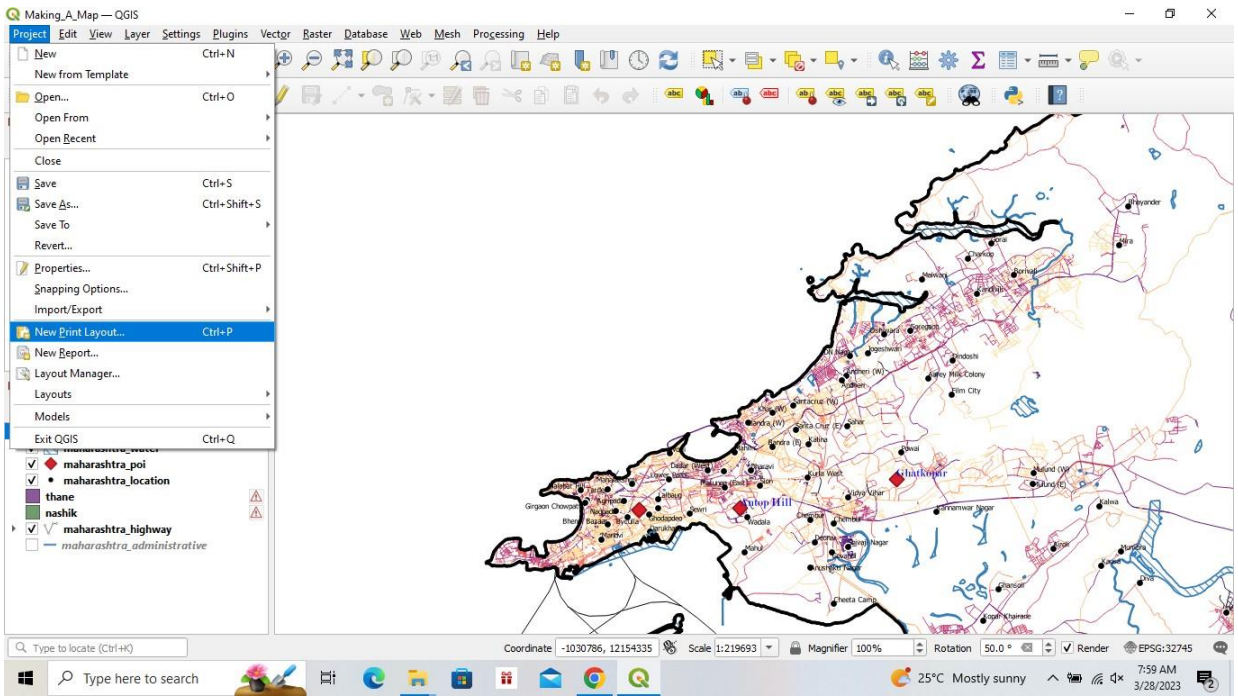


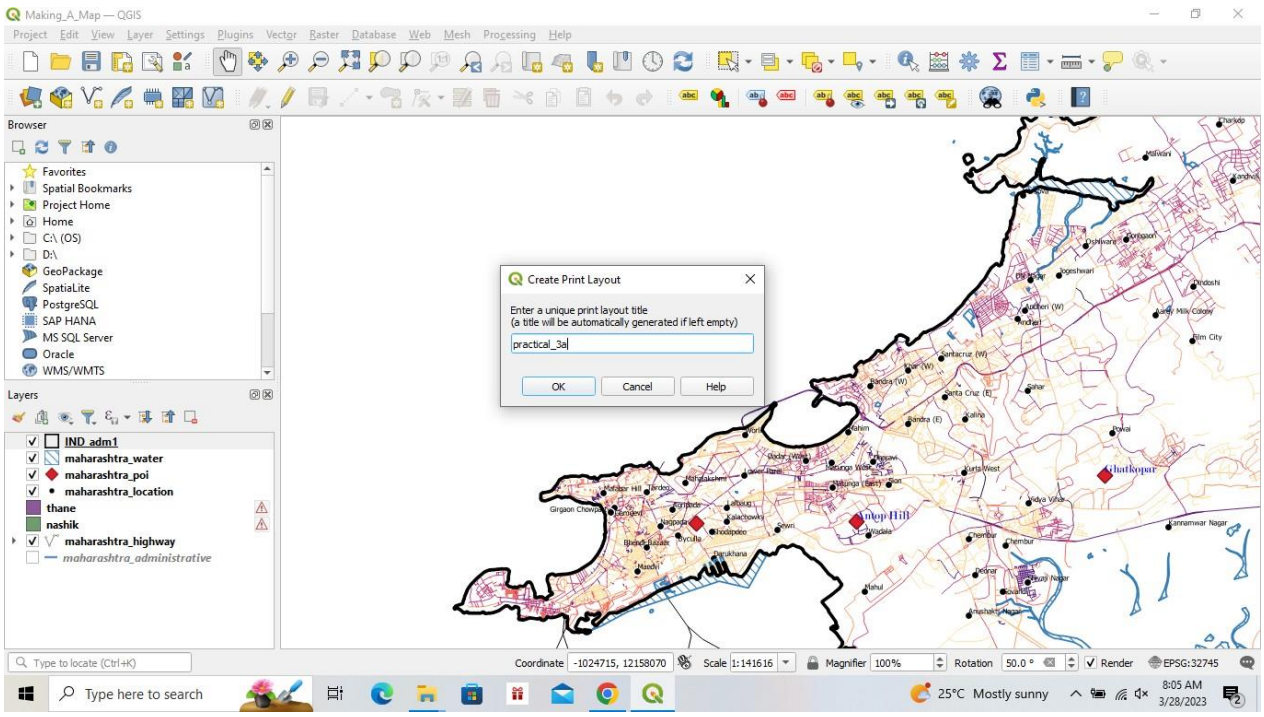
**Step 2:** After opening the map, it should look somewhat like this in your QGIS application



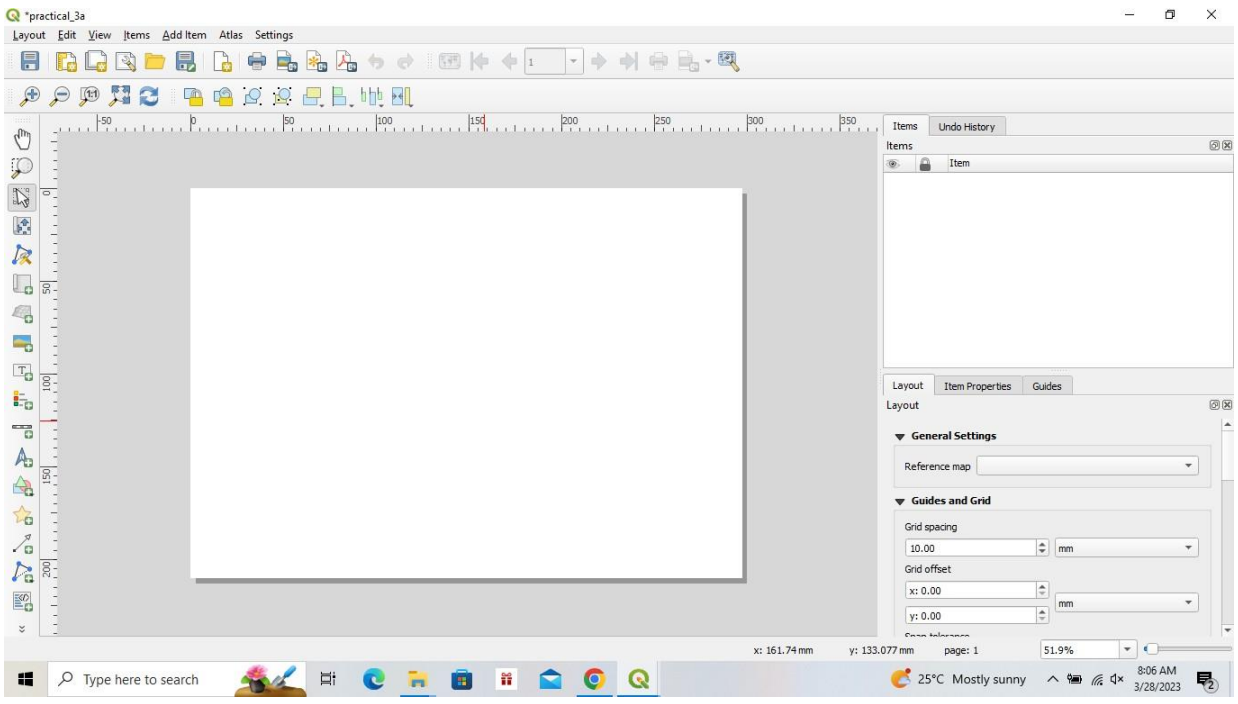

Step 3: Next, Click on Project ,New Print Layout



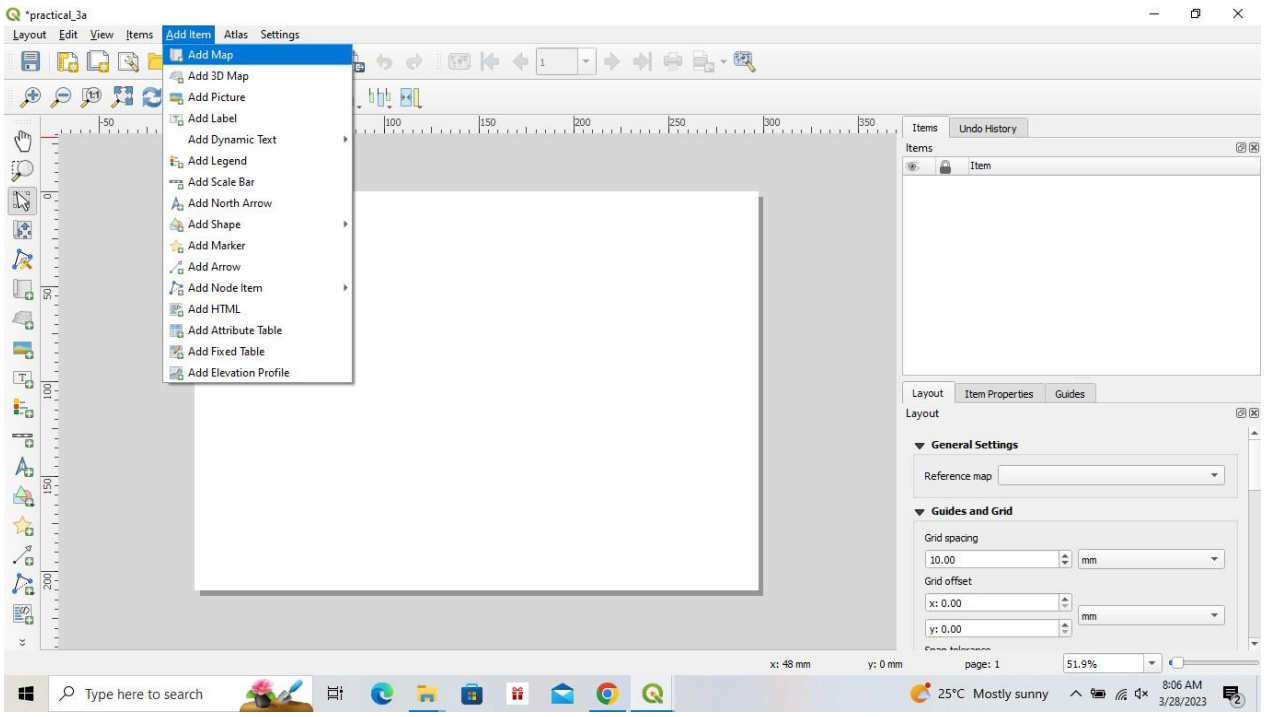
**Step 4:** Insert a suitable title and press "OK"



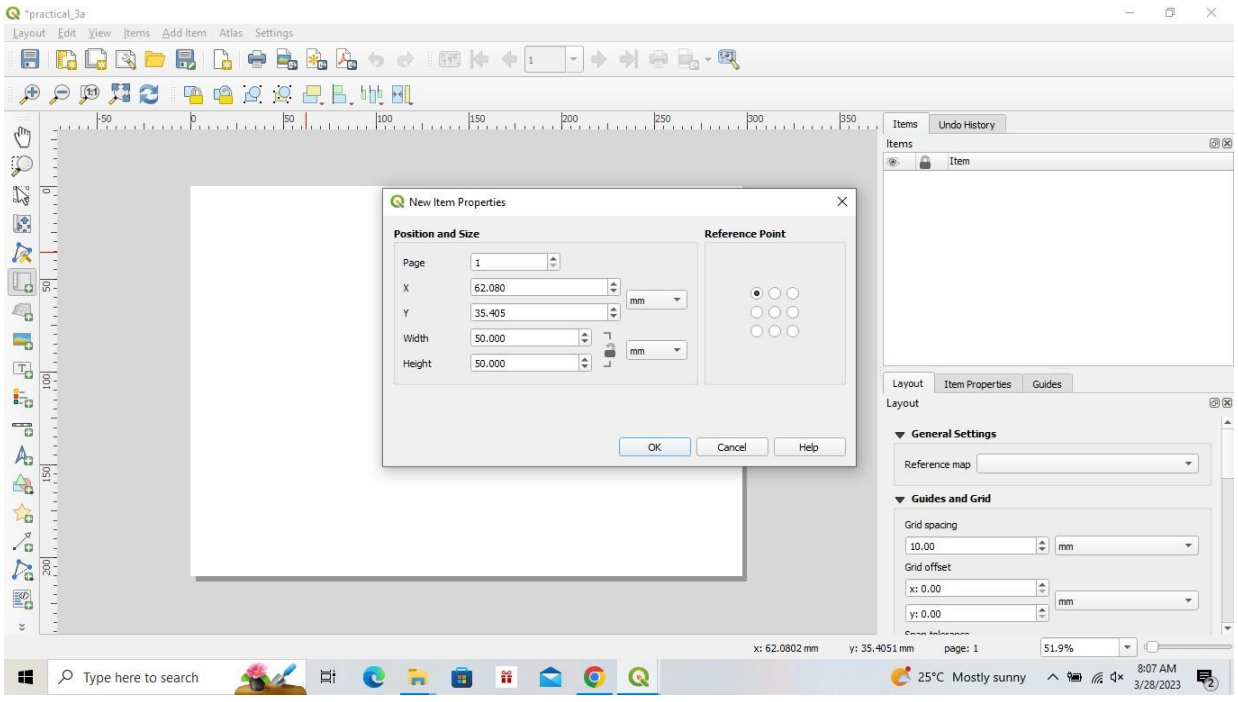

**Step 5:** A new Print Layout Window will Open



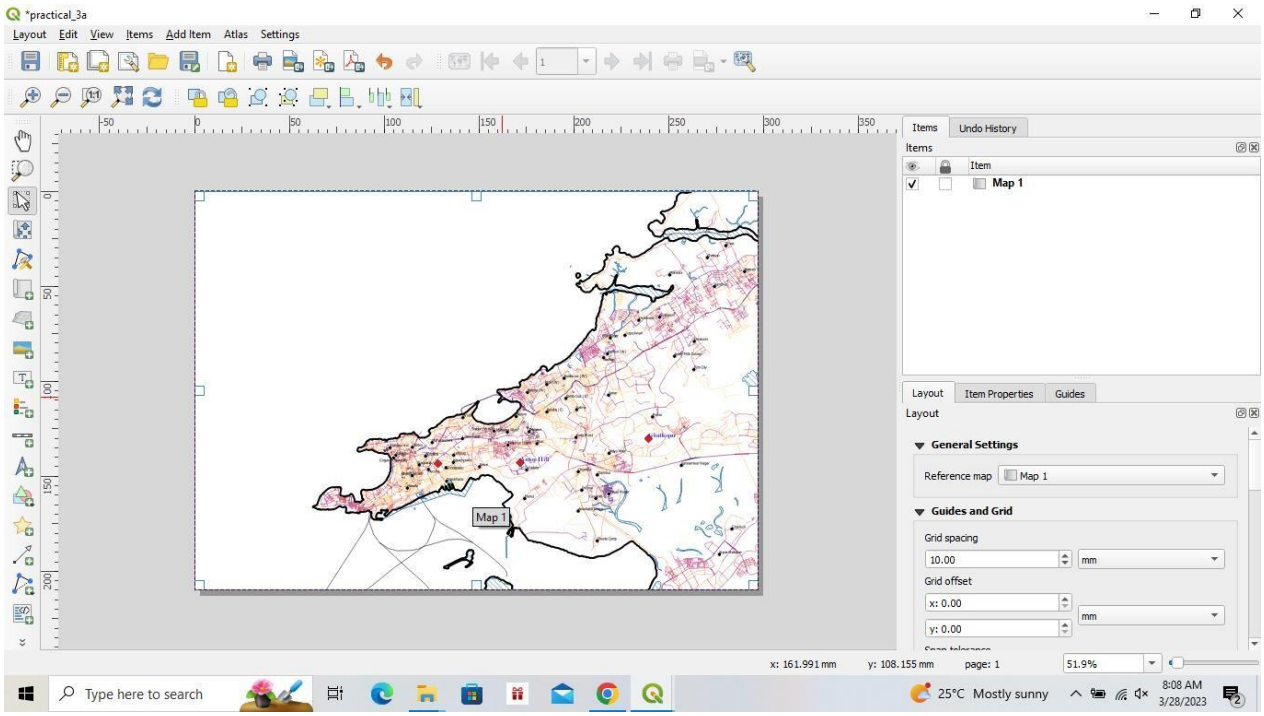
**Step 6:** Select Add Item. Add Map



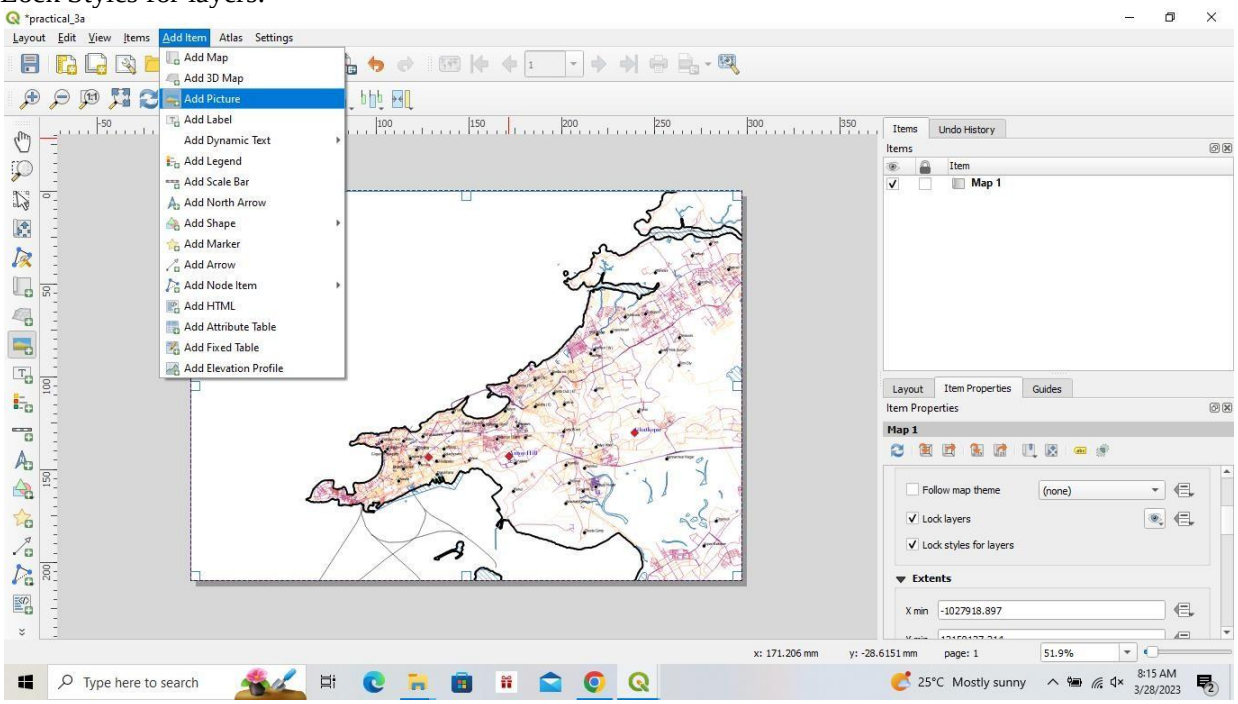

**Step 7:** Left click on the canvas and you should be presented with the following dialog box.



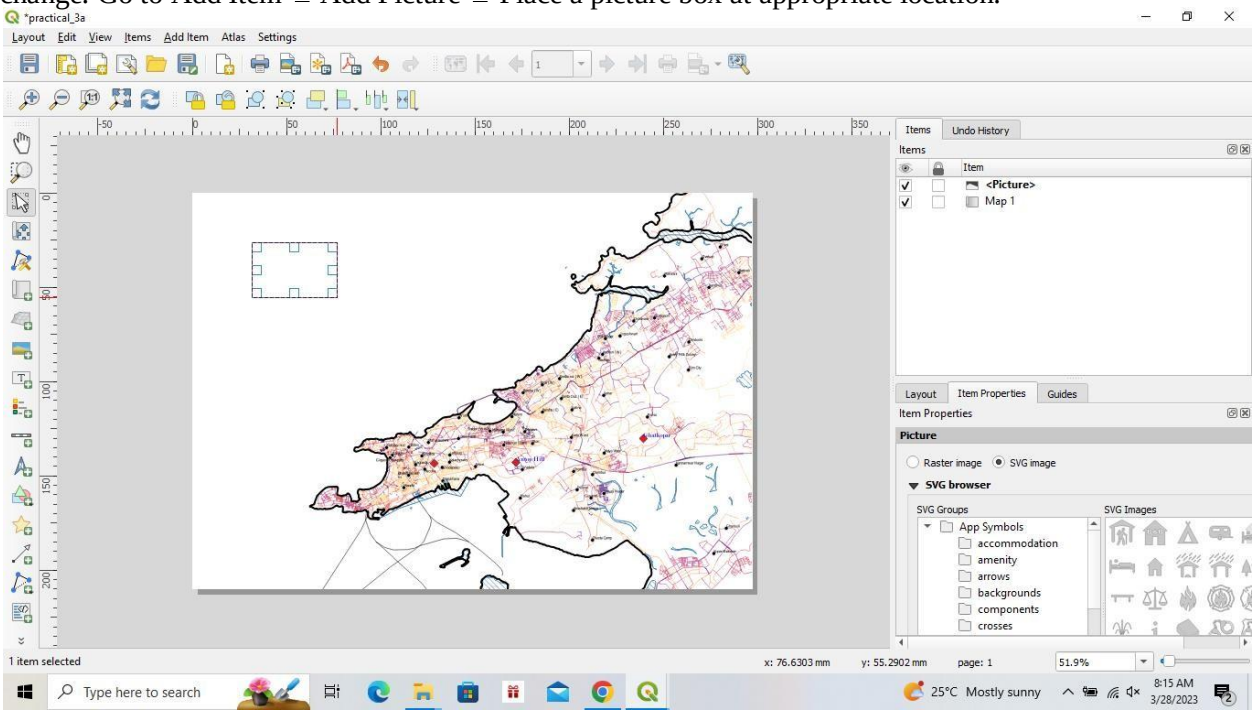
**Step 8:** Click "OK" to keep and select the default values and your map should now be created. Resize it so that it takes up the entire space of the canvas and should look like below:



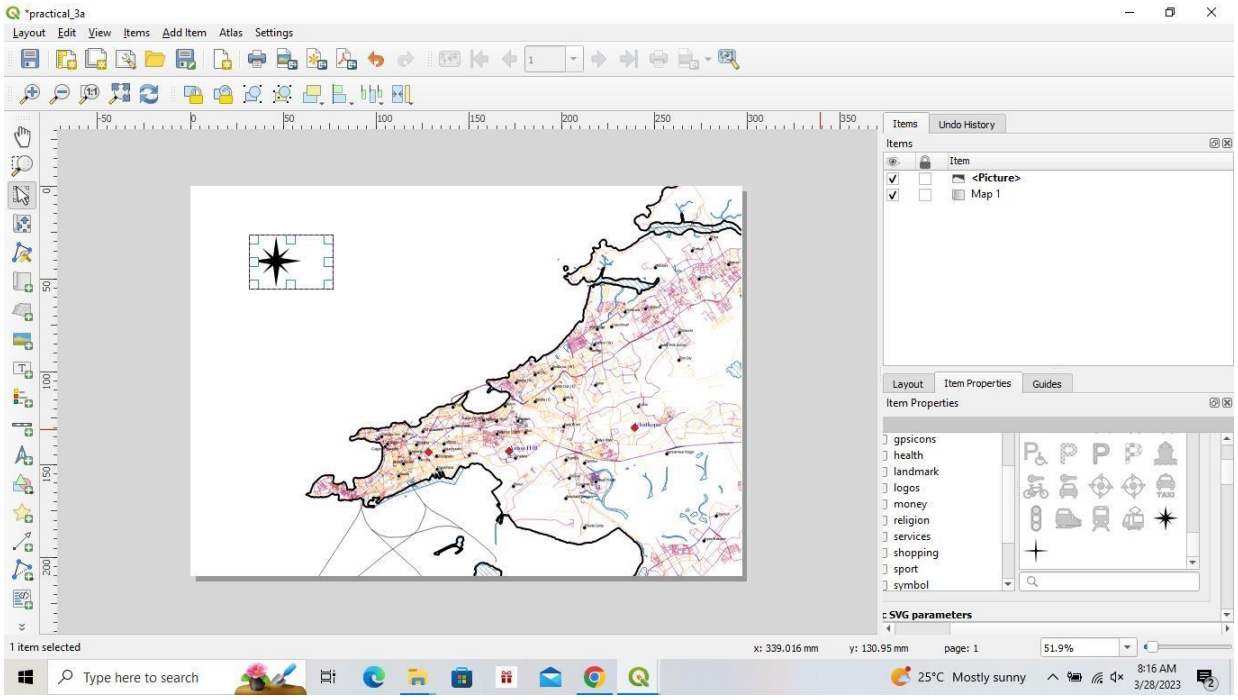

**Step 9:** After adding the map, go to Item Properties □ Map1 □ Layers and Check on Lock Layers and Lock Styles for layers.



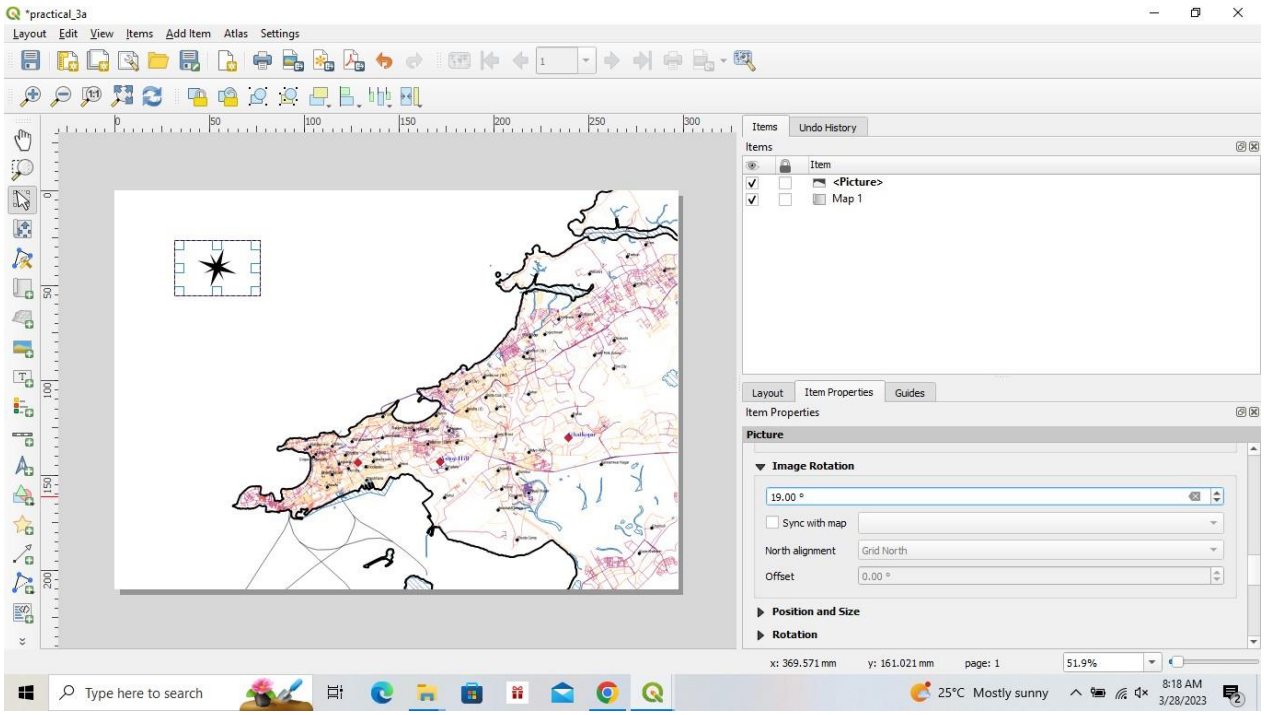
**Step 10:** This will ensure that if any change in layers or change their styles, the Print Layout view will not change. Go to Add Item _ Add Picture _ Place a picture box at appropriate location.



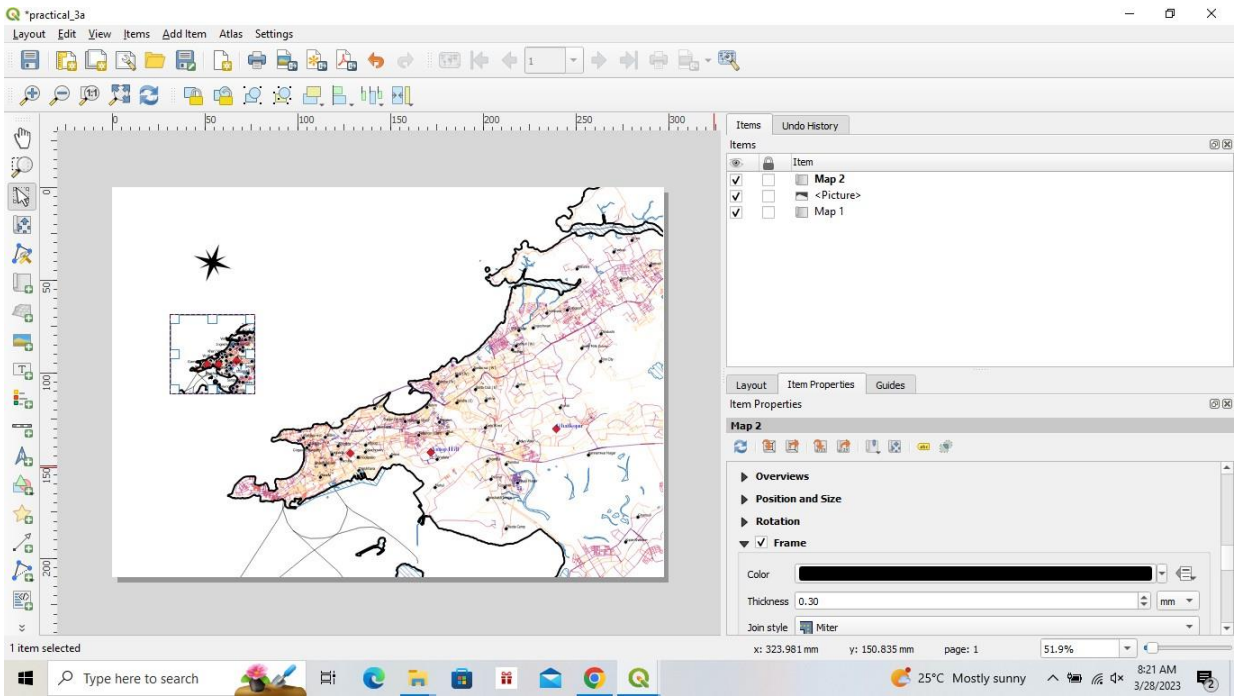

**Step 11:** Next, select "SVG browser" and select any symbol from "SVG images" you like as seen below:



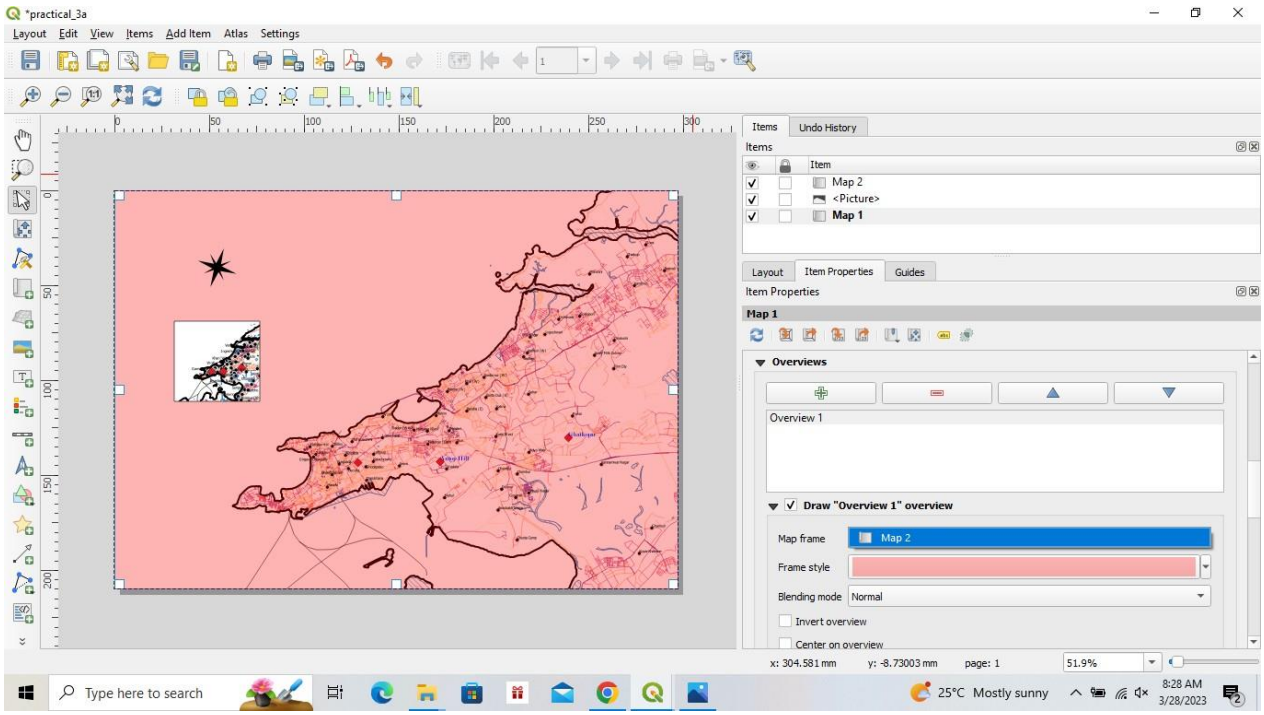
**Step 12:** Also adjust Image Rotation to its appropriate value by navigating to Item Properties □ Image Rotation. I've rotated it at an angle of 19 degree as shown below:



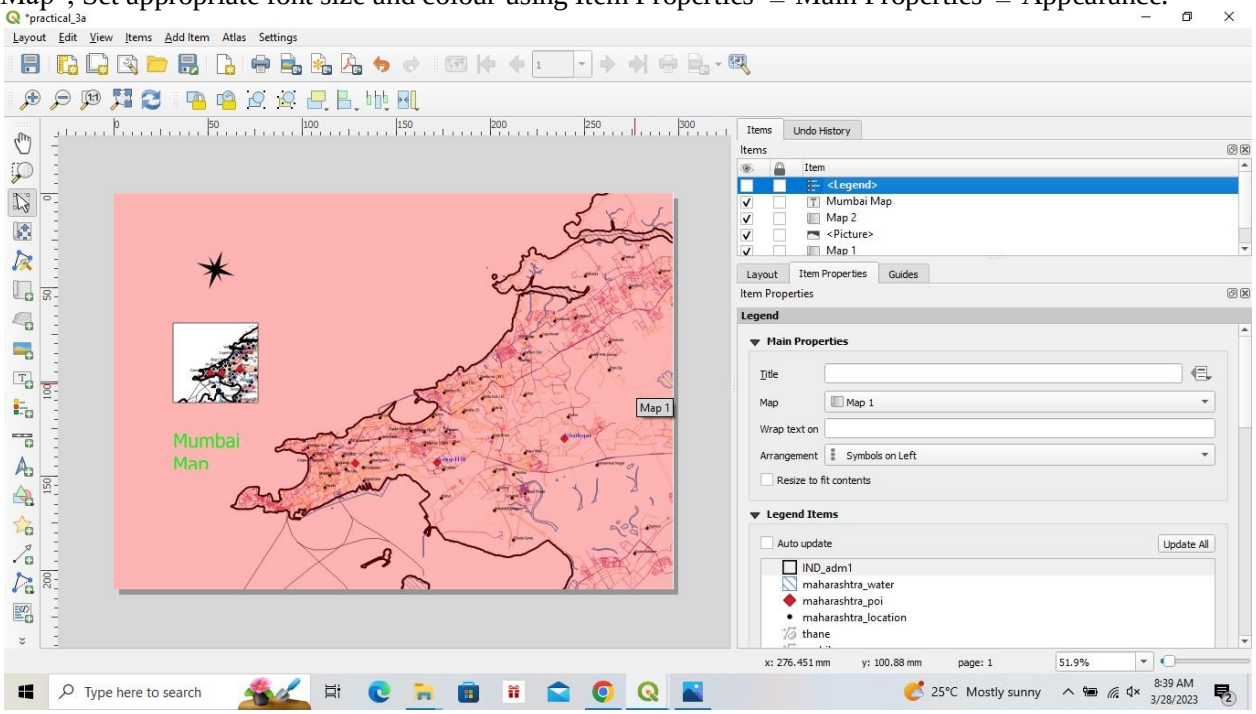

**Step 13:** Add an inset Using Add Item □ Add Map □ Select an area to be highlighted on main Map. Set a frame for Inset by enabling the check box for Frame



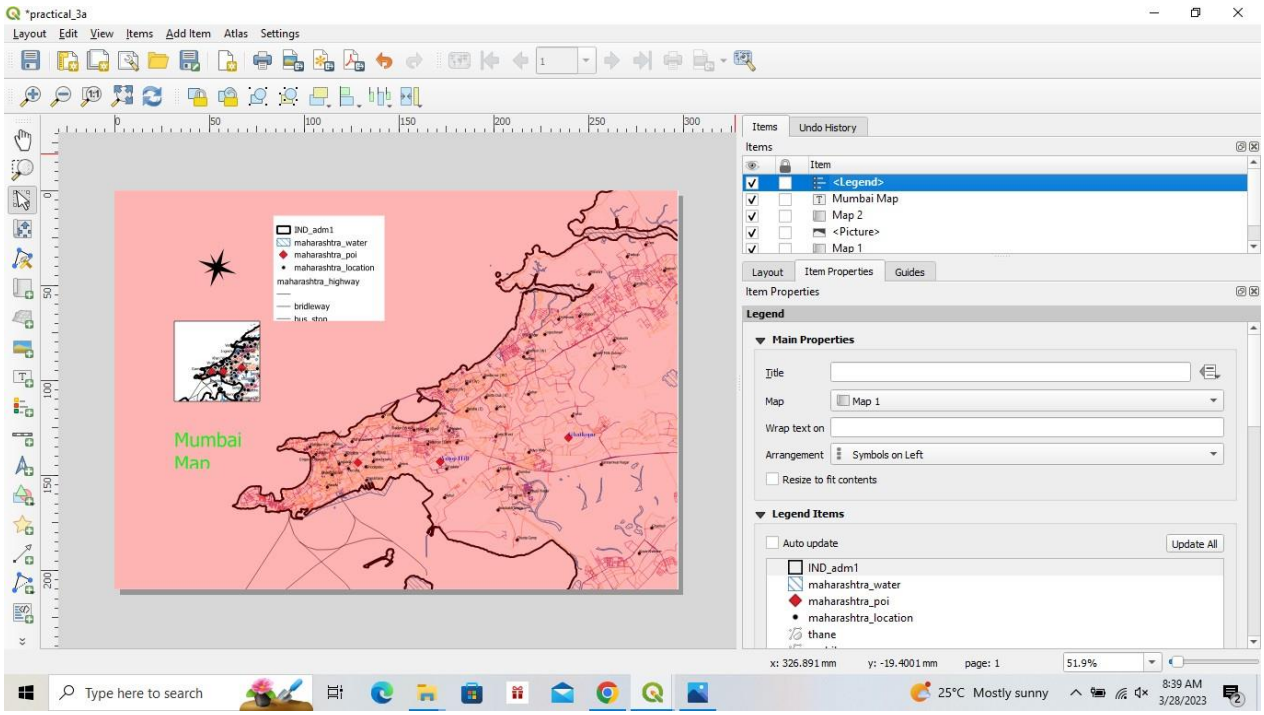
**Step 14:** To highlight the are shown in Inset, select the Picture representing main Map from Items pane. In Item Properties □ Overviews □ using icon add an overview. Select the checkbox. Draw Overview and name the Picture object representing inset (Map1 in our case □ What this is telling the Print Composer is that it must highlight our current object Map 1 with the extent of the map shown in the Map 2 object).



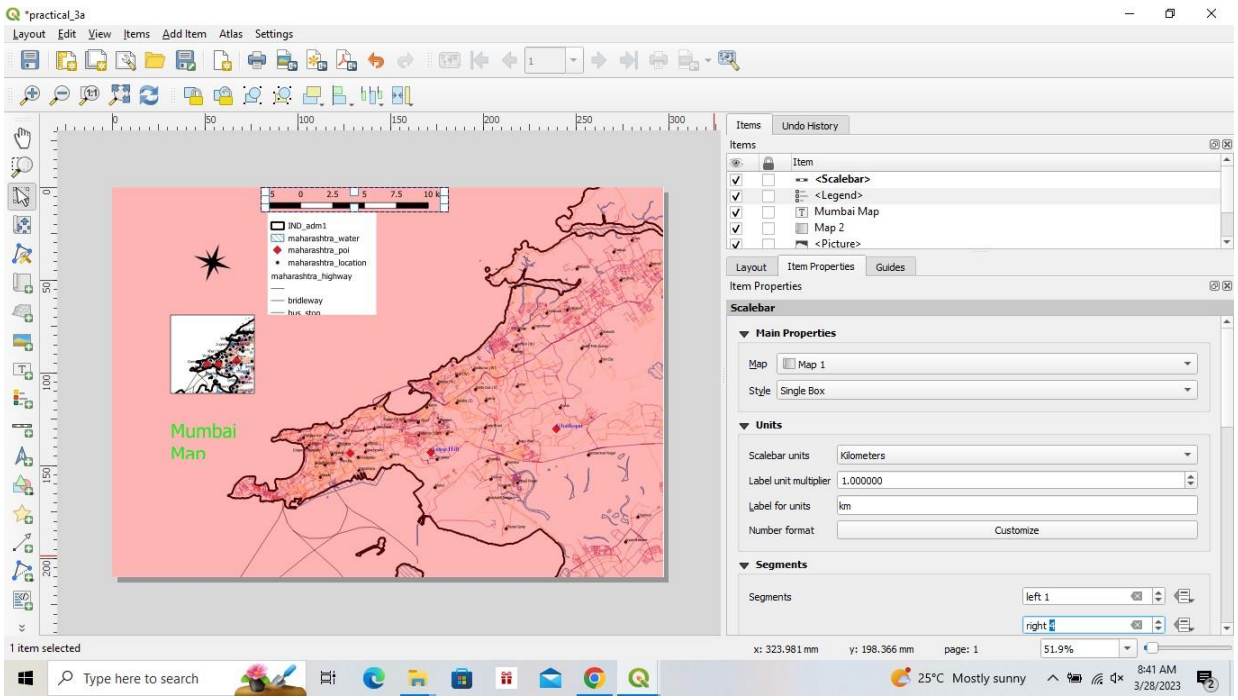

**Step 15:** Next, add a label by navigating to Add Item □ Add Label. Change the Label text To "Mumbai Map", Set appropriate font size and colour using Item Properties _ Main Properties _ Appearance.



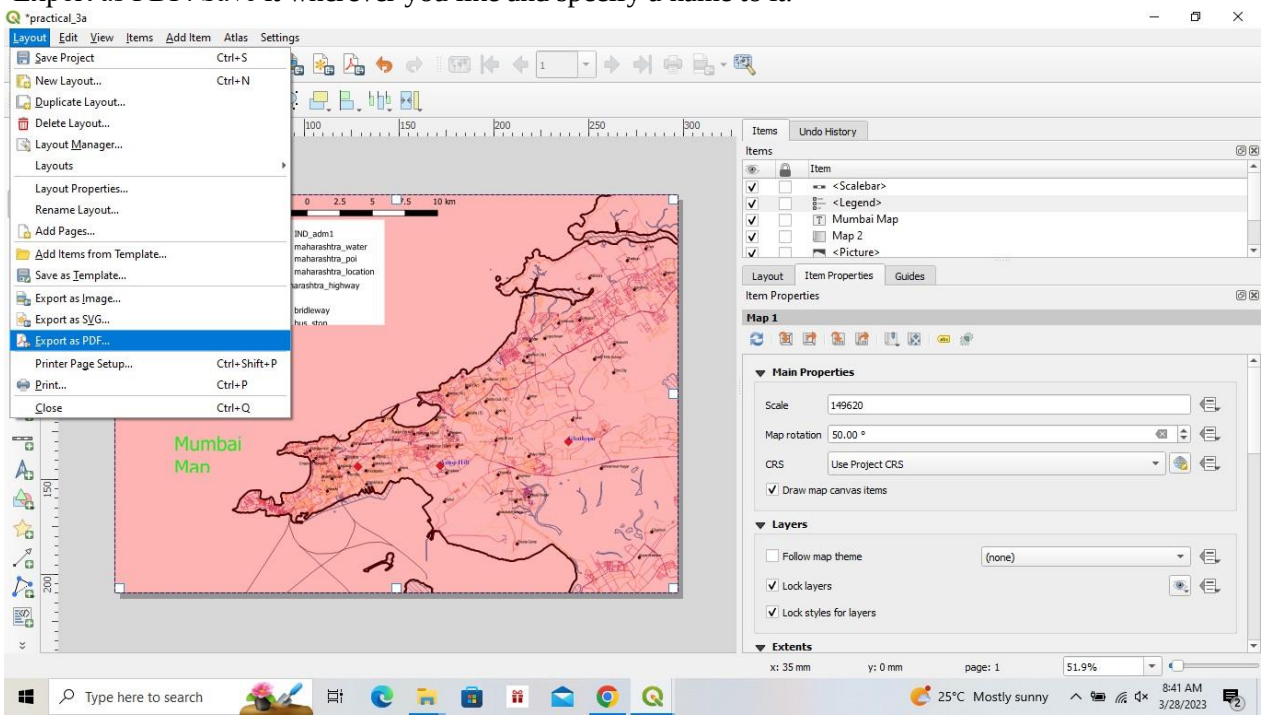
**Step 16:** Next go to Add Item □ Add Legend □ Place the legend indicator at appropriate location. Uncheck "Resize to fit contents and Auto update" and use suitable legend indicator label



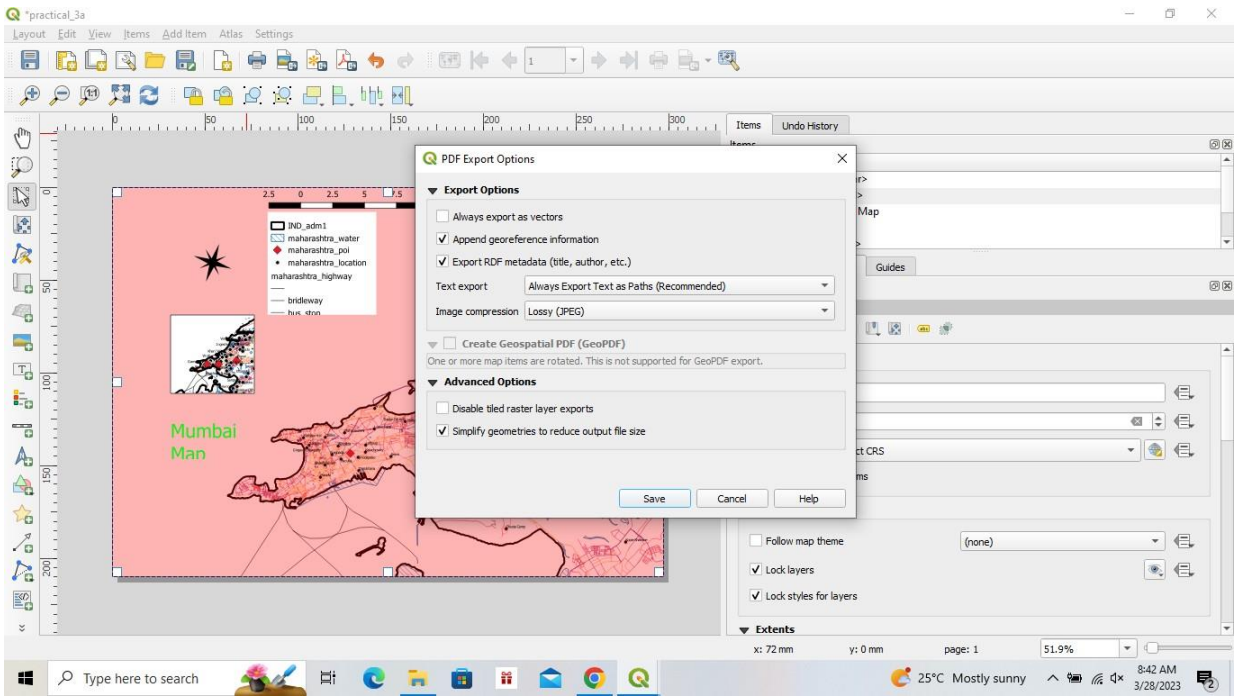

**Step 17:** Next, add a Scale bar by navigating to Add Item □ Add Scale Bar and add left 1 and right 4 respectively in the segments section:

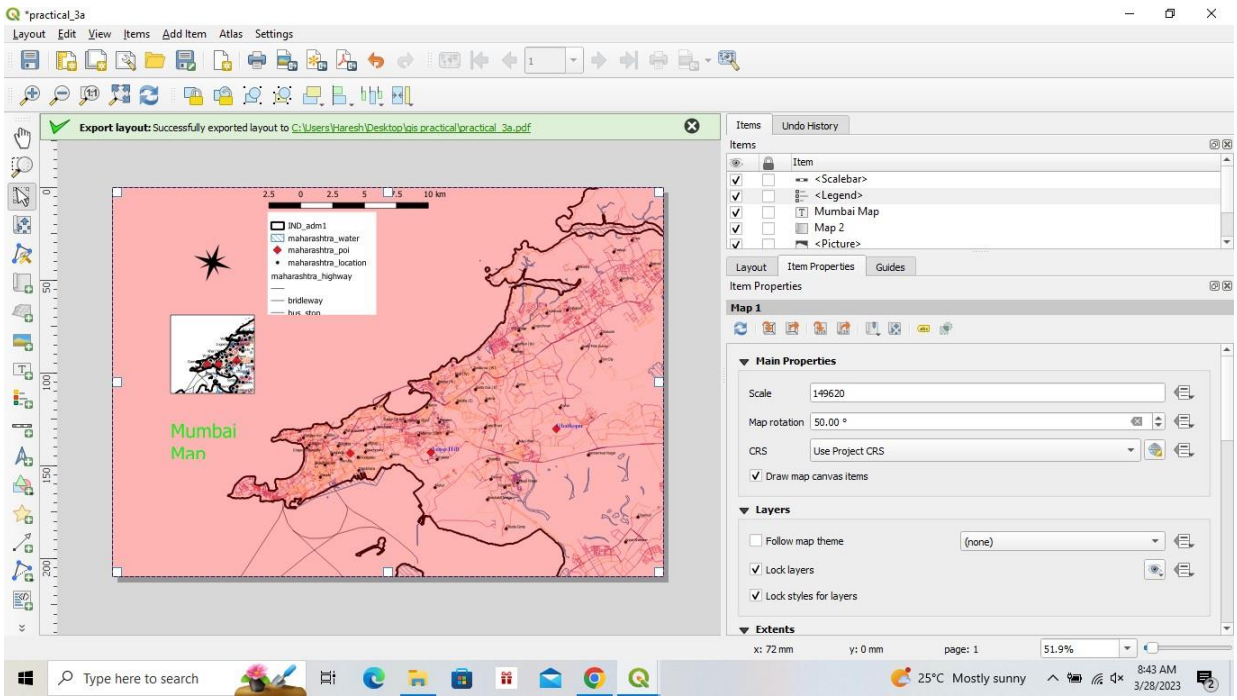


**Step 18:** Your image is now ready and can be exported. To do so, click on the "Layout" tab and select "Export as PDF. Save it wherever you like and specify a name to it.



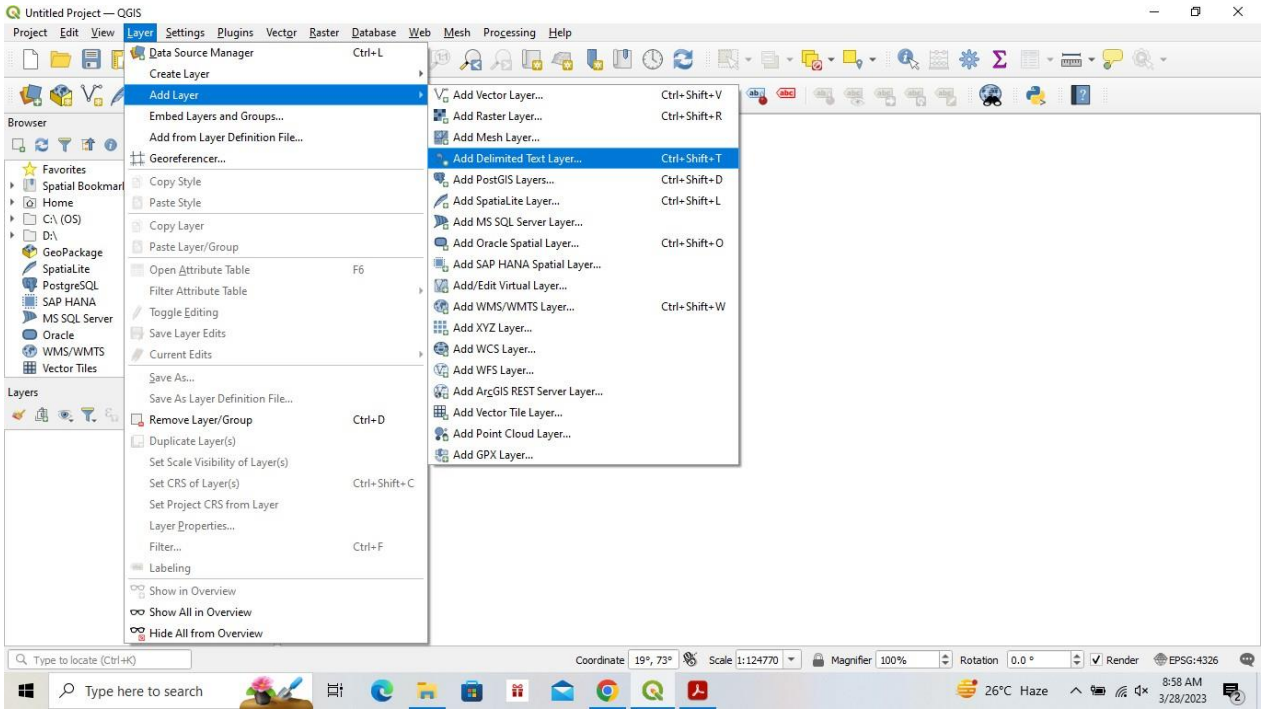

Step 19: At the end, a green dialog box stating "Export Layout: Successfully exported" with a green tick to the left will be displayed as shown below:



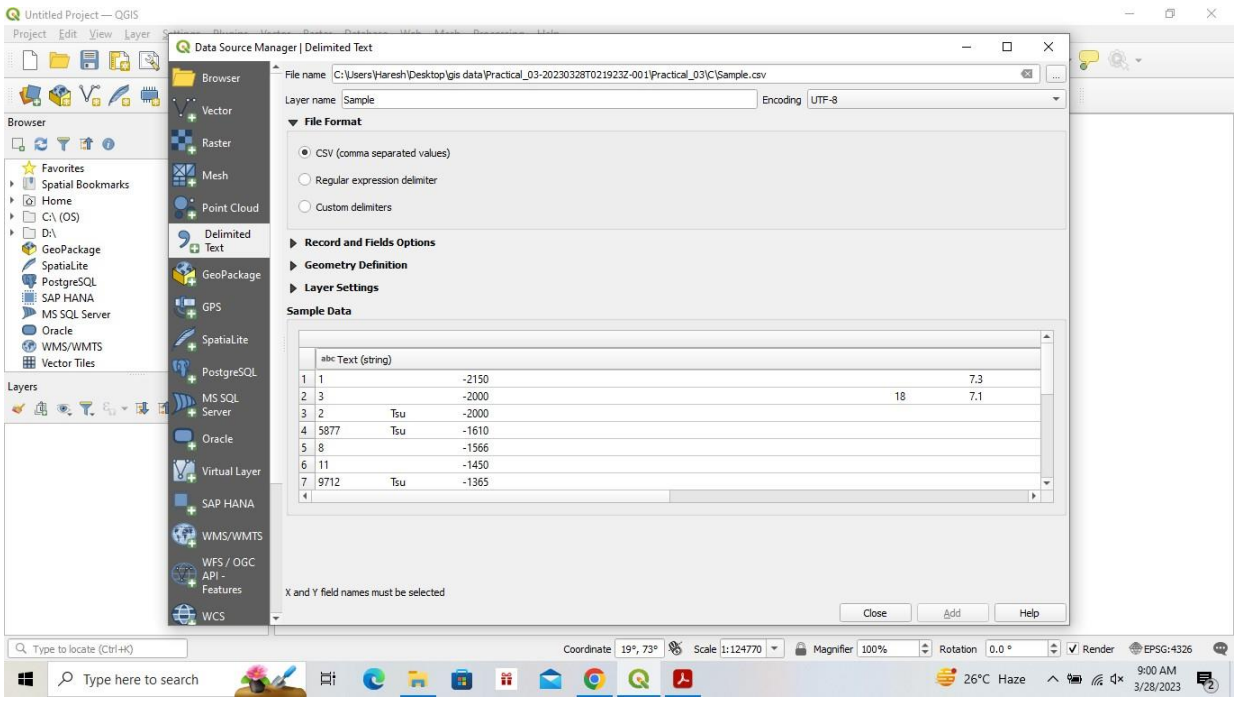

*practical_3a
Layout Edit View Items Add Item Atlas Settings
Export layout: Successfully exported layout to C:\Users\Haresh\Desktop\gis practical\practical_3a.pdf
IND_adm1
maharashtra_water
maharashtra_poi
maharashtra_location
maharashtra_highway
bridleway
Mumbai
Man
Items
Undo History
Item
<Scalebar>
<Legend>
Mumbai Map
Map 2
<Picture>
Layout
Item Properties
Guides
Item Properties
Map 1
Main Properties
Scale 149620
Map rotation 50.00 °
CRS Use Project CRS
Draw map canvas items
Layers
Follow map theme (none)
Lock layers
Lock styles for layers
Extents
x: 72 mm y: 0 mm page: 1 51.9%
Type here to search
25°C Mostly sunny
8:43 AM
3/28/2023

## 3b. Importing Spreadsheets or CSV files.

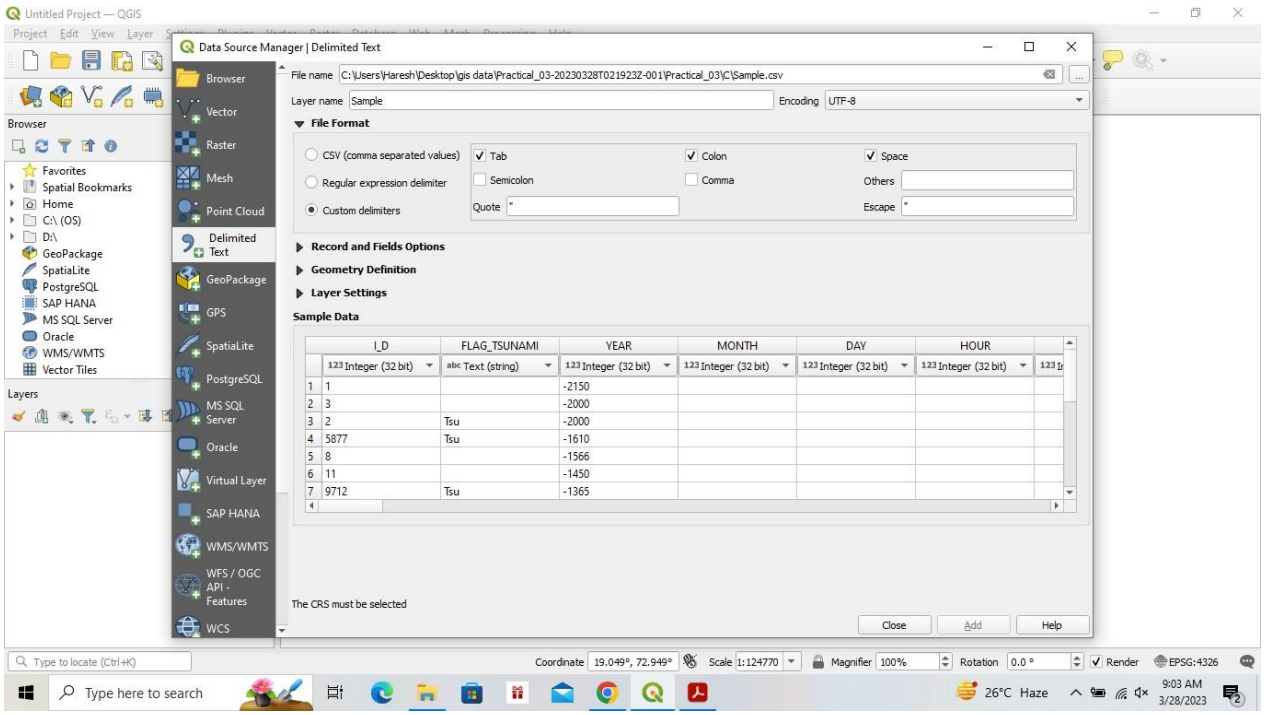
**Step 1:** Many times the GIS data comes in a table or an Excel spreadsheet or a list lat/long coordinates, therefore it has to be imported in a GIS project. Sample file for Earthquake data will be used in this practical. Go to Layer → Add Layer →Add Delimited text Layer



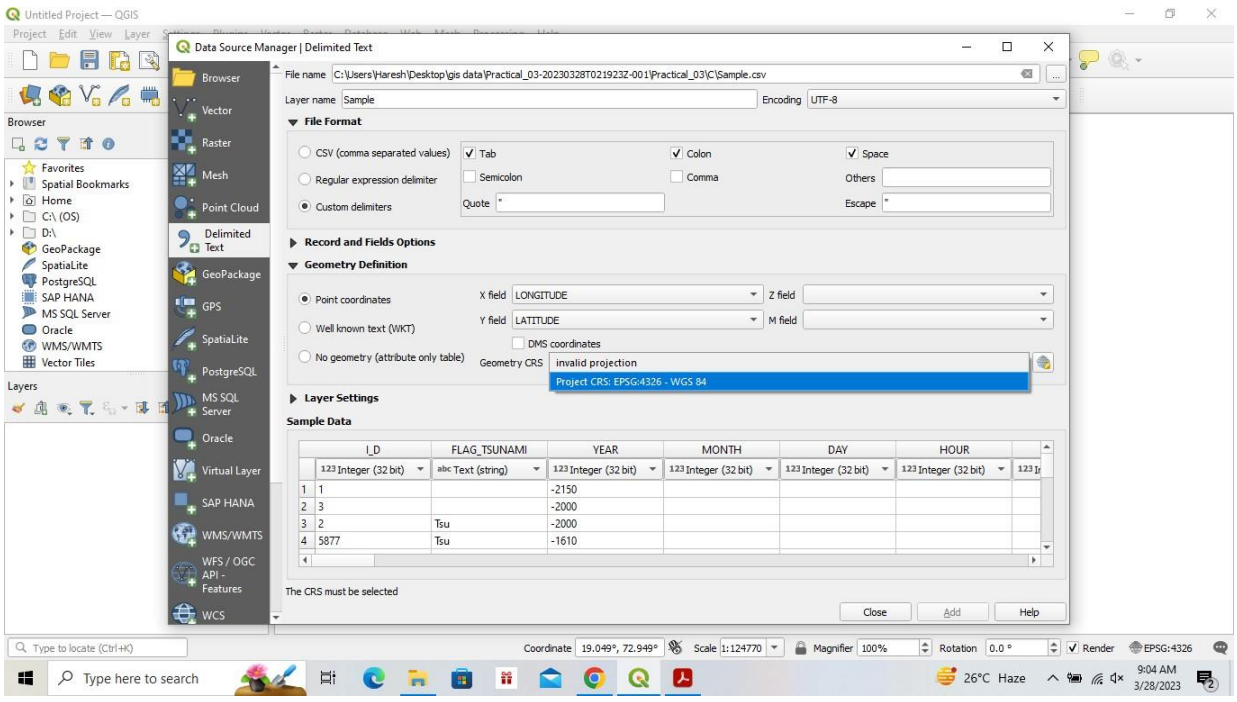

**Step 2:** Data Source Manager | Delimited Text window will appear. Select the \GIS_Workshop\Practicals\Practical_03\C\Sample.csv file from data folder.



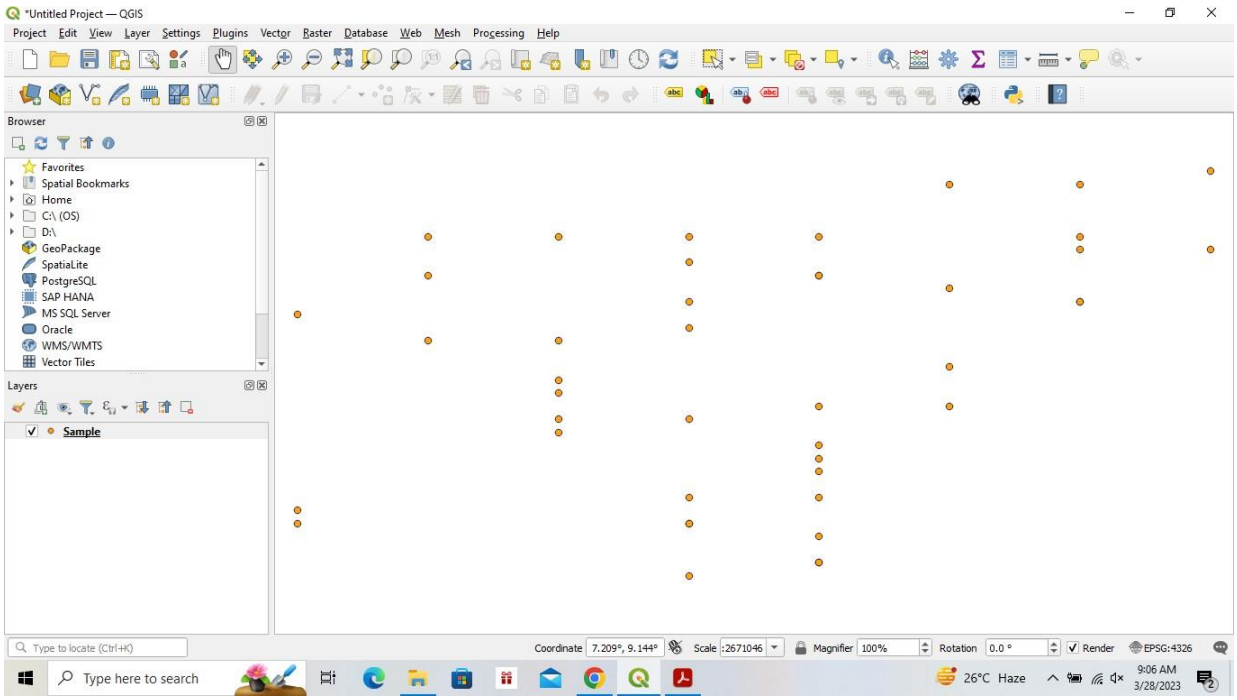
**Step 3:** Select the “Custom Delimiters” radio buttons and check the “Tab”, “Colon” and “Space” checkboxes.




**Step 4:** Change the “Geometry CRS: Project CRS” value from the “Geometry Definition” tab in the same window. Select “Longitude” in the X Field and “Latitude” in the Y Field and click on the “Add” button.



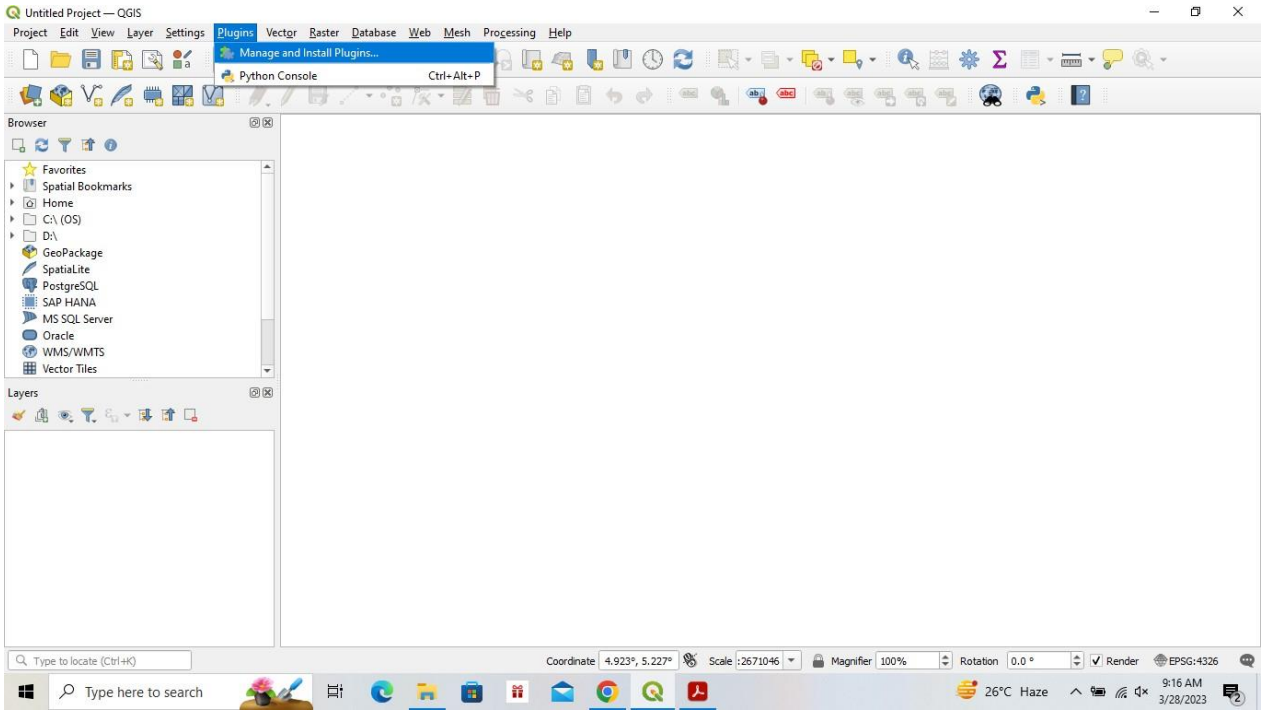
**Step 5:** These coordinates should then be displayed.



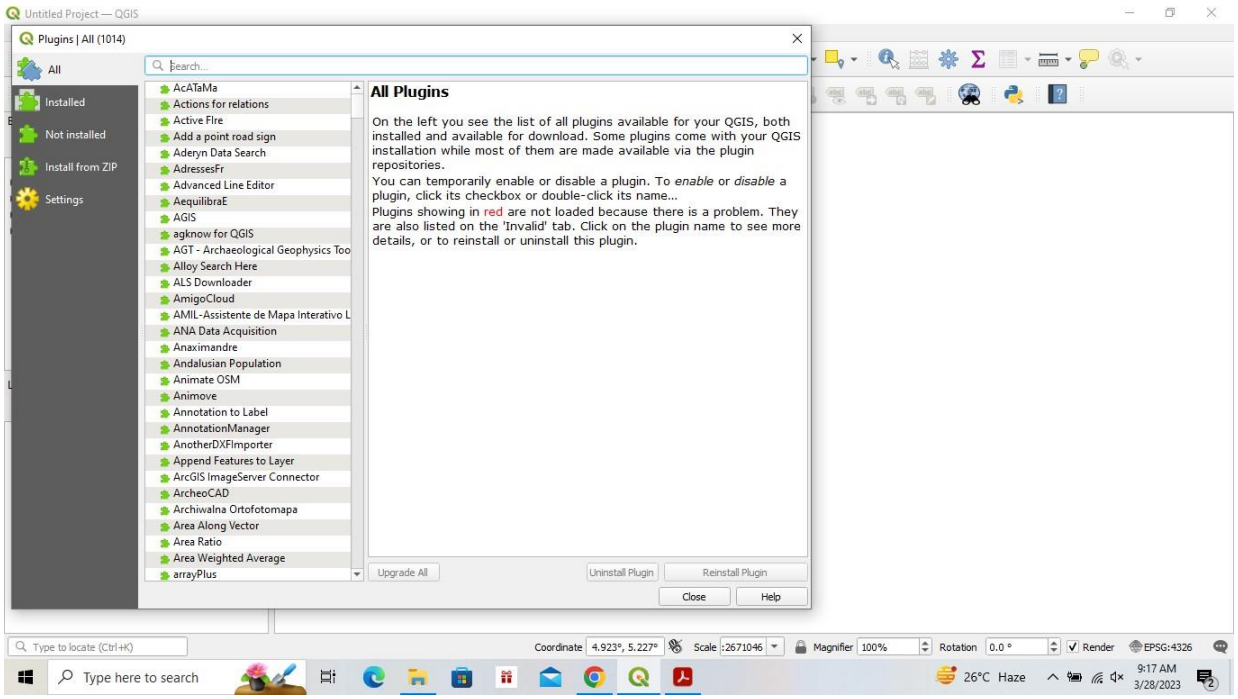
### 3c. Using Plugins

**Step 1:** Core plugins are already part of the standard QGIS installation. To use these, just enable them.

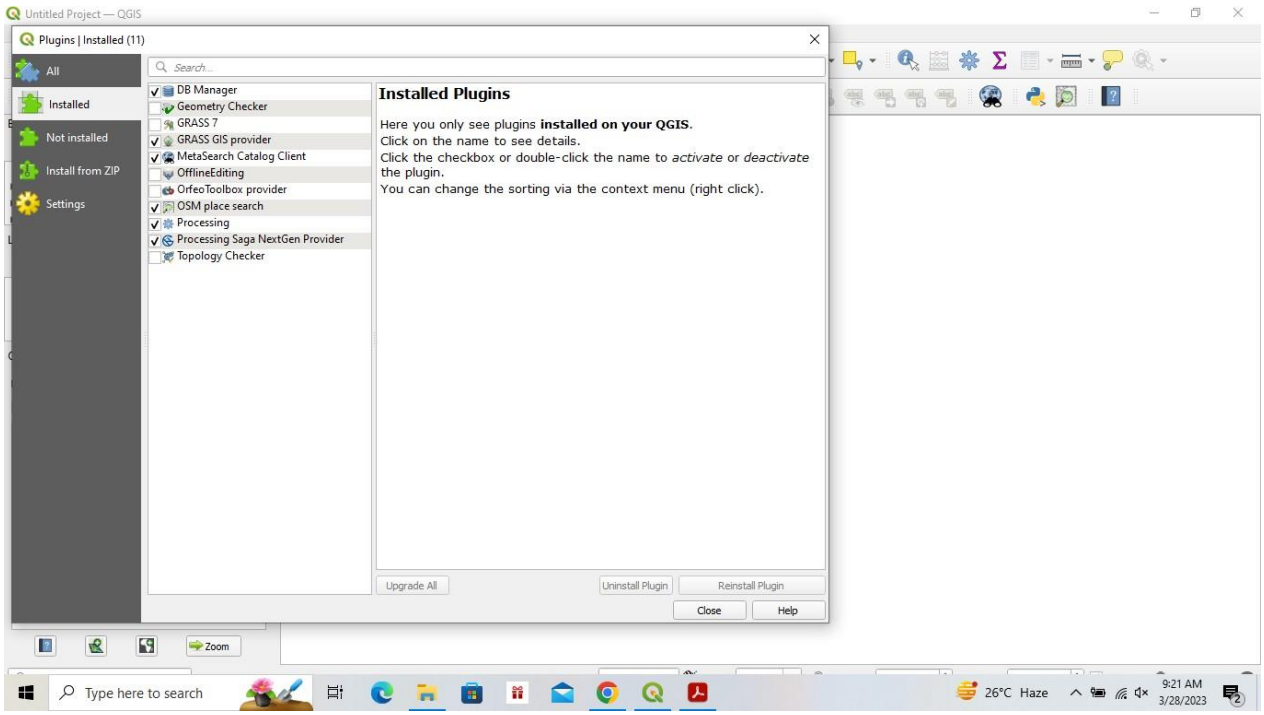
**Step 2:** Open QGIS. Click on Plugins  Manage and Install Plugins



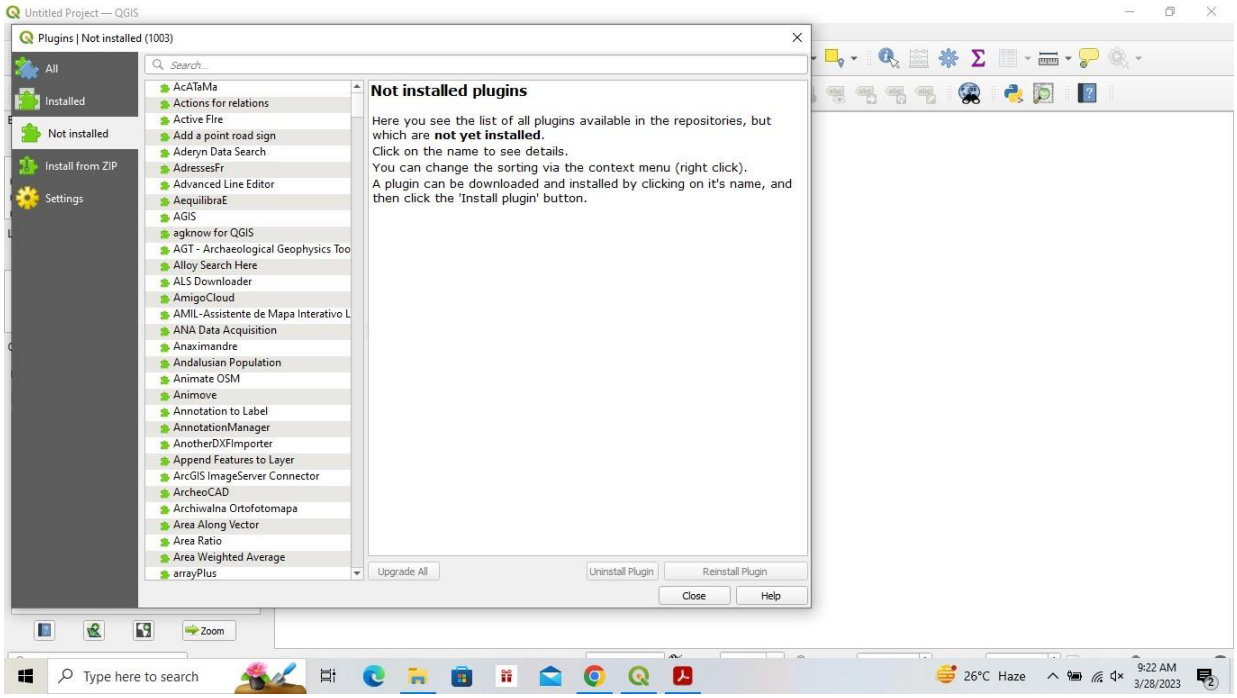

**Step 3:** After clicking on it, the following window will show up.



Step 4: To enable a plugin, check the checkbox next to the plugin and then you can use it.




**Step 5:** External plugins are available in the QGIS Plugins repository and need to be installed by you before using them.

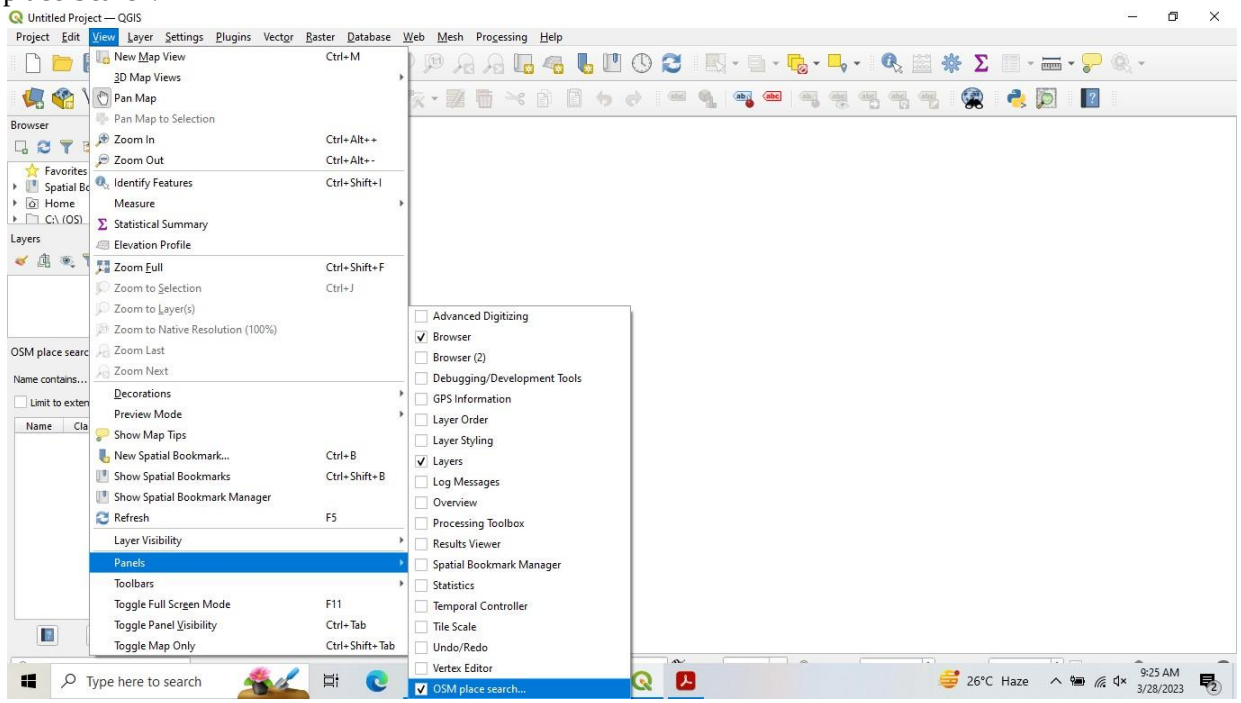


### 3d. Searching and Downloading OpenStreetMap Data

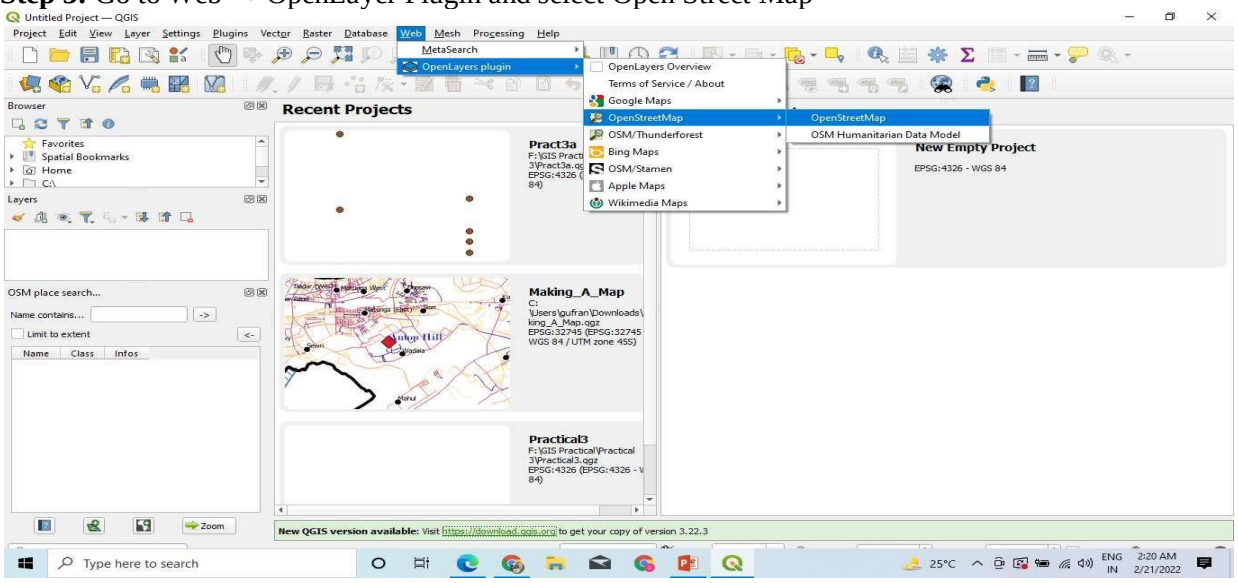
OpenStreetMap (OSM) created by Steve Coast in the UK in 2004 is a collaborative project to create a free editable map of the world. Rather than the map itself, the data generated by the project is considered its primary output. The creation and growth of OSM has been motivated by restrictions on use or availability of map information across much of the world, and the advent of inexpensive portable satellite navigation devices.

**Step 1:** Add "Open Layer (https://plugins.qgis.org/plugins/openlayers_plugin/)" and "OSM place Search" Plugin from Not Installed option from Plugin Manager Dialog Box.

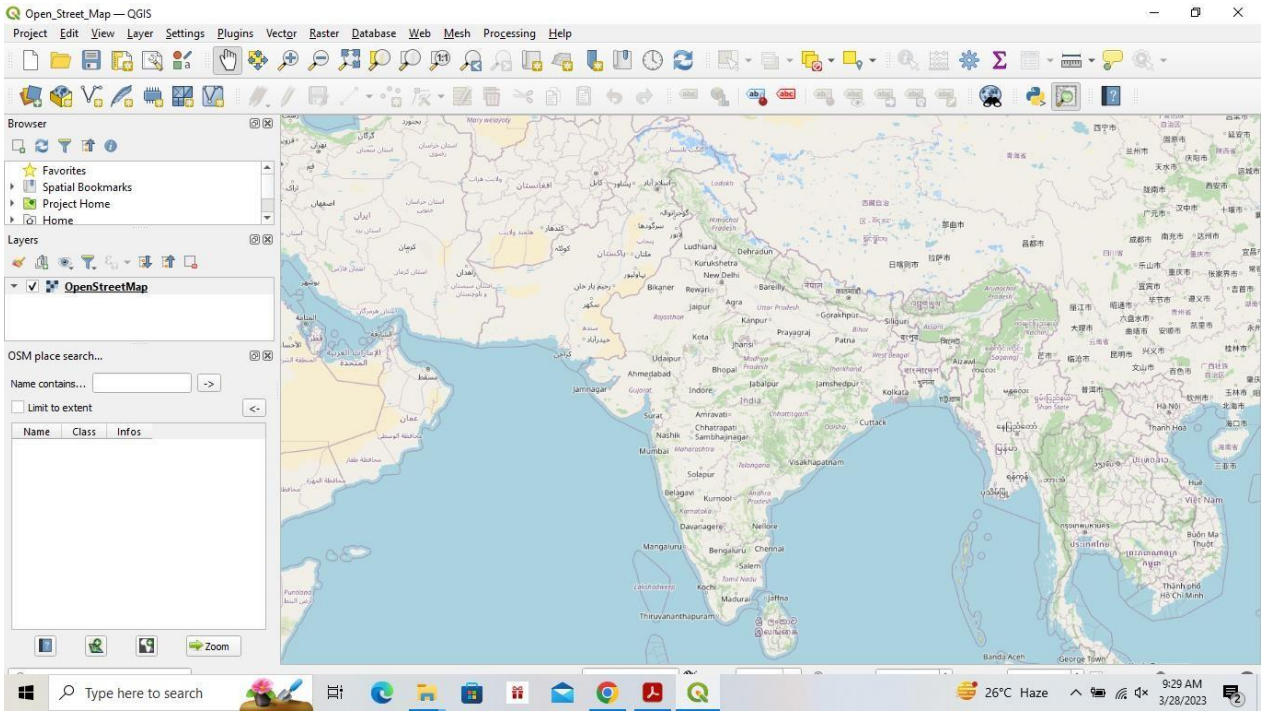
**Step 2:** The OSM Place Search plugin will install itself as a Panel in QGIS, if not go to View → Panels → select OSM
place Search.



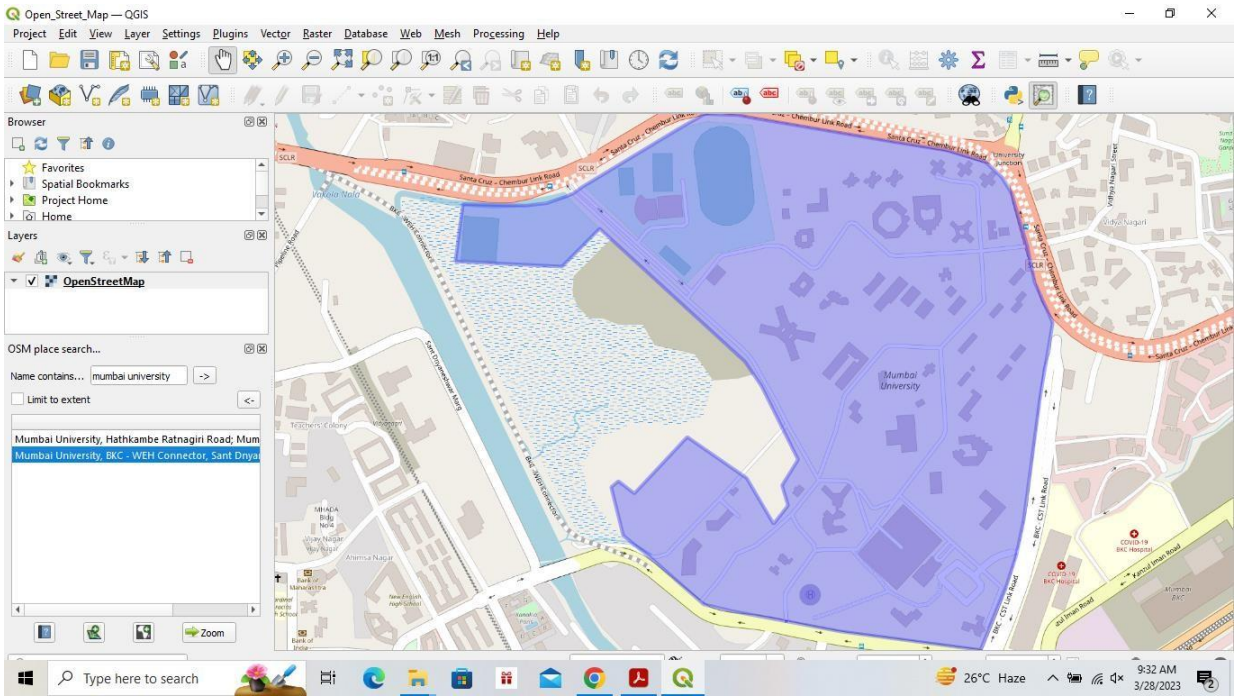

**Step 3:** Go to Web → OpenLayer Plugin and select Open Street Map



**Step 4:** A World map will appear on screen. If an error occurs in loading maps, go to project properties → CRS → Check "No CRS (or unknown/non-Earth projection)"




**Step 5:** In OSM Place search Pane → Enter Mumbai University or any place name to search.
Double click on the desired place in OSM Place search Panel or Click and press on the "Zoom" button.

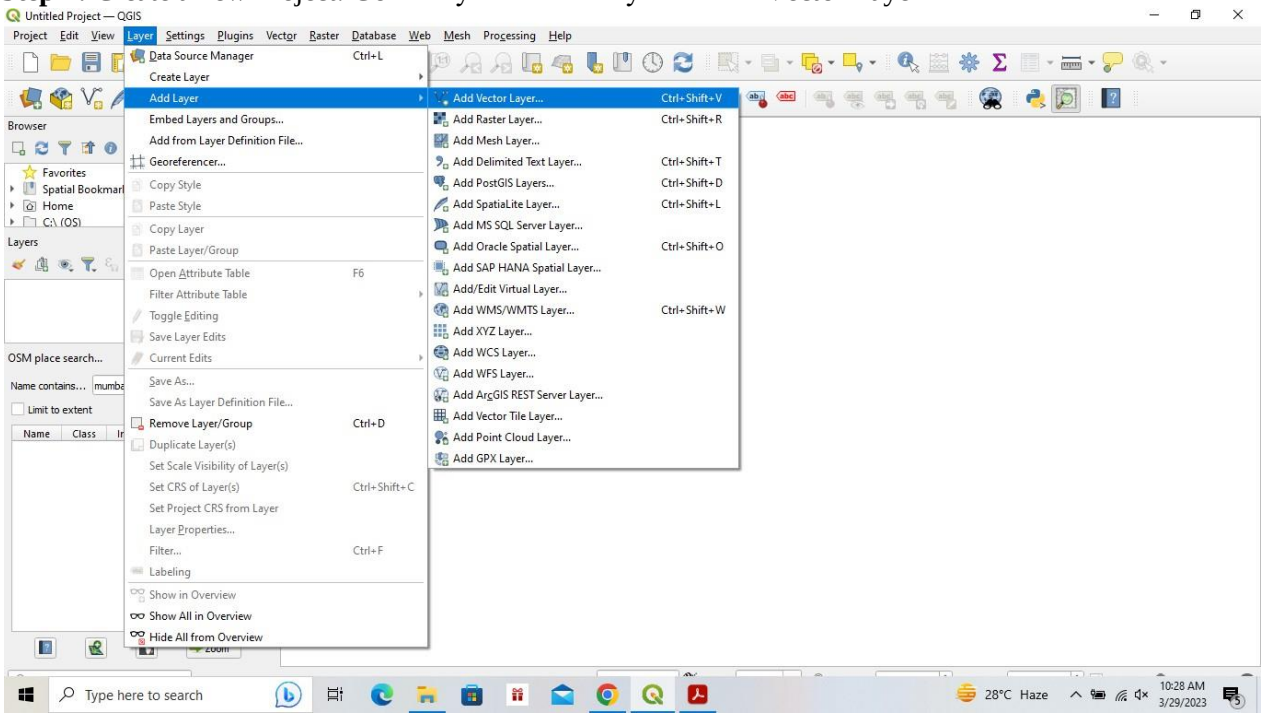


## Practical 4: Working with attributes, terrain data.

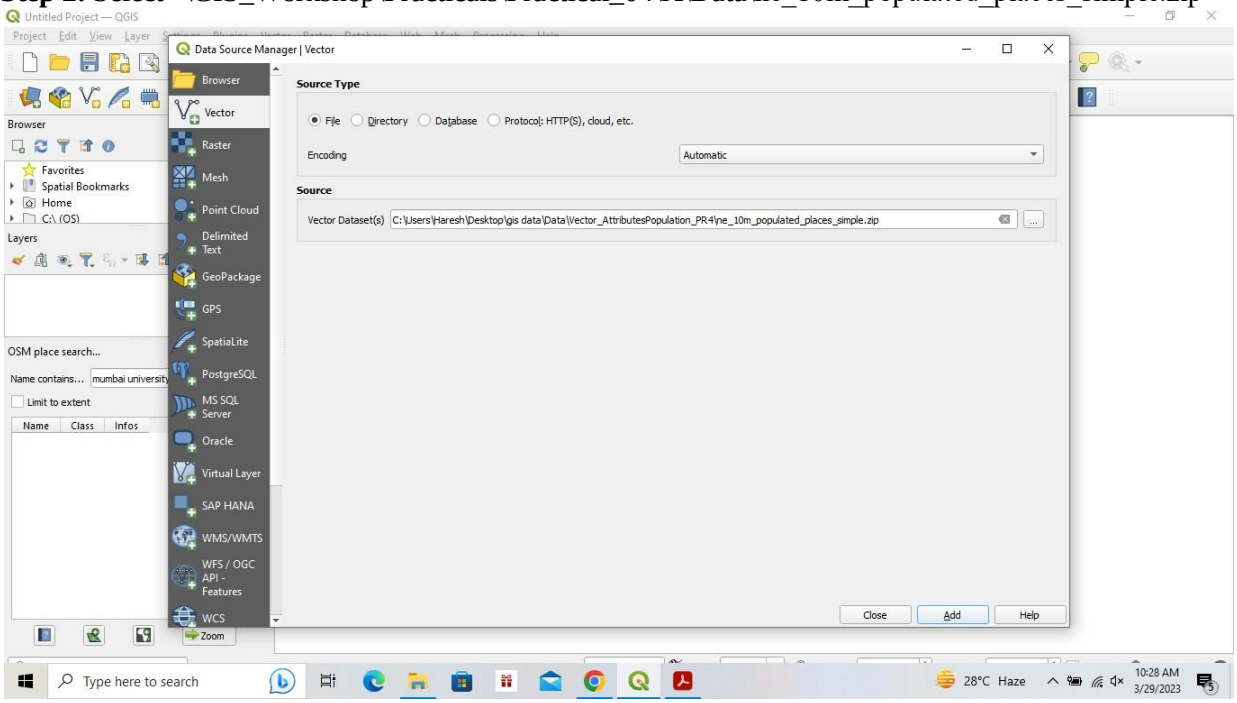
**Aim:** The aim of this practical is to understand attributes & terrain data.

a) Working with attributes

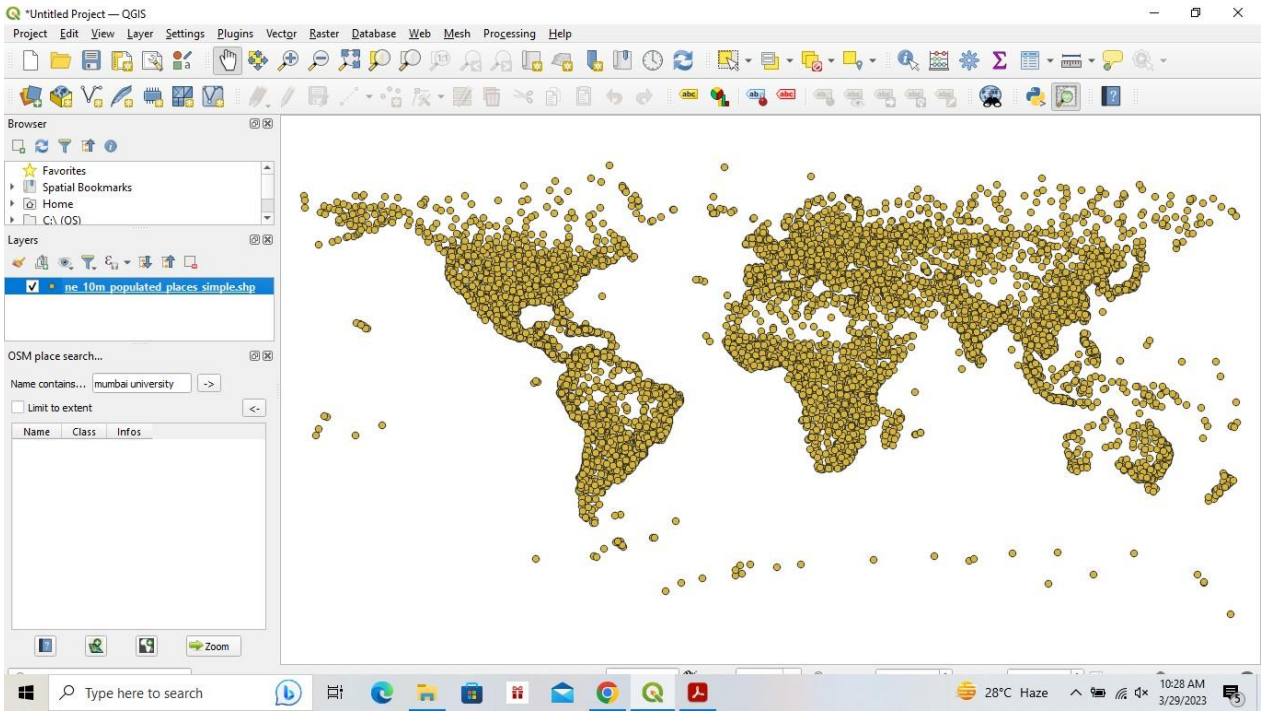
**Step 1:** Create a new Project. Go to Layer → Add Layer → Add Vector Layer



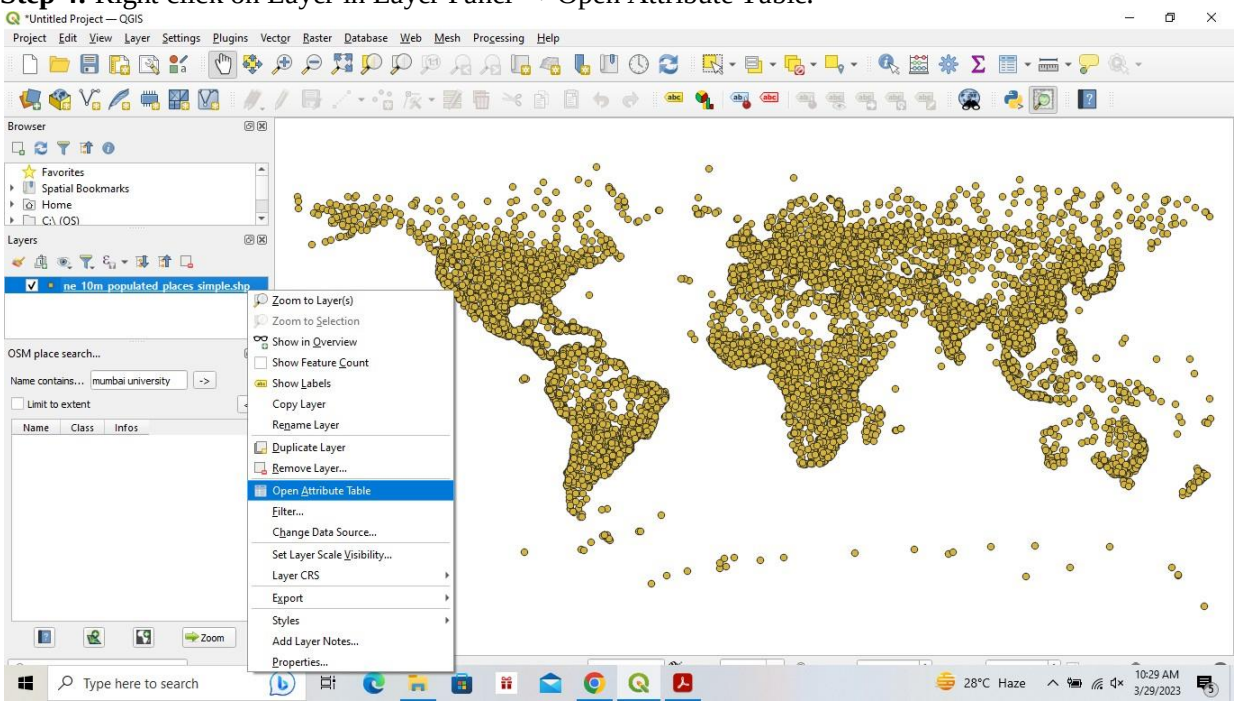

**Step 2:** Select "\GIS_Workshop\Practicals\Practical_04\A\Data\ne_10m_populated_places_simple.zip"



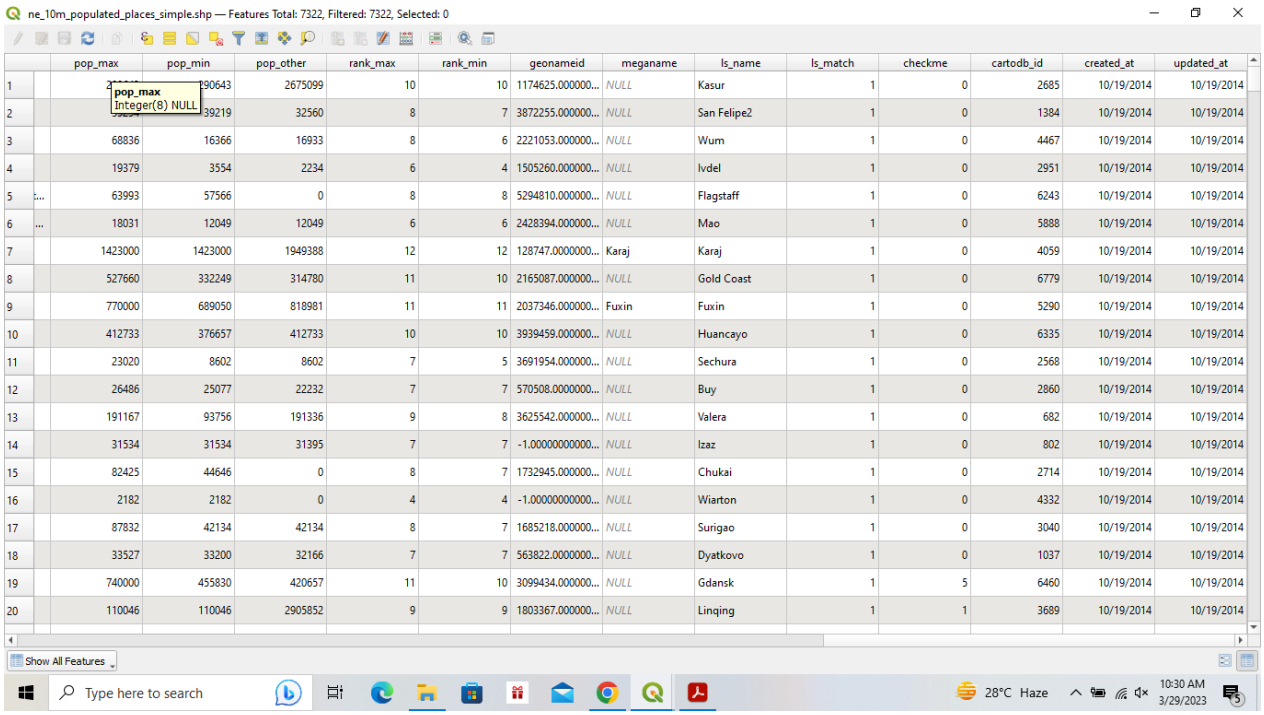
**Step 3:** After clicking on Add, the following window will show up.




**Step 4:** Right click on Layer in Layer Panel → Open Attribute Table.

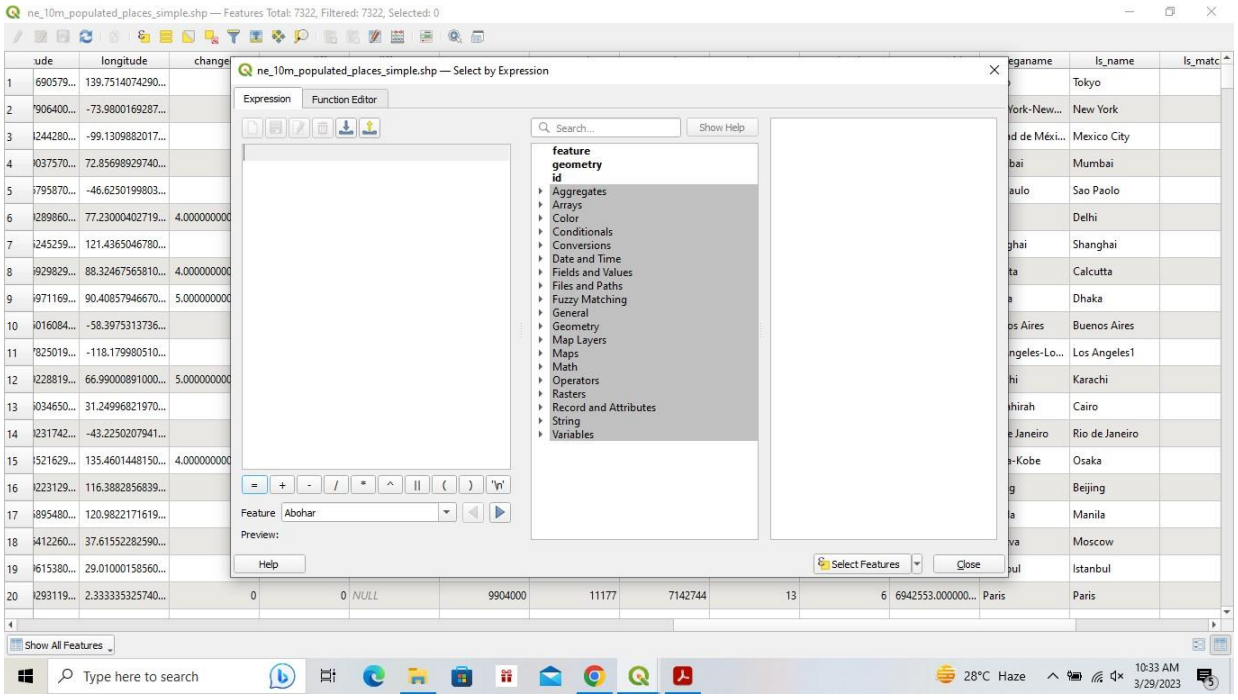


**Step 5:** Explore various attributes and their values in the Attribute table. To find the Place with maximum population click on “pop_max” file.



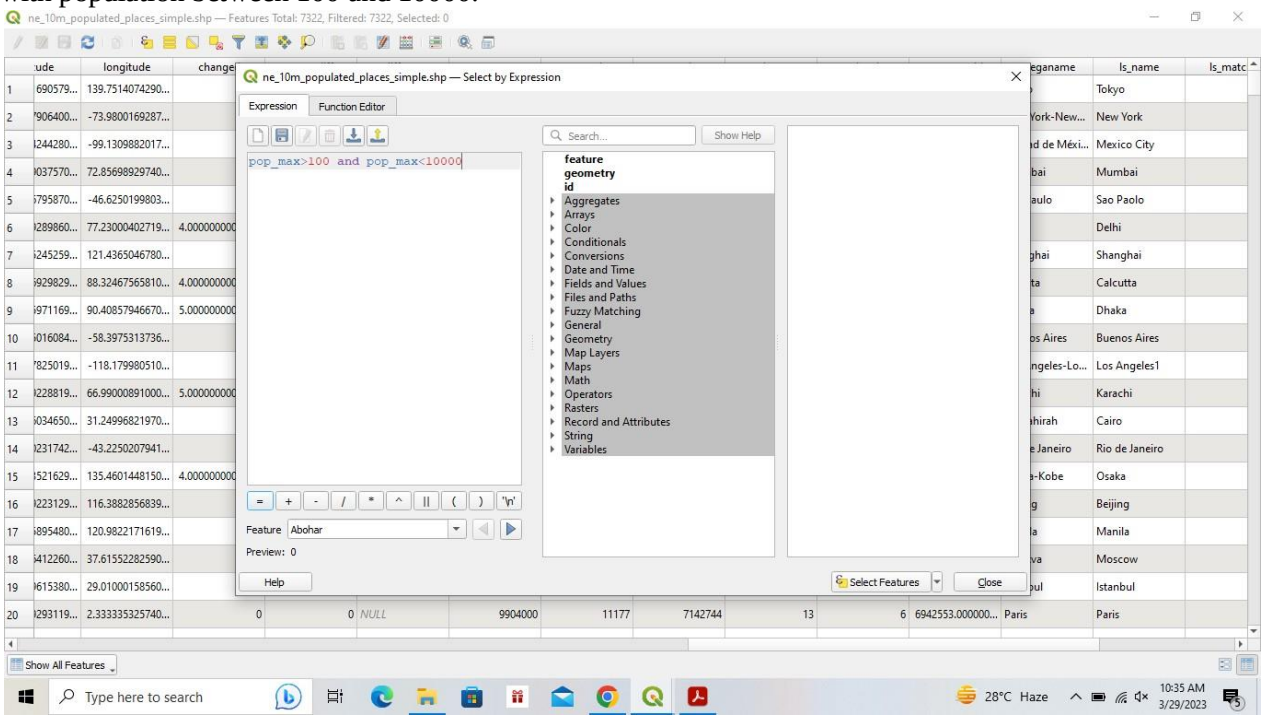

| | pop_max | pop_min | pop_other | rank_max | rank_min | geonameid | meganame | ls_name | ls_match | checkme | cartodb_id | created_at | updated_at |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 190643 | 2675099 | 10 | 10 | 1174625.000000... | NULL | Kasur | 1 | 0 | 2685 | 10/19/2014 | 10/19/2014 |
| 2 | | 39219 | 32560 | 8 | 7 | 3872255.000000... | NULL | San Felipe2 | 1 | 0 | 1384 | 10/19/2014 | 10/19/2014 |
| 3 | 68836 | 16366 | 16933 | 8 | 6 | 2221053.000000... | NULL | Wum | 1 | 0 | 4467 | 10/19/2014 | 10/19/2014 |
| 4 | 19379 | 3554 | 2234 | 6 | 4 | 1505260.000000... | NULL | Ivdel | 1 | 0 | 2951 | 10/19/2014 | 10/19/2014 |
| 5 | 63993 | 57566 | 0 | 8 | 8 | 5294810.000000... | NULL | Flagstaff | 1 | 0 | 6243 | 10/19/2014 | 10/19/2014 |
| 6 | 18031 | 12049 | 12049 | 6 | 6 | 2428394.000000... | NULL | Mao | 1 | 0 | 5888 | 10/19/2014 | 10/19/2014 |
| 7 | 1423000 | 1423000 | 1949388 | 12 | 12 | 128747.0000000... | Karaj | Karaj | 1 | 0 | 4059 | 10/19/2014 | 10/19/2014 |
| 8 | 527660 | 332249 | 314780 | 11 | 10 | 2165087.000000... | NULL | Gold Coast | 1 | 0 | 6779 | 10/19/2014 | 10/19/2014 |
| 9 | 770000 | 689050 | 818981 | 11 | 11 | 2037346.000000... | Fuxin | Fuxin | 1 | 0 | 5290 | 10/19/2014 | 10/19/2014 |
| 10 | 412733 | 376657 | 412733 | 10 | 10 | 3939459.000000... | NULL | Huancayo | 1 | 0 | 6335 | 10/19/2014 | 10/19/2014 |
| 11 | 23020 | 8602 | 8602 | 7 | 5 | 3691954.000000... | NULL | Sechura | 1 | 0 | 2568 | 10/19/2014 | 10/19/2014 |
| 12 | 26486 | 25077 | 22232 | 7 | 7 | 570508.0000000... | NULL | Buy | 1 | 0 | 2860 | 10/19/2014 | 10/19/2014 |
| 13 | 191167 | 93756 | 191336 | 9 | 8 | 3625542.000000... | NULL | Valera | 1 | 0 | 682 | 10/19/2014 | 10/19/2014 |
| 14 | 31534 | 31534 | 31395 | 7 | 7 | -1.0000000000... | NULL | Izaz | 1 | 0 | 802 | 10/19/2014 | 10/19/2014 |
| 15 | 82425 | 44646 | 0 | 8 | 7 | 1732945.000000... | NULL | Chukai | 1 | 0 | 2714 | 10/19/2014 | 10/19/2014 |
| 16 | 2182 | 2182 | 0 | 4 | 4 | -1.0000000000... | NULL | Wiarton | 1 | 0 | 4332 | 10/19/2014 | 10/19/2014 |
| 17 | 87832 | 42134 | 42134 | 8 | 7 | 1685218.000000... | NULL | Surigao | 1 | 0 | 3040 | 10/19/2014 | 10/19/2014 |
| 18 | 33527 | 33200 | 32166 | 7 | 7 | 563822.0000000... | NULL | Dyatkovo | 1 | 0 | 1037 | 10/19/2014 | 10/19/2014 |
| 19 | 740000 | 455830 | 420657 | 11 | 10 | 3099434.000000... | NULL | Gdansk | 1 | 5 | 6460 | 10/19/2014 | 10/19/2014 |
| 20 | 110046 | 110046 | 2905852 | 9 | 9 | 1803367.000000... | NULL | Linqing | 1 | 1 | 3689 | 10/19/2014 | 10/19/2014 |

**Step 6:** On clicking the Select feature using expression button the following window will appear.

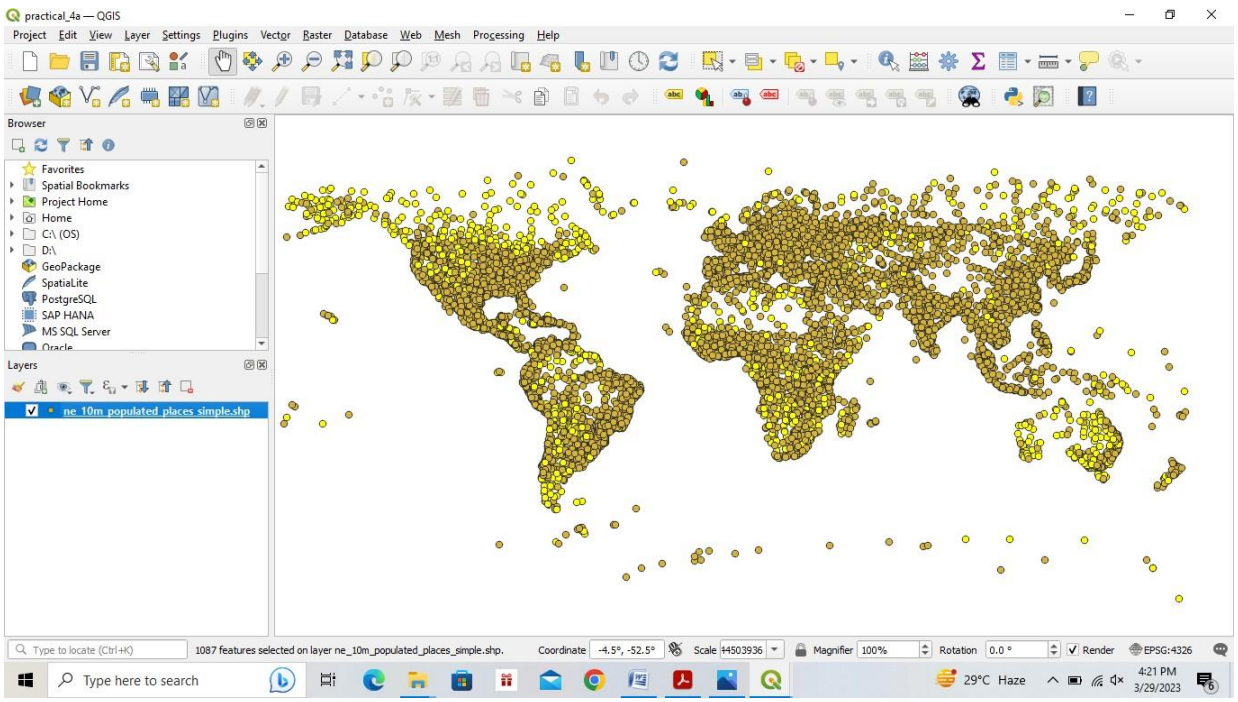



| | ude | longitude | change | | | | | | | | eganame | ls_name | ls_matc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 690579... | 139.7514074290... | | | | | | | | | | Tokyo | |
| 2 | 906400... | -73.9800169287... | | | | | | | | | York-New... | New York | |
| 3 | 244280... | -99.1309882017... | | | | | | | | | d de Méxi... | Mexico City | |
| 4 | 037570... | 72.85698929740... | | | | | | | | | bai | Mumbai | |
| 5 | 795870... | -46.6250199803... | | | | | | | | | aulo | Sao Paolo | |
| 6 | 289860... | 77.23000402719... | 4.000000000 | | | | | | | | | Delhi | |
| 7 | 245259... | 121.4365046780... | | | | | | | | | ghai | Shanghai | |
| 8 | 929829... | 88.32467565810... | 4.000000000 | | | | | | | | ta | Calcutta | |
| 9 | 971169... | 90.40857946670... | 5.000000000 | | | | | | | | a | Dhaka | |
| 10 | 016084... | -58.3975313736... | | | | | | | | | os Aires | Buenos Aires | |
| 11 | 825019... | -118.179980510... | | | | | | | | | ngeles-Lo... | Los Angeles1 | |
| 12 | 228819... | 66.99000891000... | 5.000000000 | | | | | | | | hi | Karachi | |
| 13 | 034650... | 31.24996821970... | | | | | | | | | ahirah | Cairo | |
| 14 | 231742... | -43.2250207941... | | | | | | | | | e Janeiro | Rio de Janeiro | |
| 15 | 521629... | 135.4601448150... | 4.000000000 | | | | | | | | a-Kobe | Osaka | |
| 16 | 223129... | 116.3882856839... | | | | | | | | | g | Beijing | |
| 17 | 895480... | 120.9822171619... | | | | | | | | | a | Manila | |
| 18 | 412260... | 37.61552282590... | | | | | | | | | va | Moscow | |
| 19 | 615380... | 29.01000158560... | | | | | | | | | ul | Istanbul | |
| 20 | 293119... | 2.333335325740... | 0 | 0 | NULL | 9904000 | 11177 | 7142744 | 13 | 6 | 6942553.000000... | Paris | Paris |

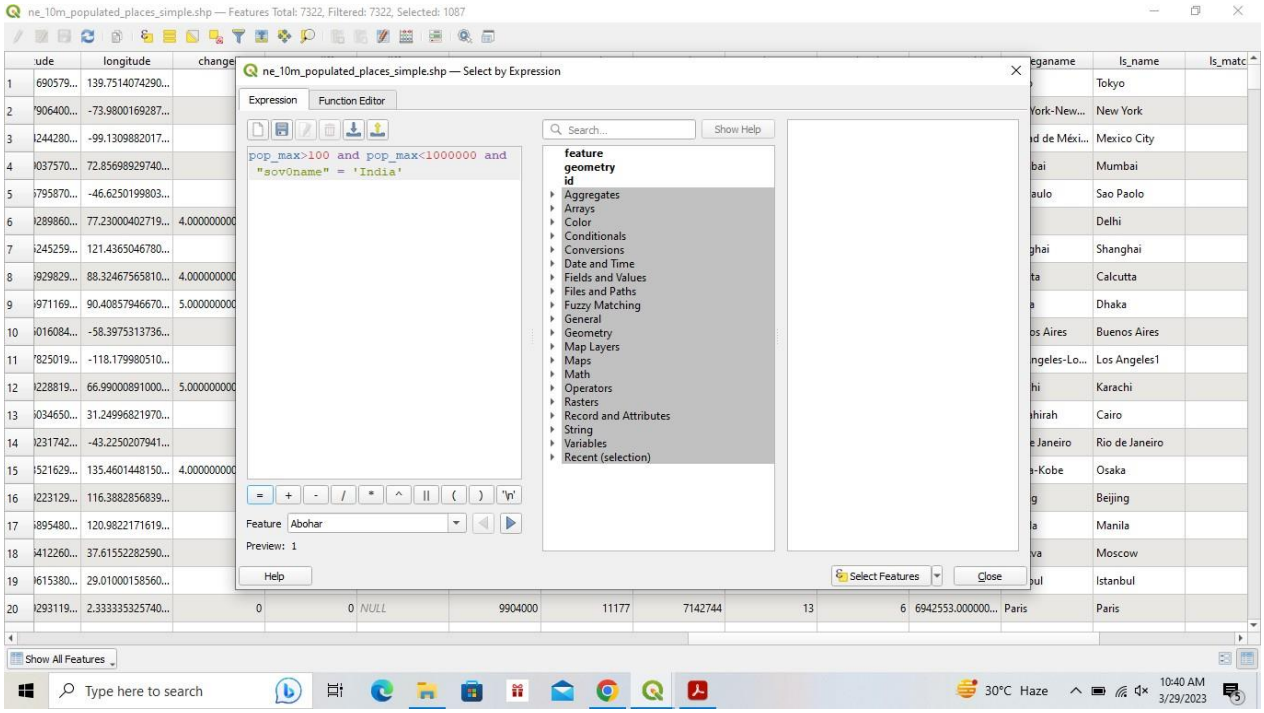
**Step 7:** Enter pop_max>100 and pop_max<10000 and click “select features” button to get all the places with population between 100 and 10000.

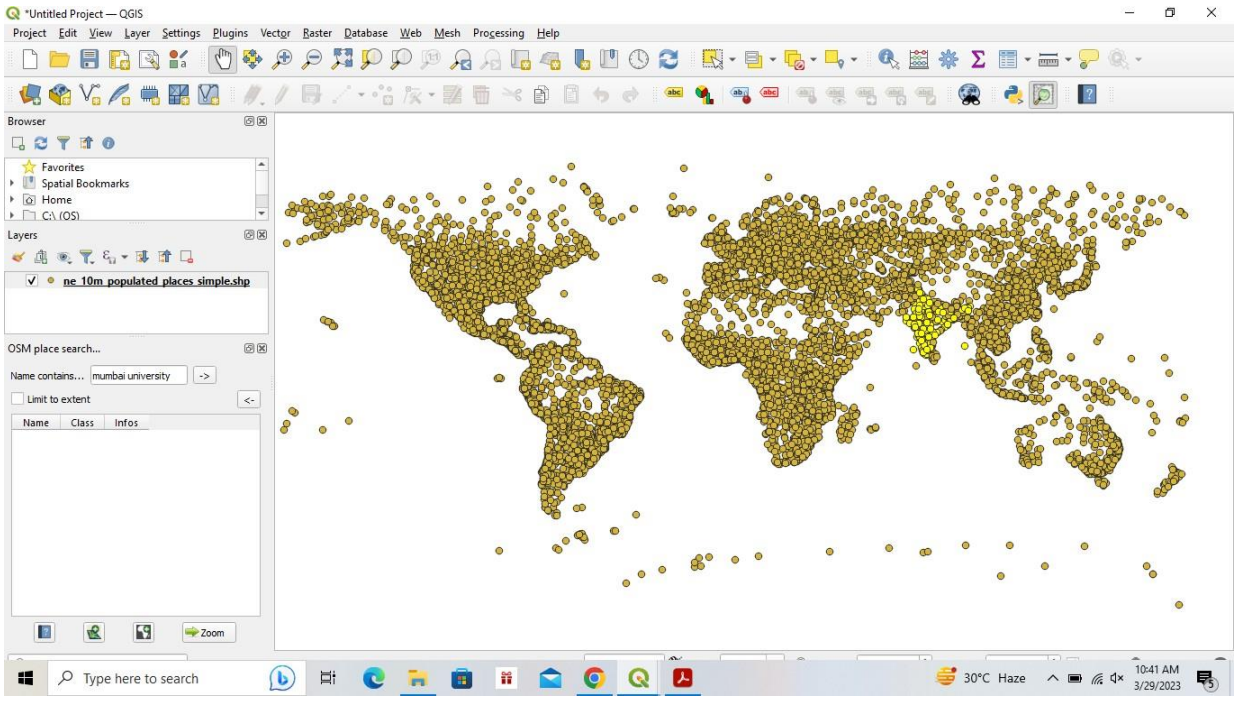



**Step 8:** Enter pop_max>100 and pop_max<10000 and click “select features” button to get all the places with population between 100 and 10000 and click close. The places matching the criteria will appear in different color.

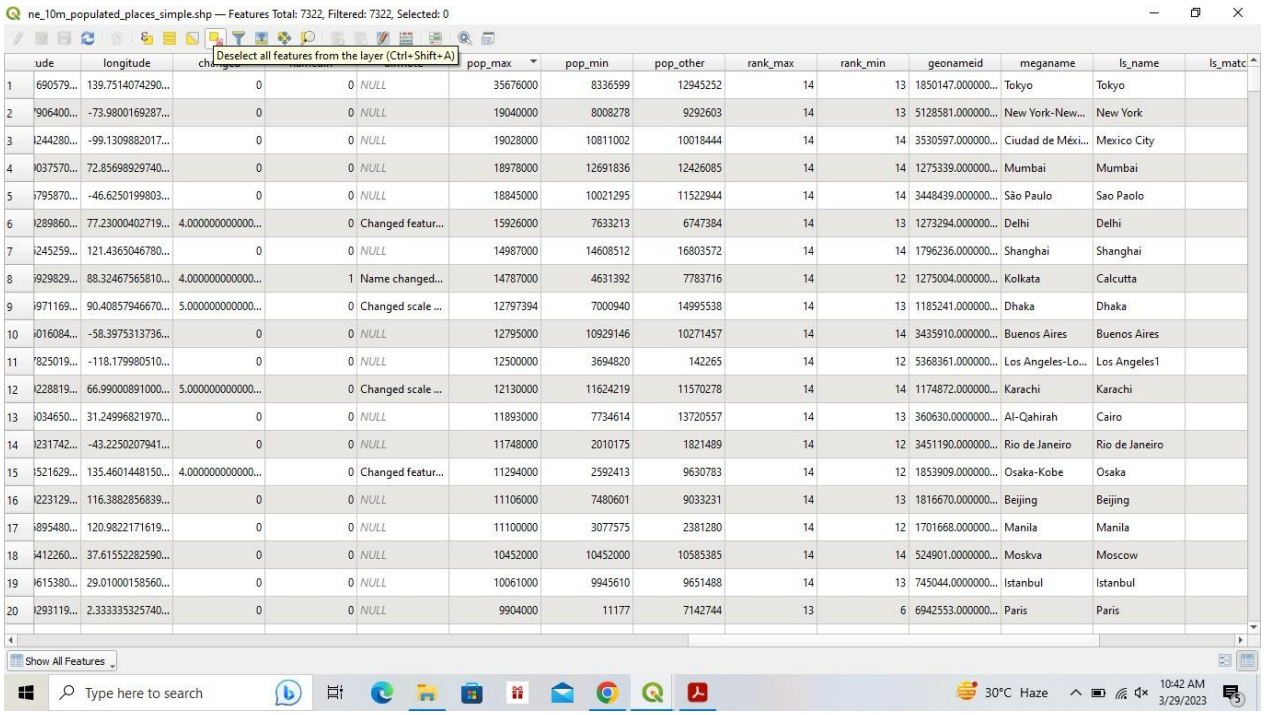


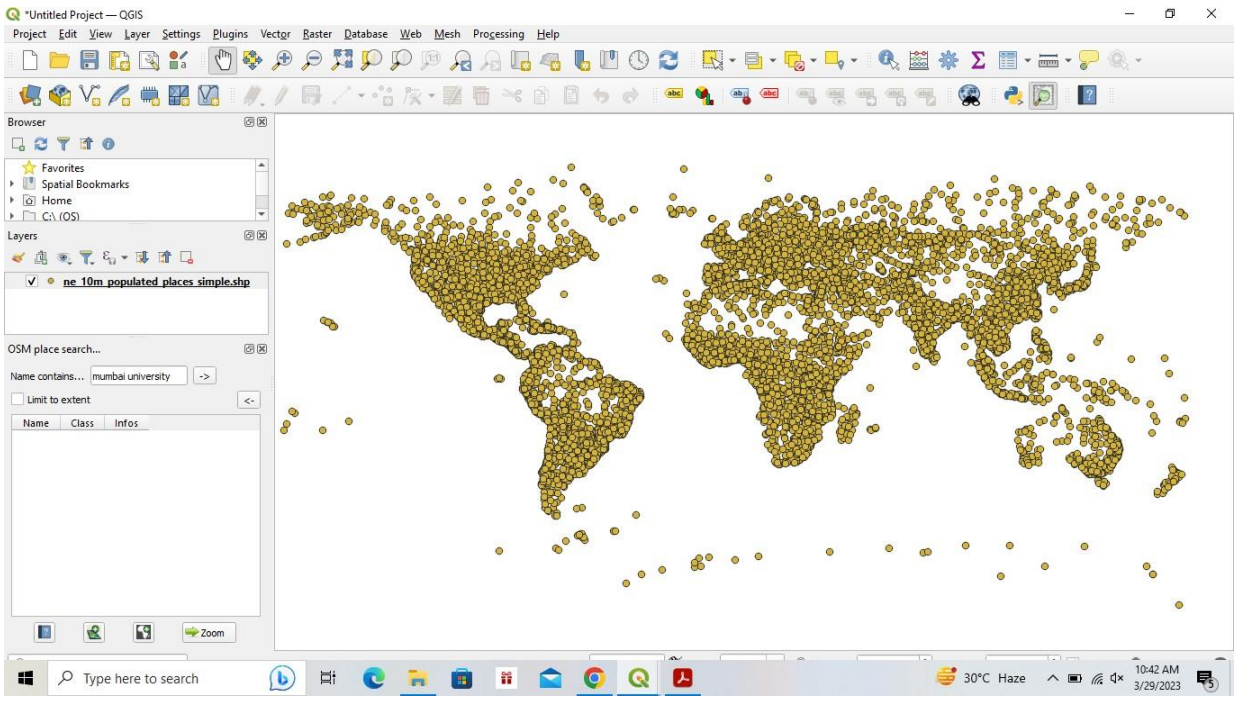
**Step 9:** Different queries can be performed using the dataset. Enter pop_max>100 and pop_max<1000000 and "sov0name" = 'India' and click "select features" button to get all the places with population between 100 and 1000000 and click close. The places matching the criteria will appear in different color.



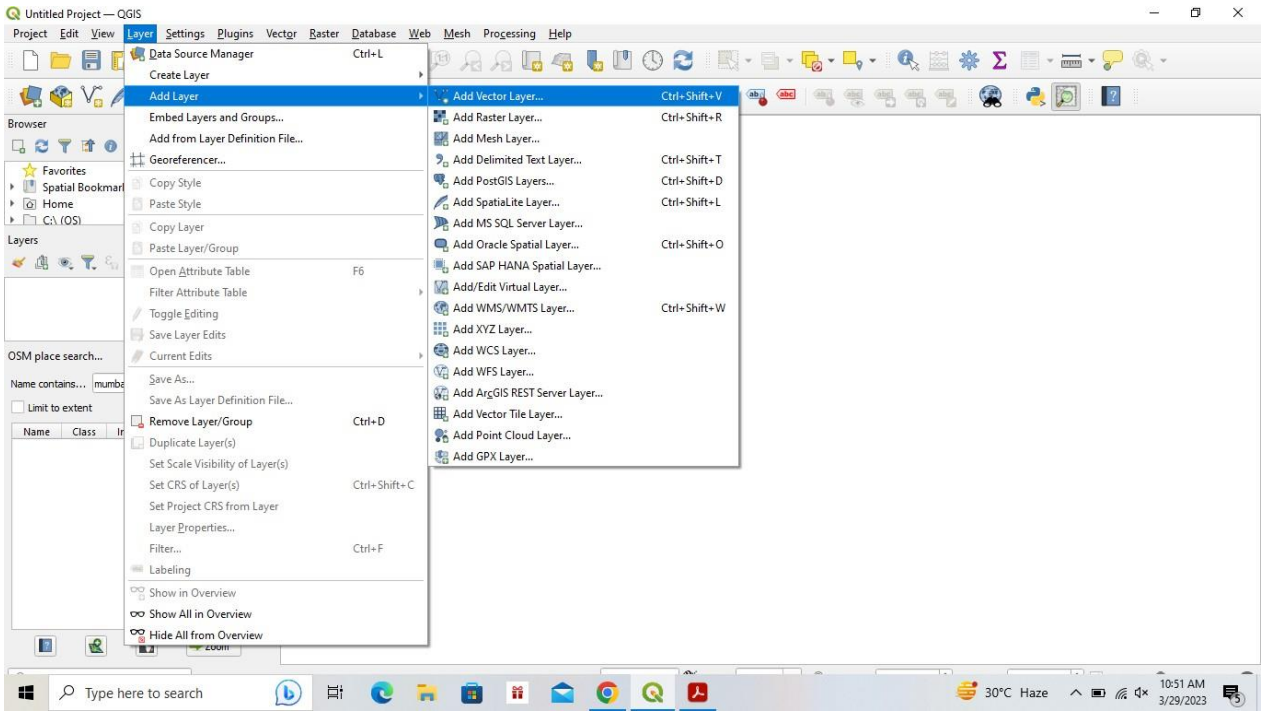
**Step 10:** Use the deselect button to deselect the feature to be rendered in original color.



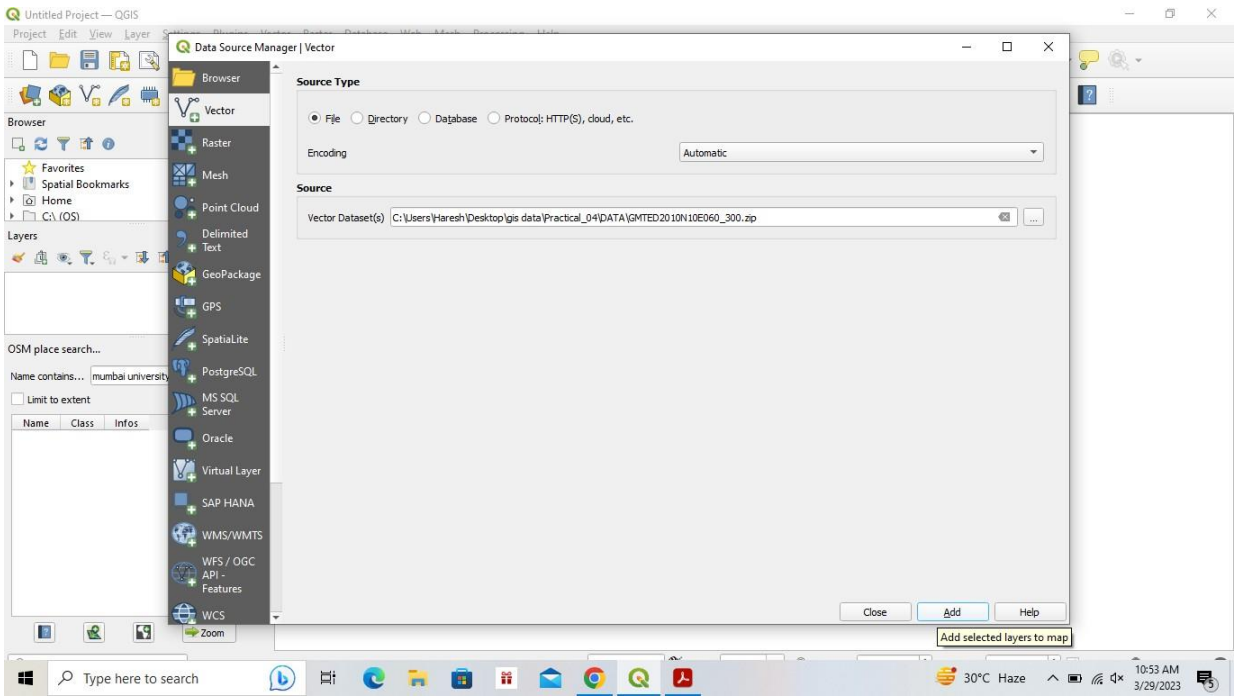



## 4b) Terrain Data and Hill shade analysis

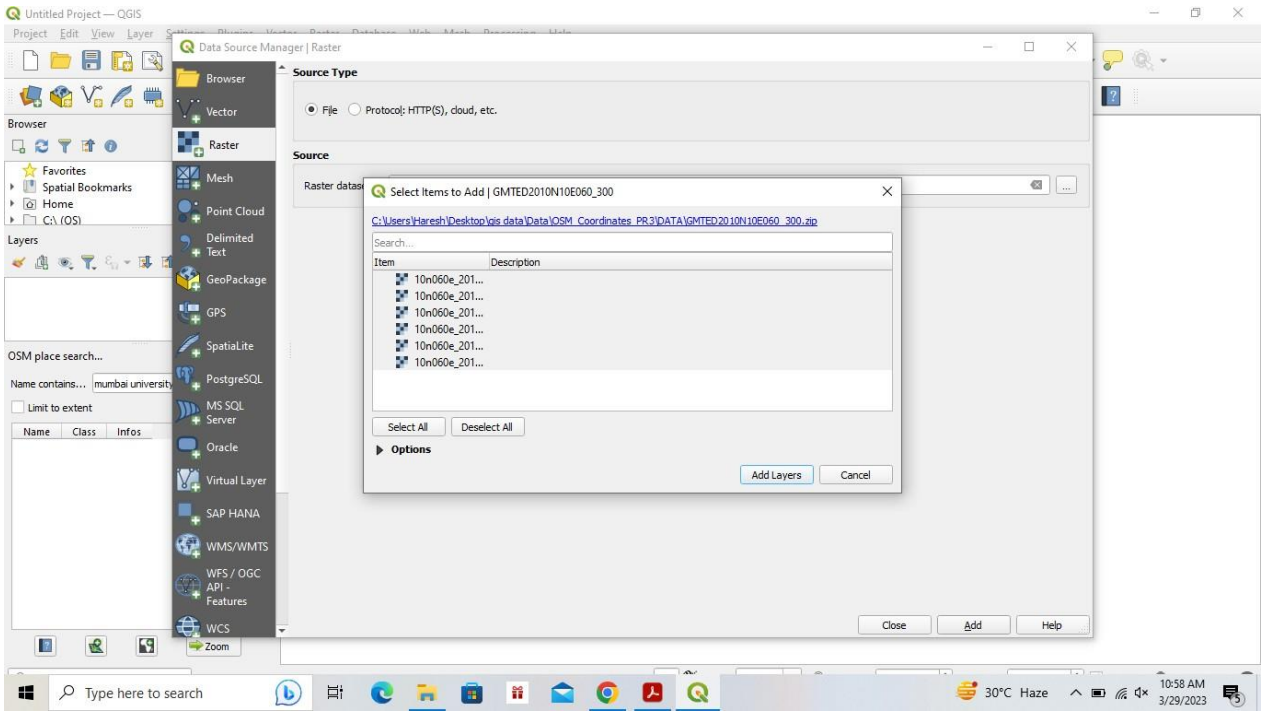
**Step 1:** Create a new Project. Go to Layer → Add Layer → Add Raster Layer



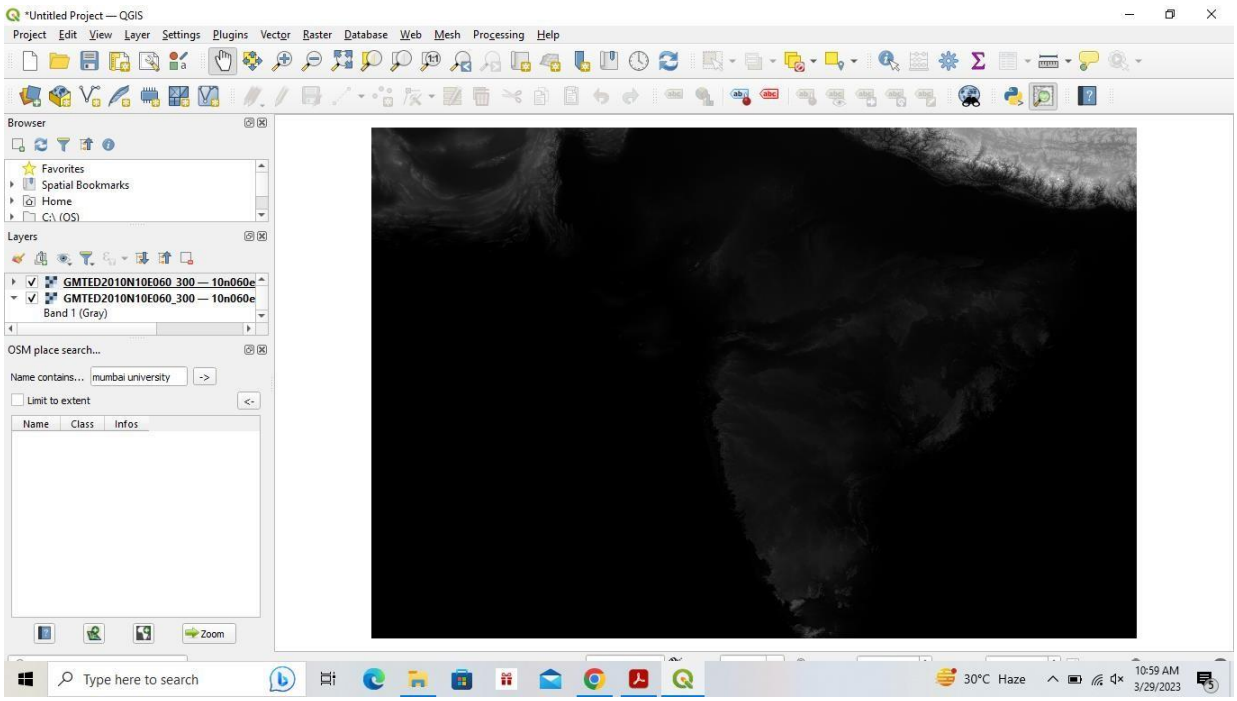

**Step 2:** Select "\GIS_Workshop\Practicals\Practical_04\A\Data\GMTED2010N10E060_300.zip"



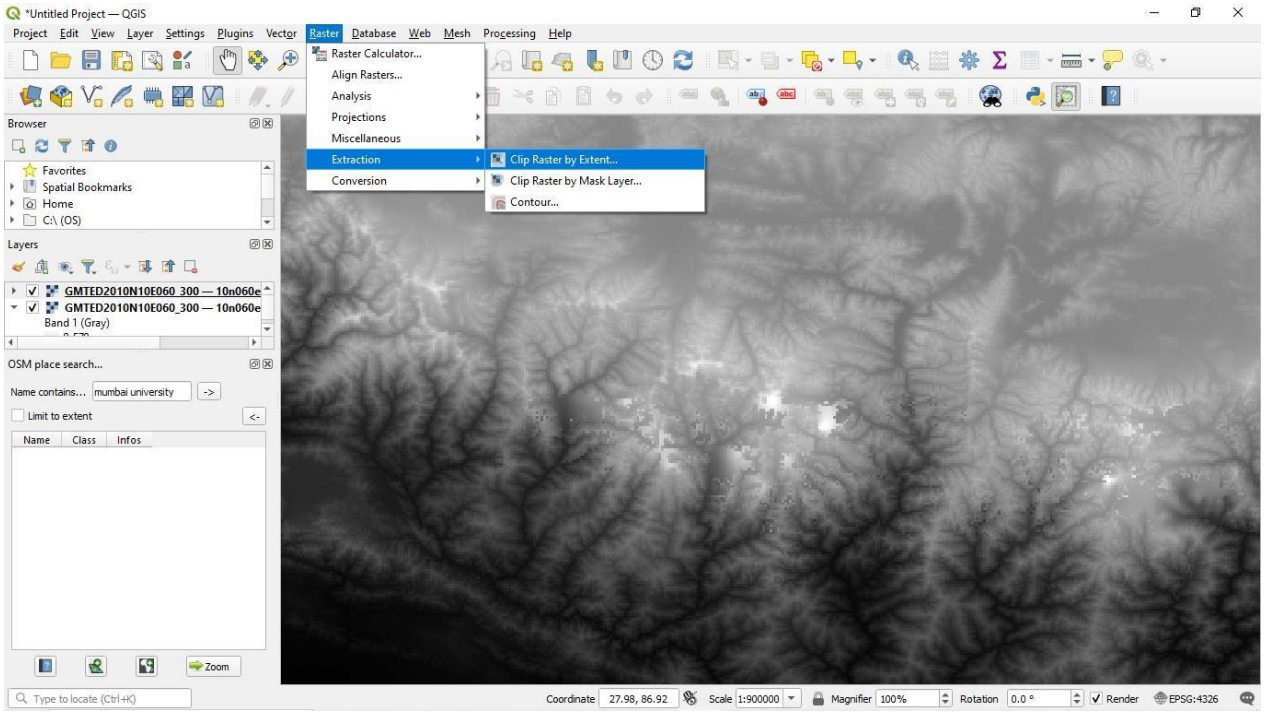
**Step 3:** After clicking on Add, the following window will show up.



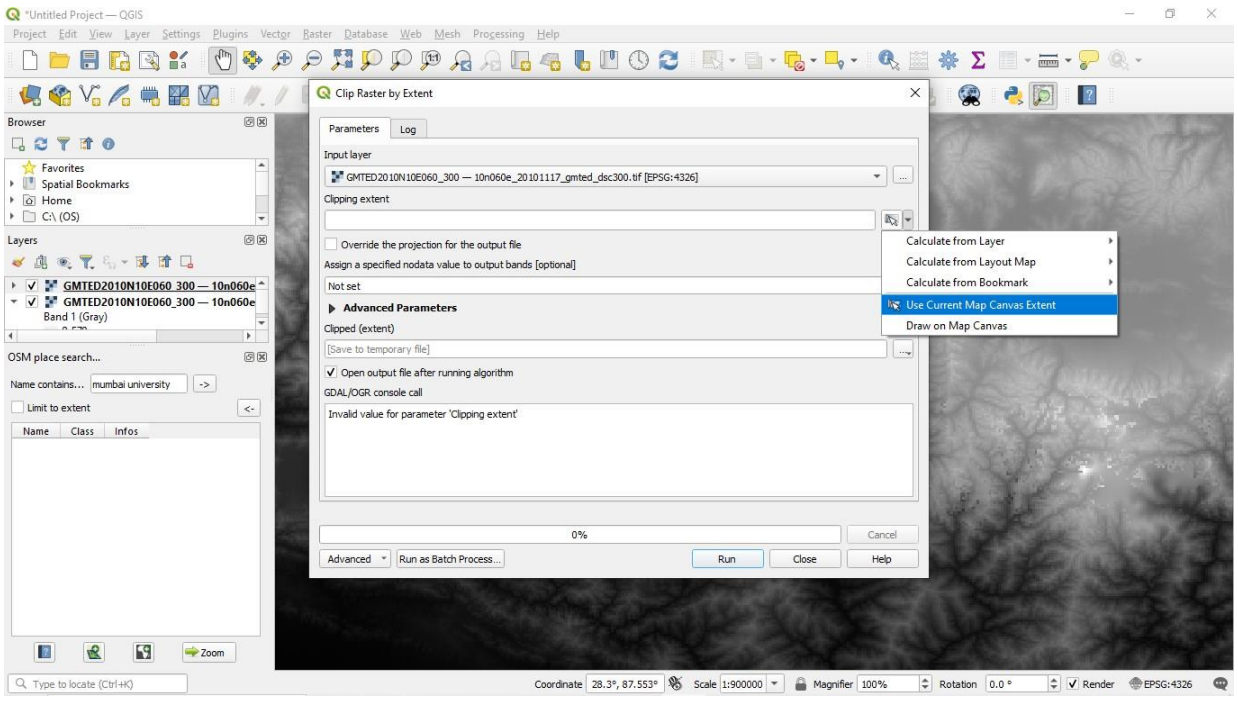

**Step 4:** Click Add Layers and close the Data Source Manager. Your terrain data is loaded.



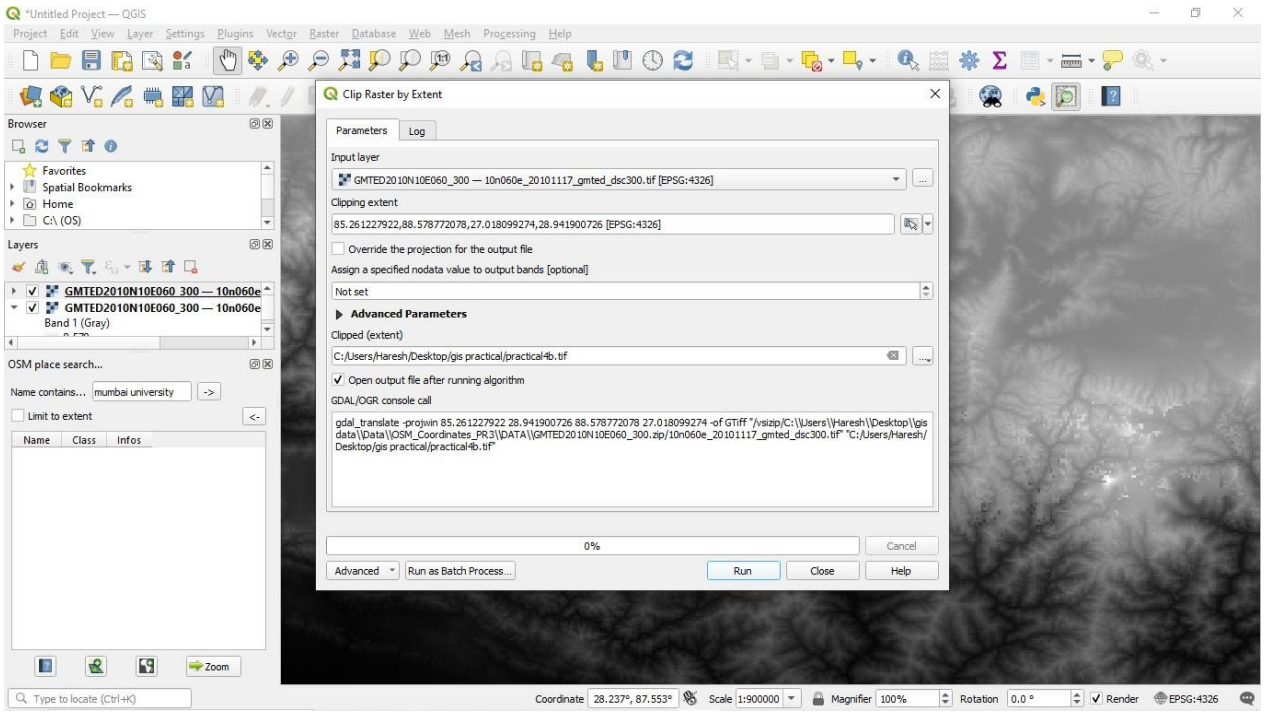
**Step 5:** Enter 86.92, 27.98 in the coordinate field, Scale 900000 and Magnifier 100% at the bottom of QGIS. Select Raster □ Extraction □ Clip raster by extent.



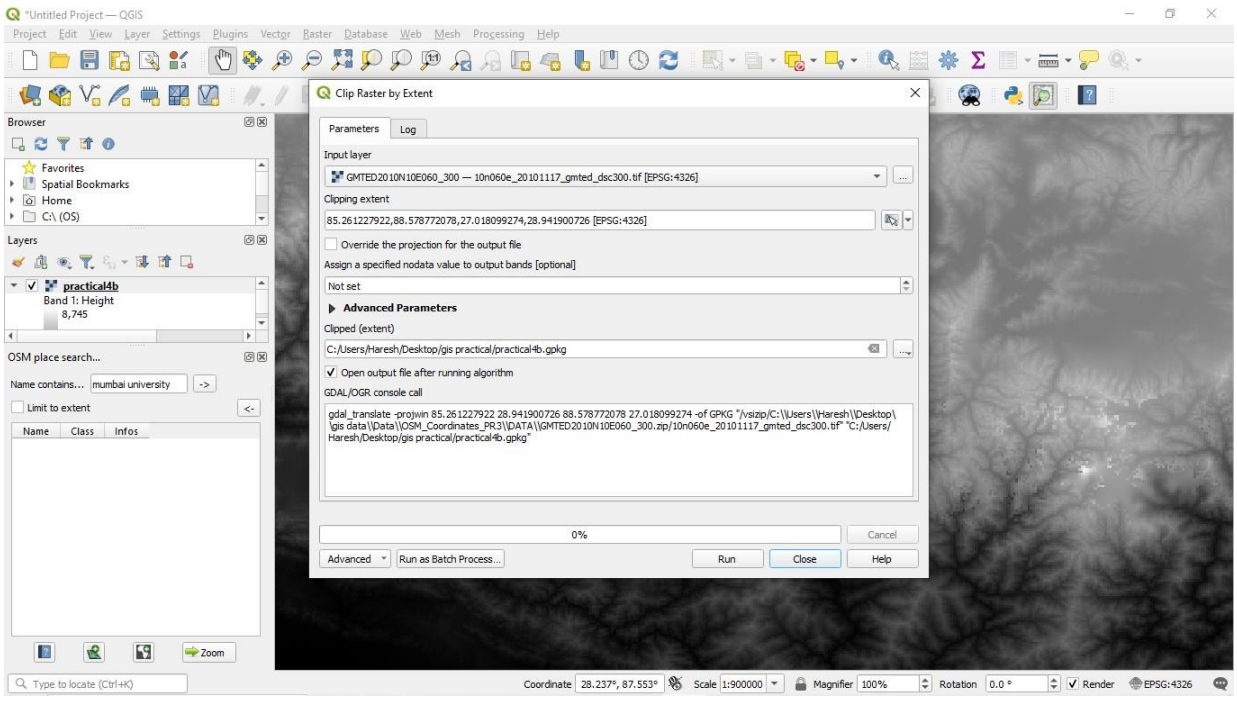

**Step 6:** Select the clipping area by selecting the option Use Map Canvas Extent if the visible part of map is to be selected or manually select an area on canvas by using Select Extent on Canvas.



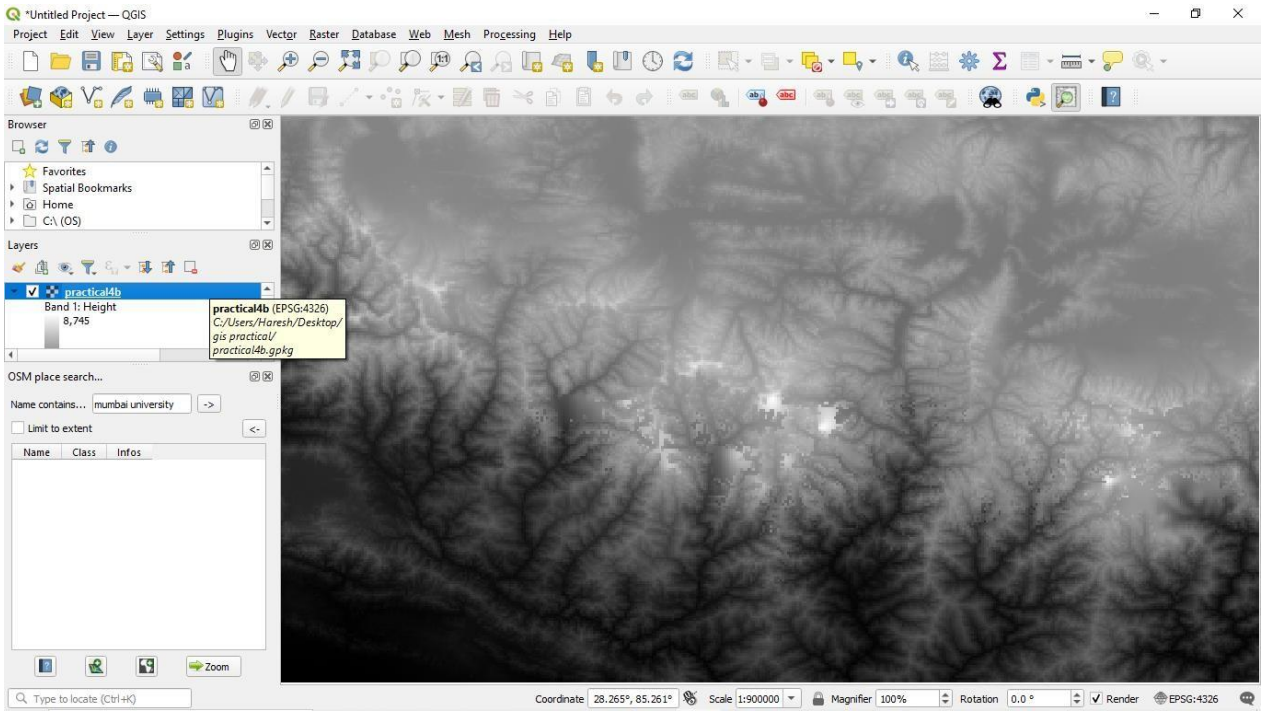
**Step 7:** Select the location and file name for storing clipped raster layer. Press RUN.



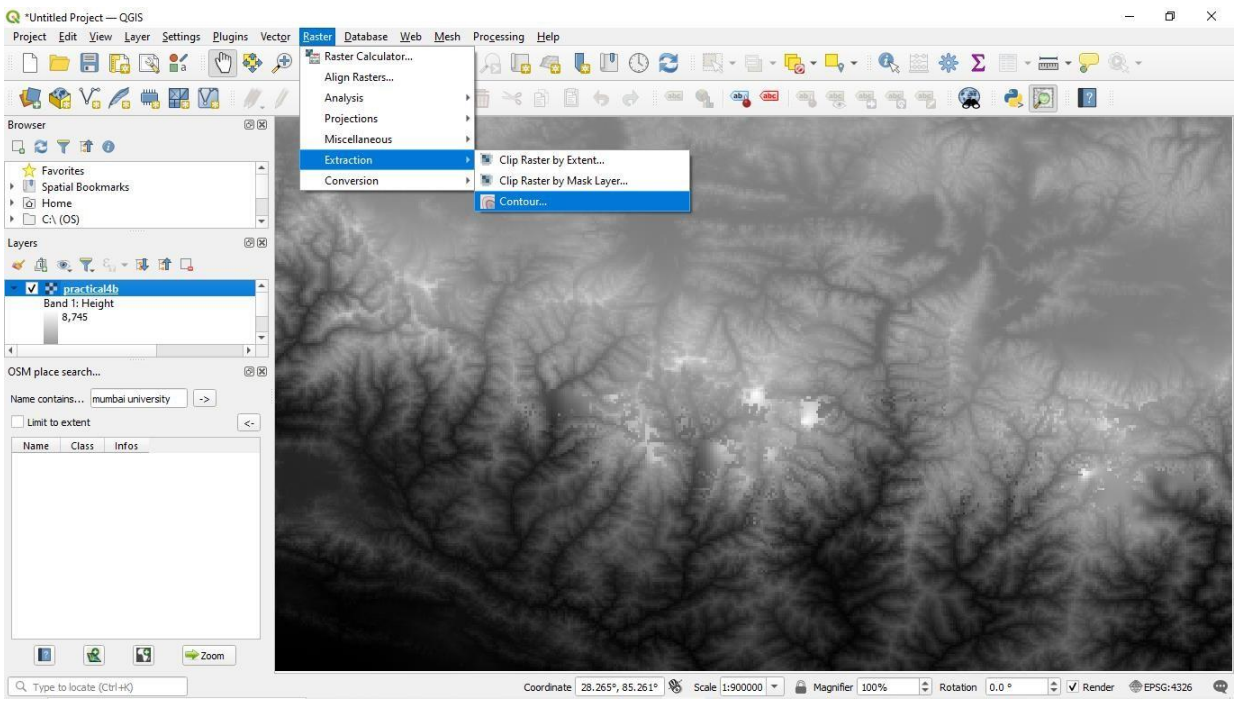

**Step 8:** After pressing the RUN the following window will appear and layer will be created for the given file name.



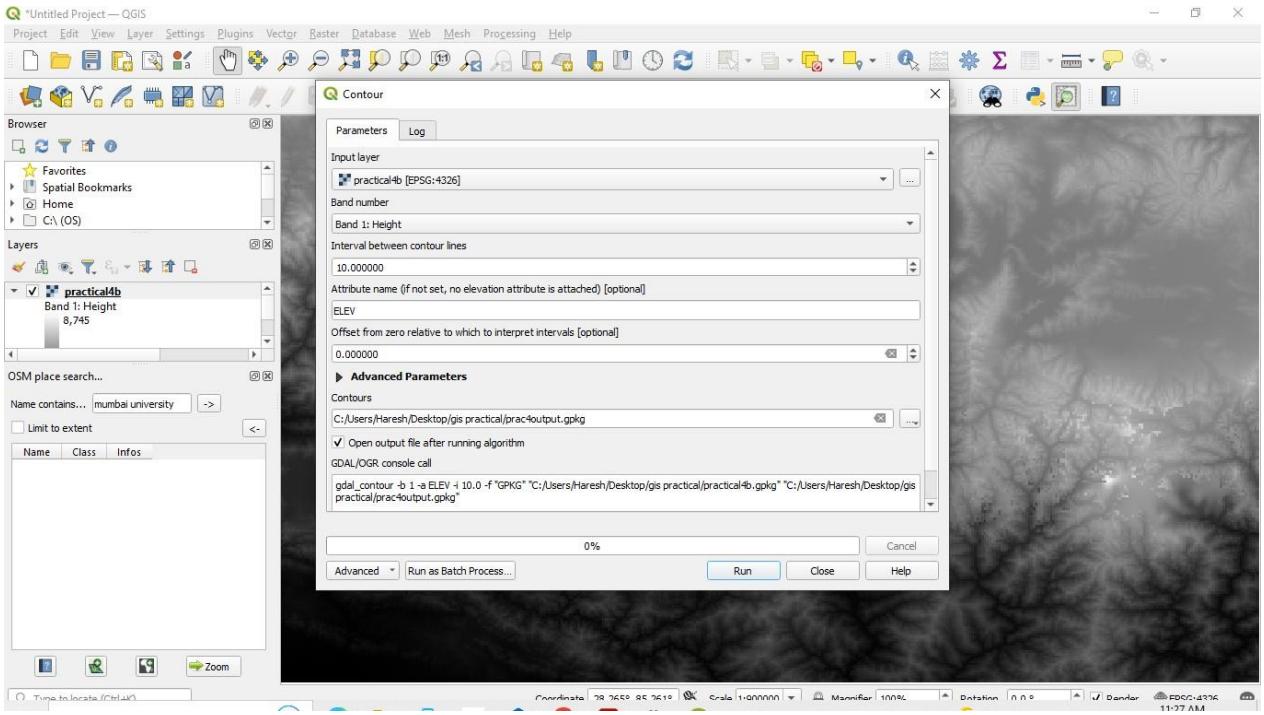
**Step 9:** Deselect the original layer and keep the clipped one under layer tab.

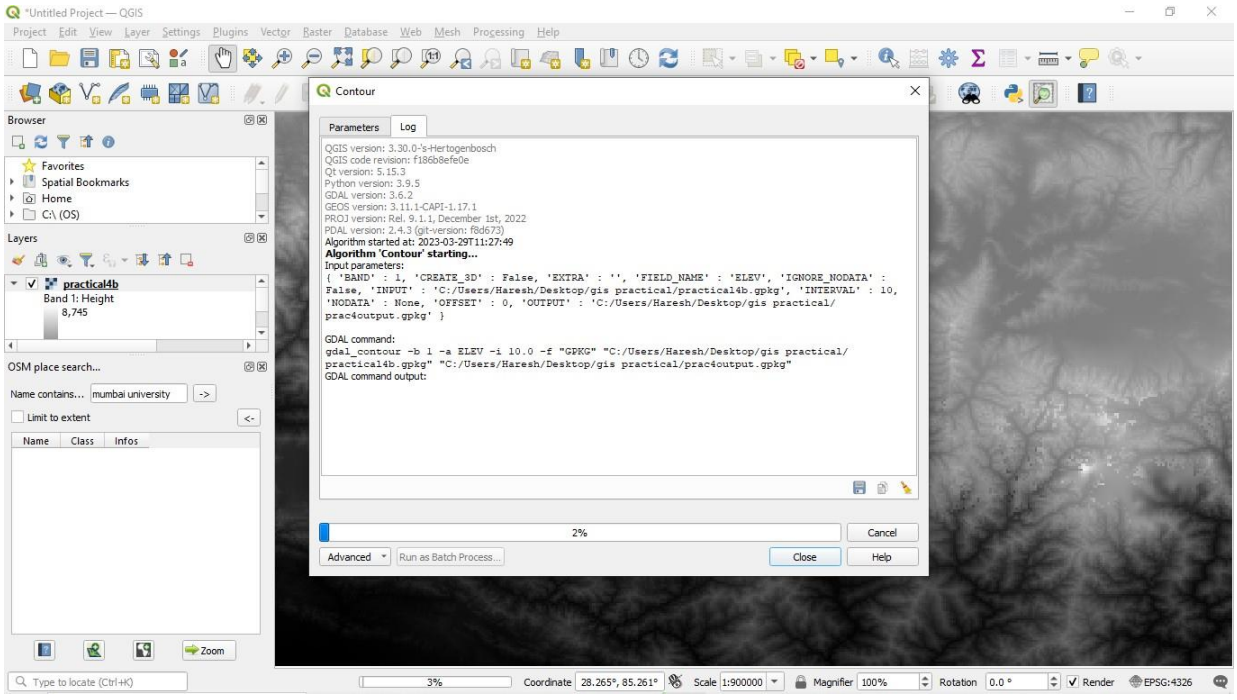


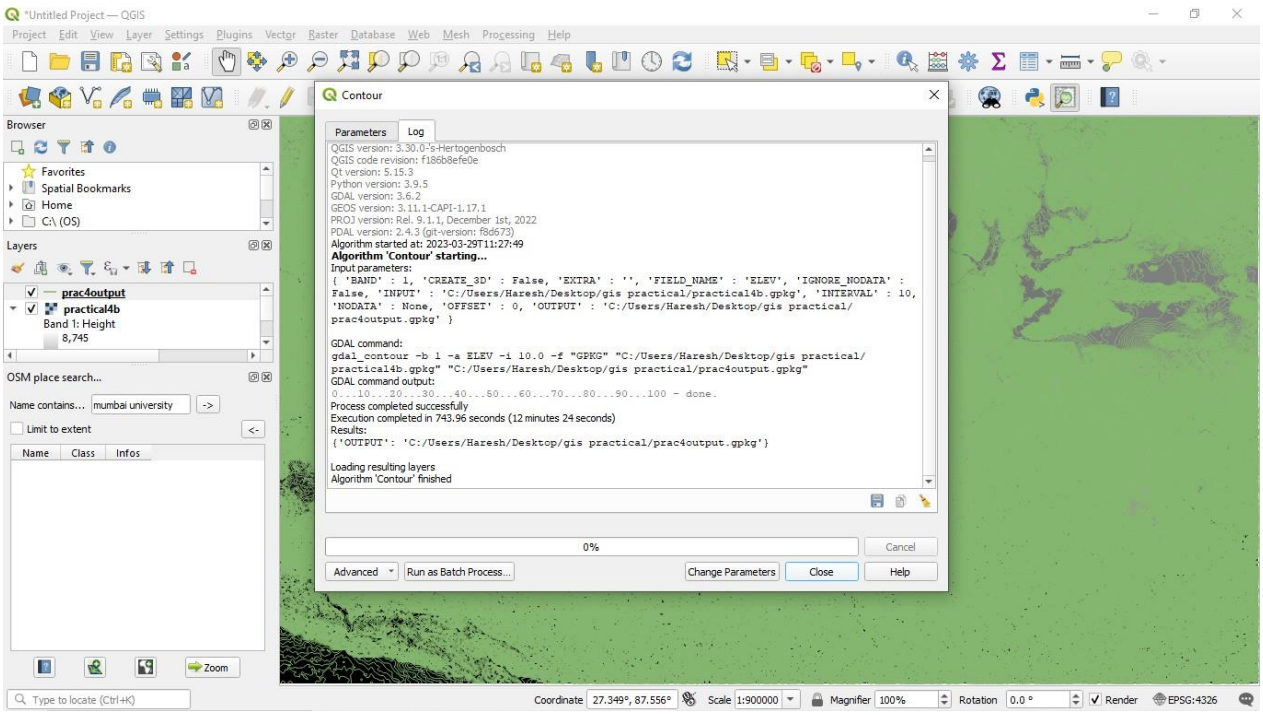

**Step 10:** Go to Raster ▢ Extraction ▢ Contour.

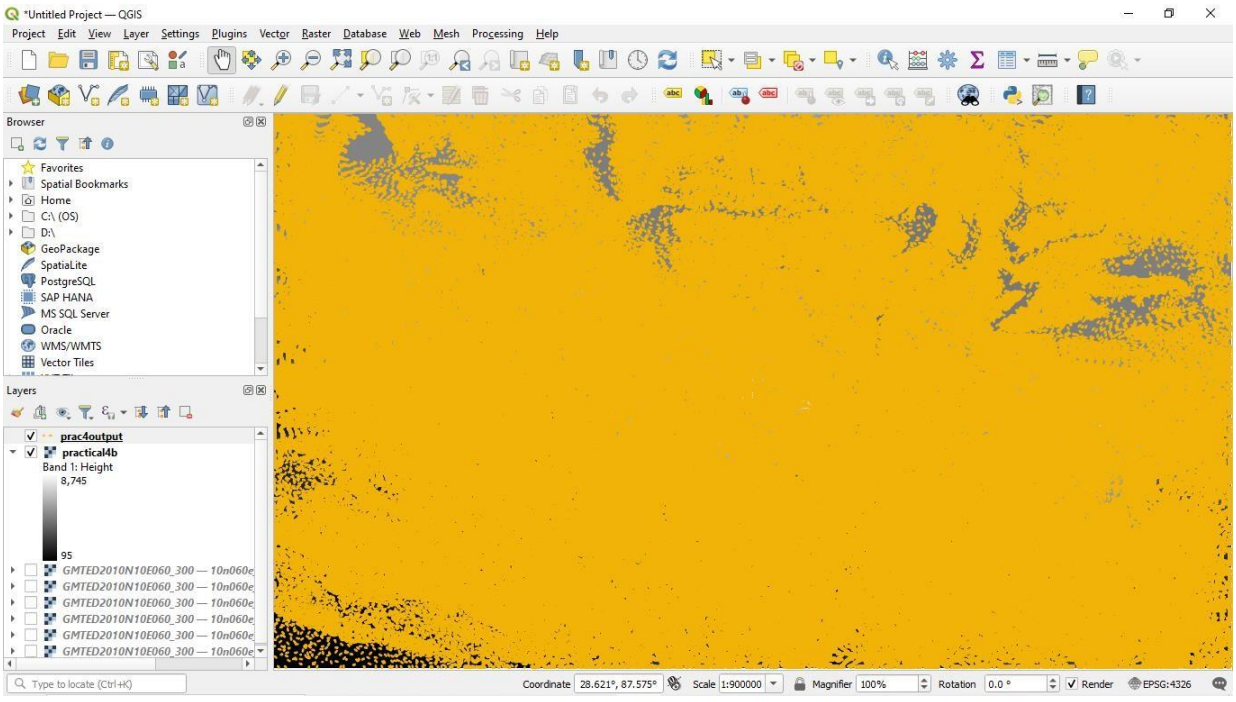


**Step 11:** Select output file and location and Press RUN.

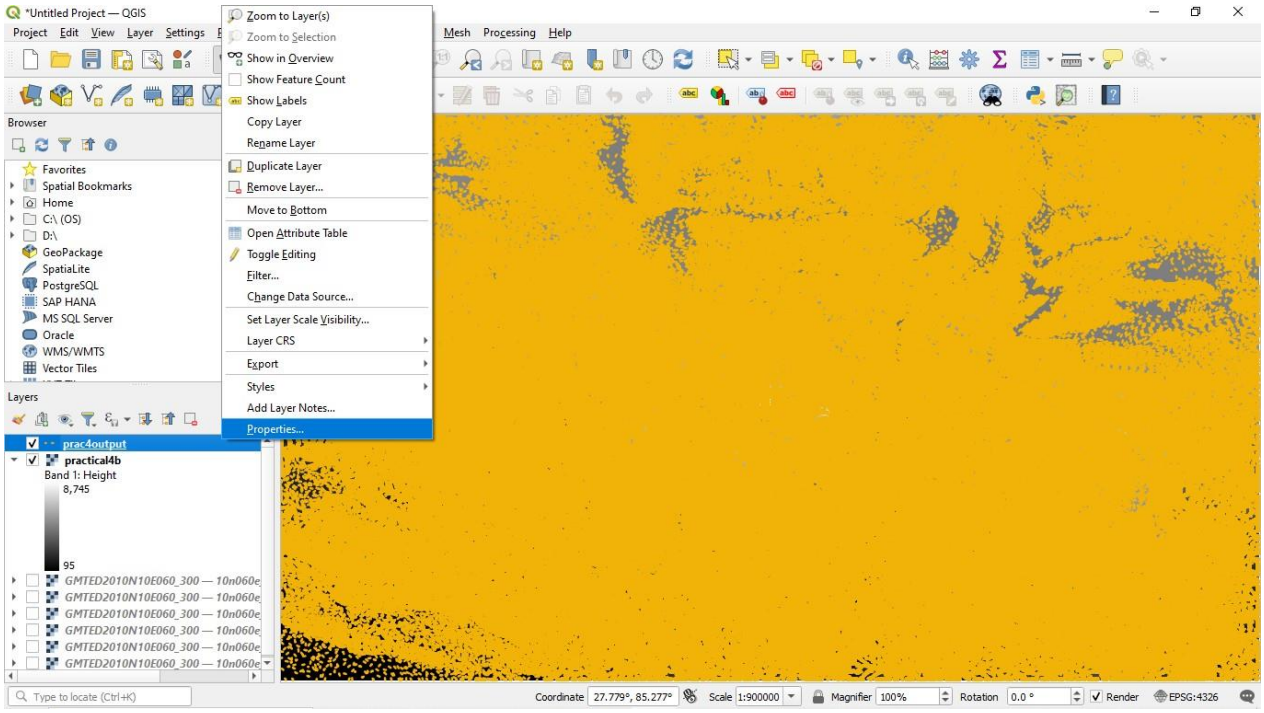


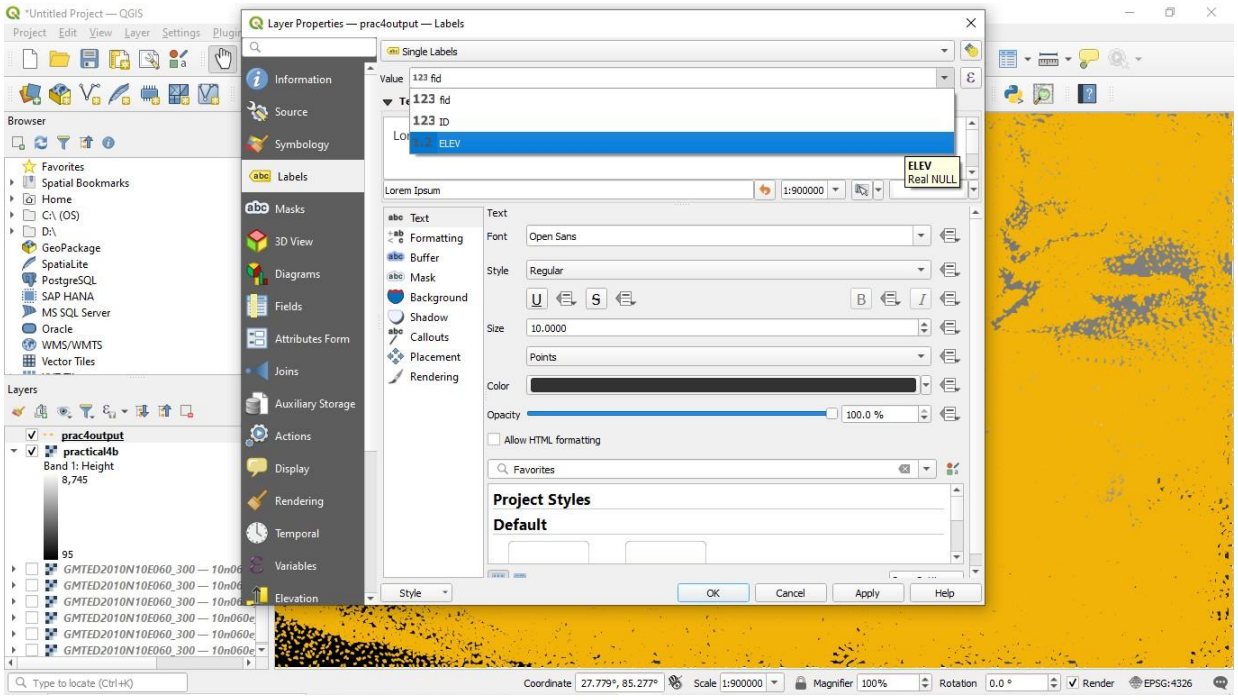



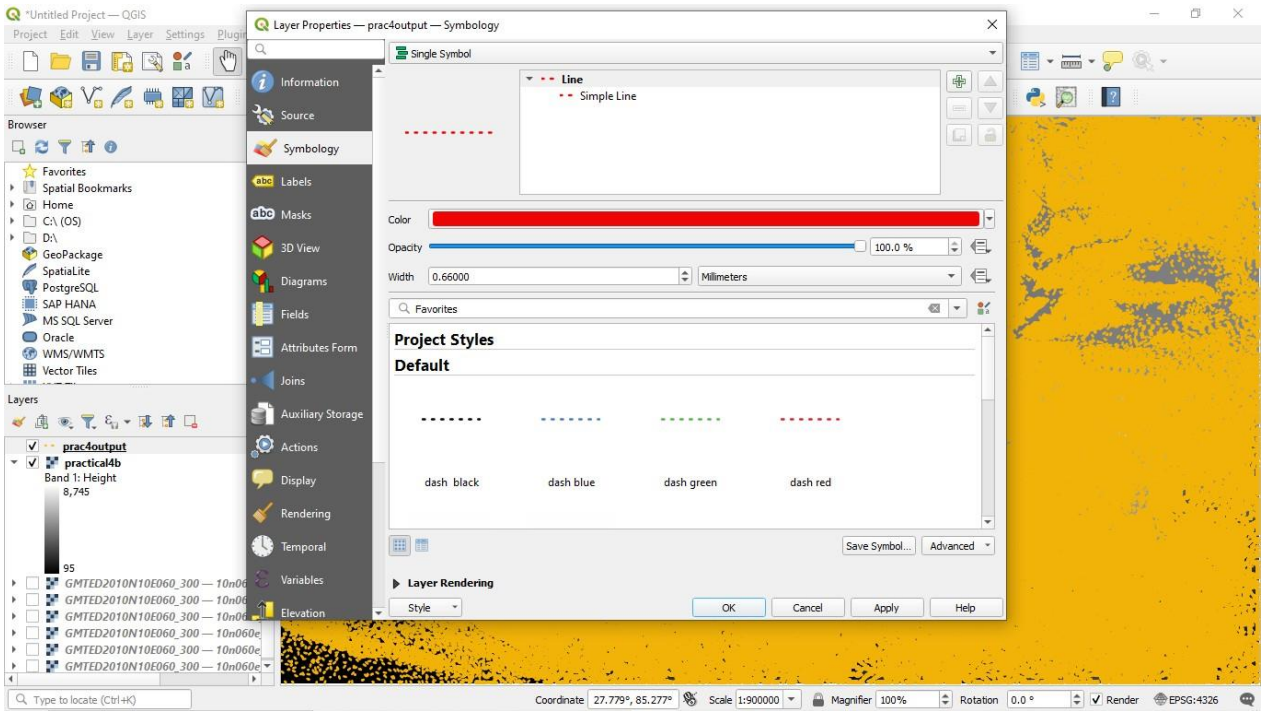

*Untitled Project — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Contour
Parameters
Log
QGIS version: 3.30.0-'s-Hertogenbosch
QGIS code revision: f186b8efe0e
Qt version: 5.15.3
Python version: 3.9.5
GDAL version: 3.6.2
GEOS version: 3.11.1-CAPI-1.17.1
PROJ version: Rel. 9.1.1, December 1st, 2022
PDAL version: 2.4.3 (git-version: f8d673)
Algorithm started at: 2023-03-29T11:27:49
Algorithm 'Contour' starting...
Input parameters:
{ 'BAND' : 1, 'CREATE_3D' : False, 'EXTRA' : '', 'FIELD_NAME' : 'ELEV', 'IGNORE_NODATA' : False, 'INPUT' : 'C:/Users/Haresh/Desktop/gis practical/practical4b.gpkg', 'INTERVAL' : 10, 'NODATA' : None, 'OFFSET' : 0, 'OUTPUT' : 'C:/Users/Haresh/Desktop/gis practical/prac4output.gpkg' }
GDAL command:
gdal_contour -b 1 -a ELEV -i 10.0 -f "GPKG" "C:/Users/Haresh/Desktop/gis practical/practical4b.gpkg" "C:/Users/Haresh/Desktop/gis practical/prac4output.gpkg"
GDAL command output:
0...10...20...30...40...50...60...70...80...90...100 - done.
Process completed successfully
Execution completed in 743.96 seconds (12 minutes 24 seconds)
Results:
{'OUTPUT': 'C:/Users/Haresh/Desktop/gis practical/prac4output.gpkg'}
Loading resulting layers
Algorithm 'Contour' finished
0%
Cancel
Advanced
Run as Batch Process...
Change Parameters
Close
Help
Browser
Favorites
Spatial Bookmarks
Home
C:\ (OS)
Layers
prac4output
practical4b
Band 1: Height
8,745
OSM place search...
Name contains...
mumbai university
Limit to extent
Name
Class
Infos
Zoom
Type to locate (Ctrl+K)
Coordinate 27.349°, 87.556°
Scale 1:900000
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326

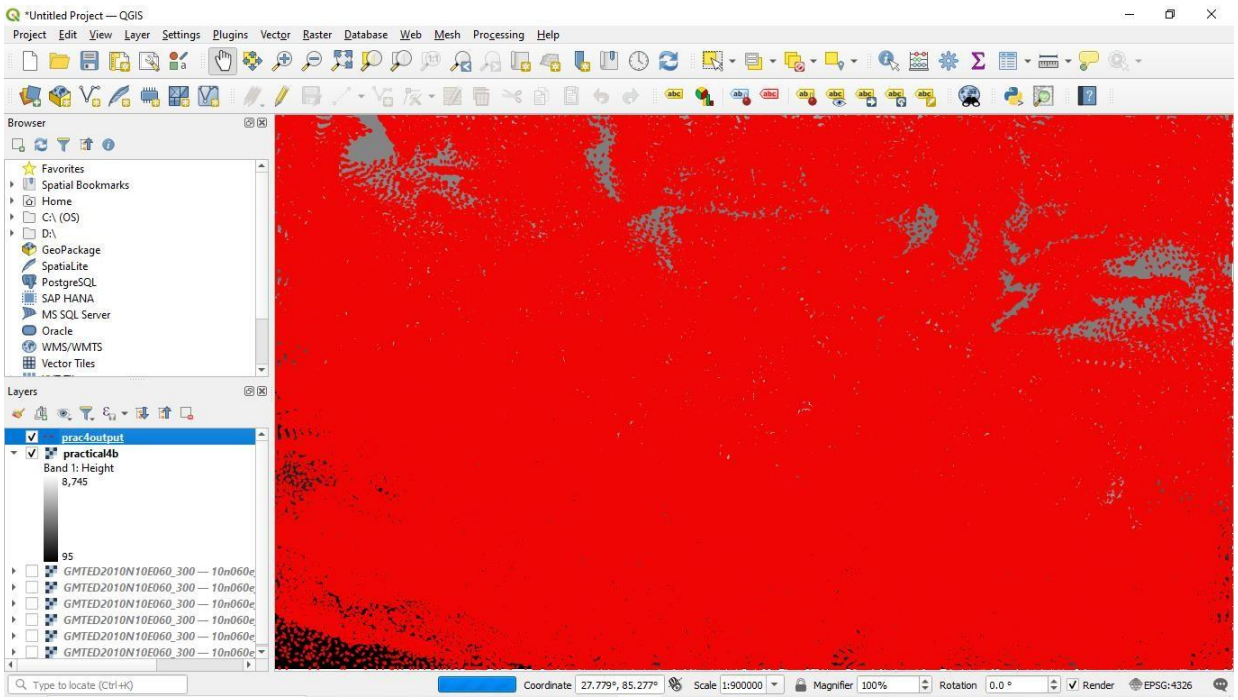

*Untitled Project — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Home
C:\ (OS)
D:\
GeoPackage
SpatiaLite
PostgreSQL
SAP HANA
MS SQL Server
Oracle
WMS/WMTS
Vector Tiles
Layers
prac4output
practical4b
Band 1: Height
8,745
95
GMTED2010N10E060_300 — 10n060e
Type to locate (Ctrl+K)
Coordinate 28.621°, 87.575°
Scale 1:900000
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326

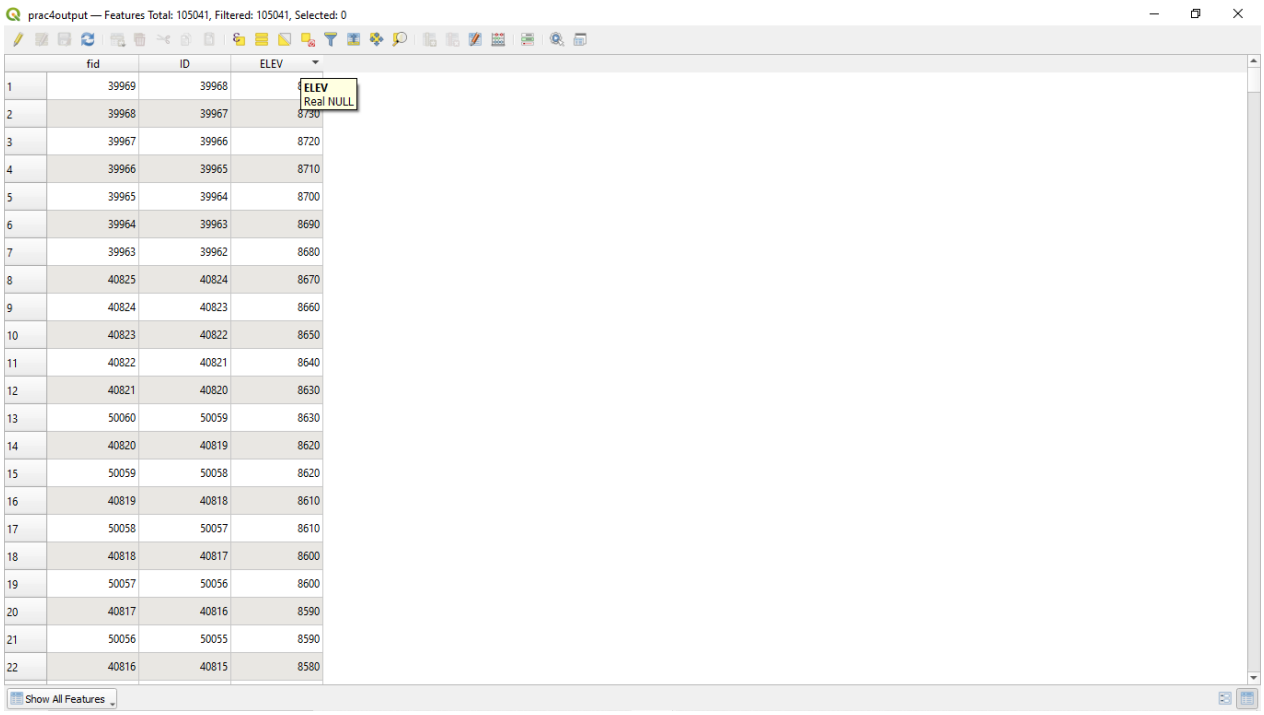
**Step 12:** Label the layer using “ELEV” field and set appropriate symbols for line. In the Layer panel right click on Contour Raster Layer and select “Open Attribute table”. Arrange the table in descending order based on the value of “ELEV”column.



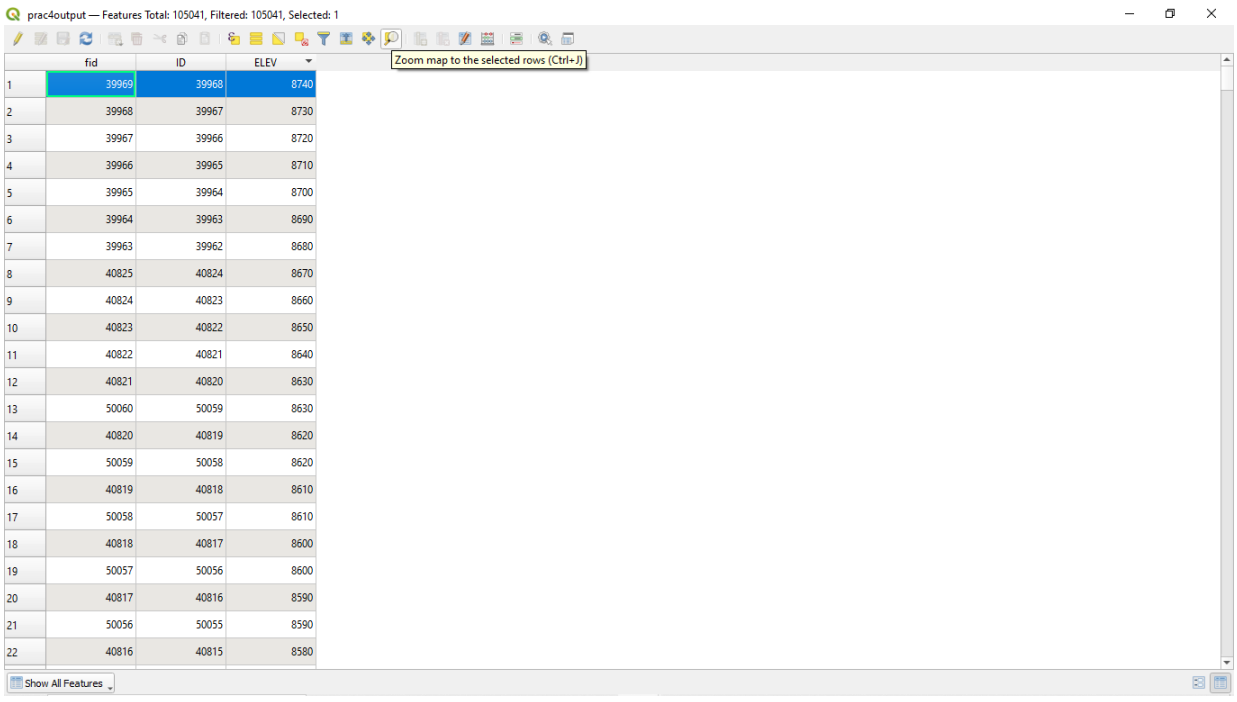

*Untitled Project — QGIS
Layer Properties — prac4output — Symbology
Single Symbol
Line
Simple Line
Information
Source
Symbology
Labels
Masks
3D View
Diagrams
Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Temporal
Variables
Elevation
Color
Opacity
100.0 %
Width
0.66000
Millimeters
Favorites
Project Styles
Default
dash black
dash blue
dash green
dash red
Save Symbol...
Advanced
Layer Rendering
Style
OK
Cancel
Apply
Help
Browser
Favorites
Spatial Bookmarks
Home
C:\ (OS)
D:\
GeoPackage
SpatiaLite
PostgreSQL
SAP HANA
MS SQL Server
Oracle
WMS/WMTS
Vector Tiles
Layers
prac4output
practical4b
Band 1: Height
8,745
95
Type to locate (Ctrl+K)
Coordinate 27.779°, 85.277°
Scale 1:900000
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326


*Untitled Project — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Home
C:\ (OS)
D:\
GeoPackage
SpatiaLite
PostgreSQL
SAP HANA
MS SQL Server
Oracle
WMS/WMTS
Vector Tiles
Layers
prac4output
practical4b
Band 1: Height
8,745
95
Type to locate (Ctrl+K)
Coordinate 27.779°, 85.277°
Scale 1:900000
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326

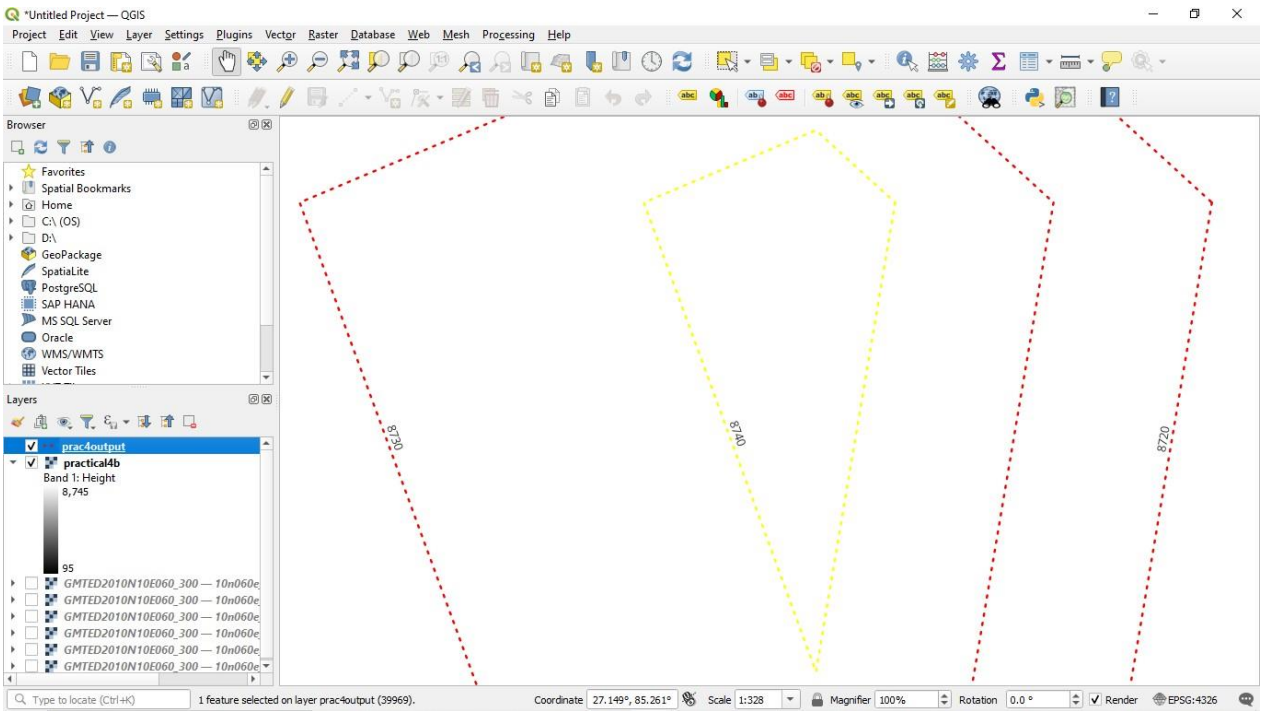



| | fid | ID | ELEV |
|---|---|---|---|
| 1 | 39969 | 39968 | |
| 2 | 39968 | 39967 | 8730 |
| 3 | 39967 | 39966 | 8720 |
| 4 | 39966 | 39965 | 8710 |
| 5 | 39965 | 39964 | 8700 |
| 6 | 39964 | 39963 | 8690 |
| 7 | 39963 | 39962 | 8680 |
| 8 | 40825 | 40824 | 8670 |
| 9 | 40824 | 40823 | 8660 |
| 10 | 40823 | 40822 | 8650 |
| 11 | 40822 | 40821 | 8640 |
| 12 | 40821 | 40820 | 8630 |
| 13 | 50060 | 50059 | 8630 |
| 14 | 40820 | 40819 | 8620 |
| 15 | 50059 | 50058 | 8620 |
| 16 | 40819 | 40818 | 8610 |
| 17 | 50058 | 50057 | 8610 |
| 18 | 40818 | 40817 | 8600 |
| 19 | 50057 | 50056 | 8600 |
| 20 | 40817 | 40816 | 8590 |
| 21 | 50056 | 50055 | 8590 |
| 22 | 40816 | 40815 | 8580 |

**Step 13:** Select first row & click on “Zoom map to the selected rows”.




| | fid | ID | ELEV |
|---|---|---|---|
| 1 | 39969 | 39968 | 8740 |
| 2 | 39968 | 39967 | 8730 |
| 3 | 39967 | 39966 | 8720 |
| 4 | 39966 | 39965 | 8710 |
| 5 | 39965 | 39964 | 8700 |
| 6 | 39964 | 39963 | 8690 |
| 7 | 39963 | 39962 | 8680 |
| 8 | 40825 | 40824 | 8670 |
| 9 | 40824 | 40823 | 8660 |
| 10 | 40823 | 40822 | 8650 |
| 11 | 40822 | 40821 | 8640 |
| 12 | 40821 | 40820 | 8630 |
| 13 | 50060 | 50059 | 8630 |
| 14 | 40820 | 40819 | 8620 |
| 15 | 50059 | 50058 | 8620 |
| 16 | 40819 | 40818 | 8610 |
| 17 | 50058 | 50057 | 8610 |
| 18 | 40818 | 40817 | 8600 |
| 19 | 50057 | 50056 | 8600 |
| 20 | 40817 | 40816 | 8590 |
| 21 | 50056 | 50055 | 8590 |
| 22 | 40816 | 40815 | 8580 |



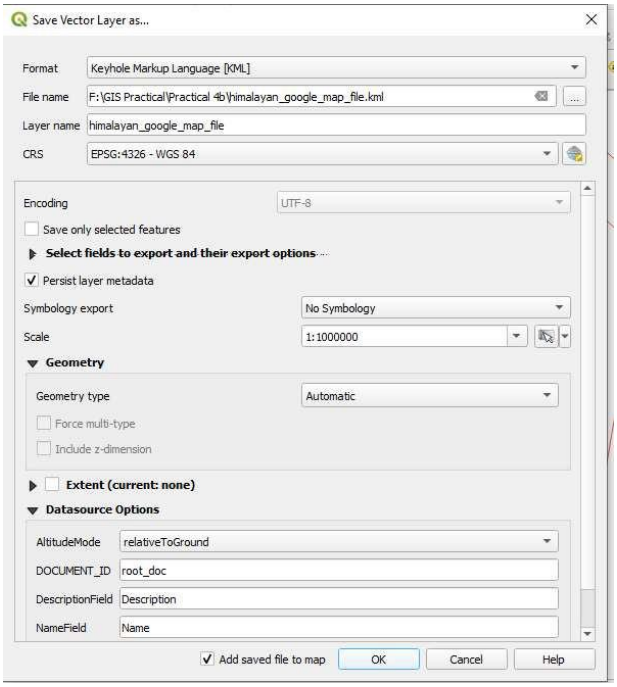

**Step 14:** Compare the above counter line raster layer with the previous Google map image or visit https://www.google.com/maps/@27.9857765,86.9285378,14.75z/data=!5m1!1e4?hl=en-US

➢ To verify the above contour files using Google Map

➢ Make a copy of Contour Layer, Go to Layer →Save As

➢ Select file format as "Keyhole Markup Language", set file name, location and Layer Name.

➢ Also set CRS to WGS 84 EPSG:4326

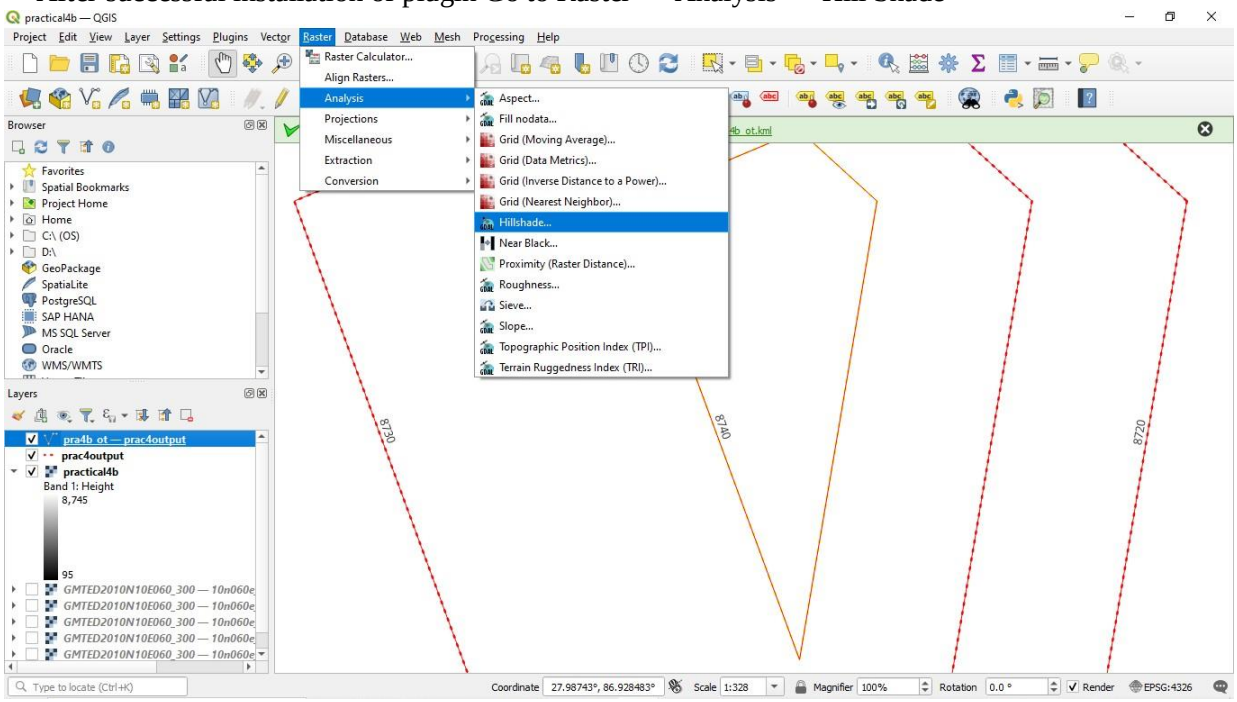


**Step 15:** Go to the stored location on Hard Disk and open the "Himalayan_Google_Map_File.kml" with Google Map.\A Hillshade is a grayscale 3D representation of the surface, showing the topographical shape of hills and mountains using shading (levels of gray) on a map, just to indicate relative slopes, mountain ridges, not absolute height.

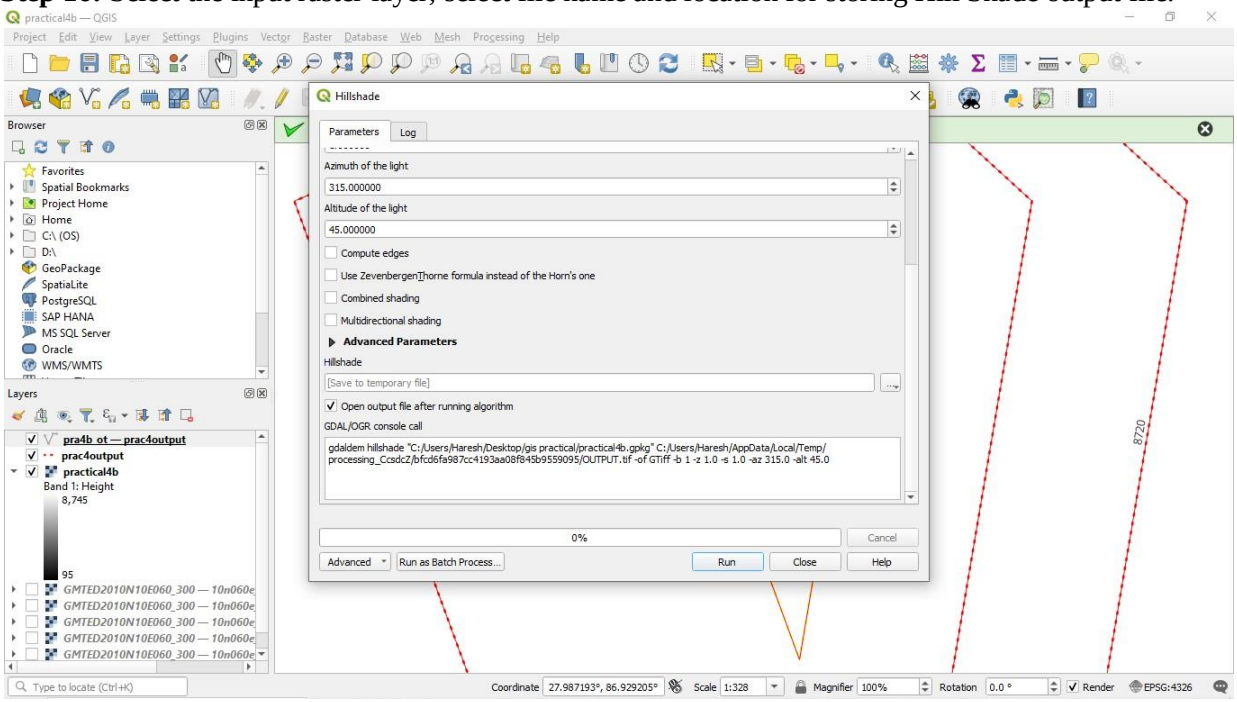
➢ For Hill Shade surface analysis

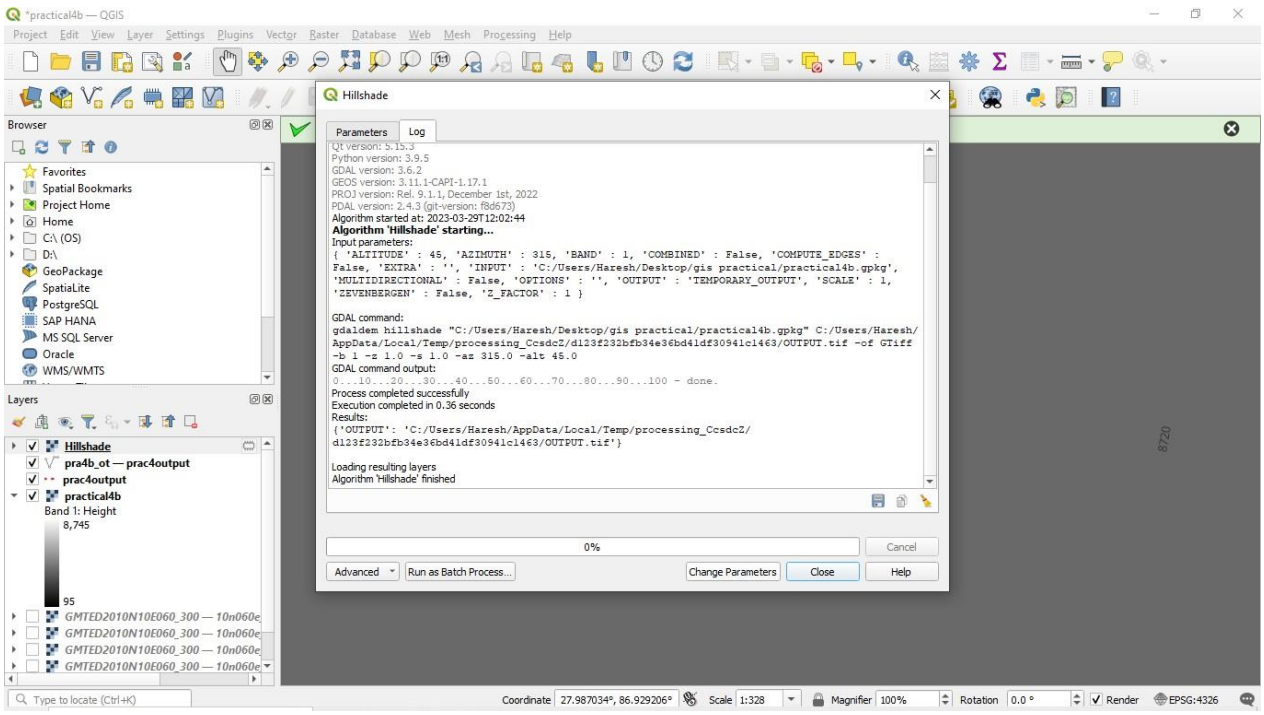
➢ Go to Plugin → Install Georeferencer GADL.

➢ After successful installation of plugin Go to Raster → Analysis → Hill Shade

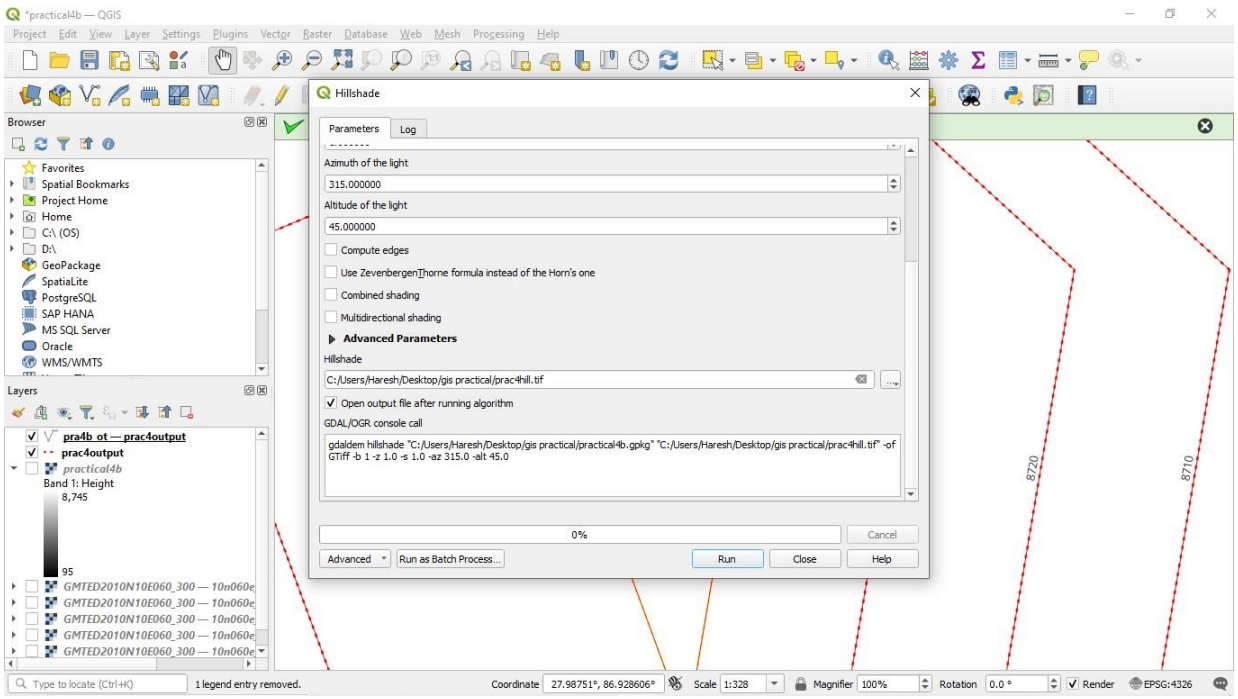



**Step 16:** Select the input raster layer, select file name and location for storing Hill Shade output file.

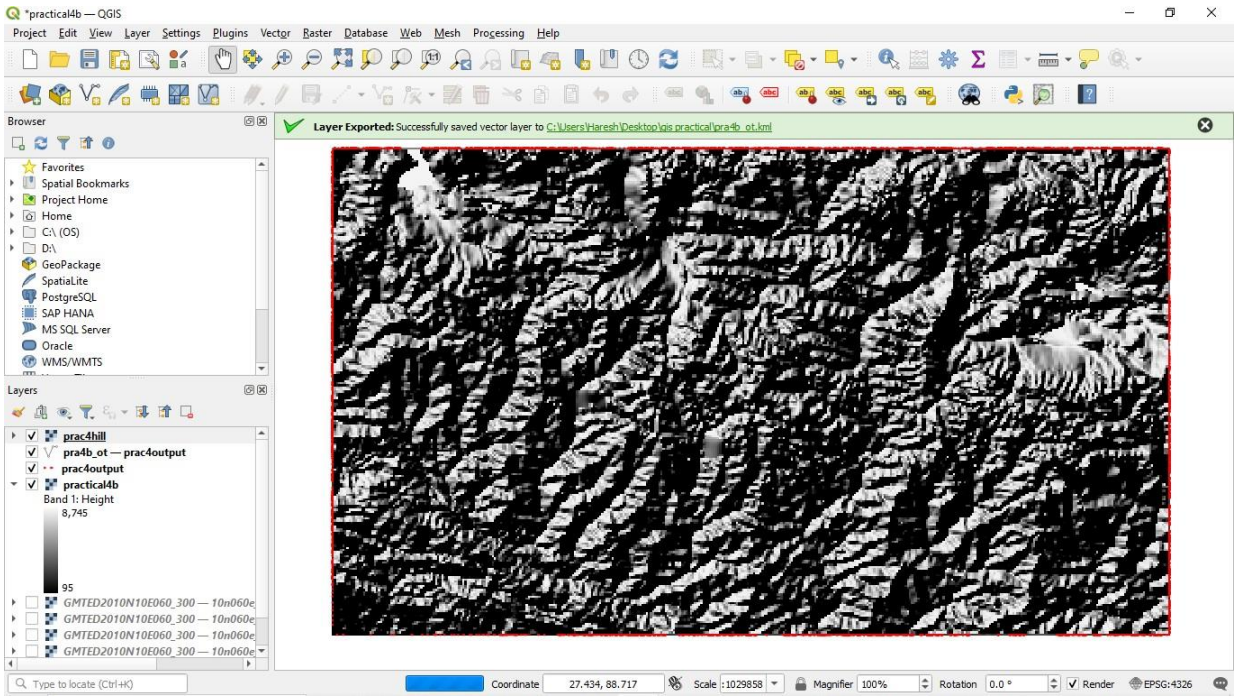





**Step 17:** Press "RUN" and Close the Hill Shape Dialog window.

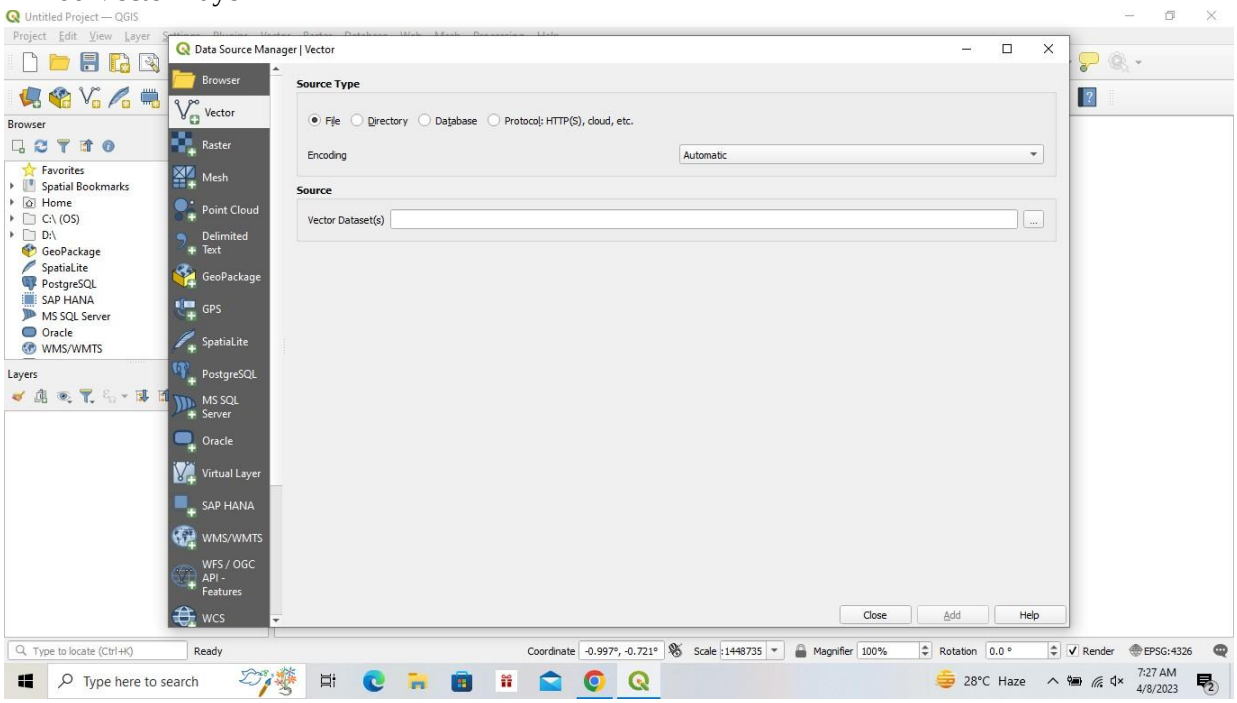


**Step 18:** After Raster styling the Output will appear like this.

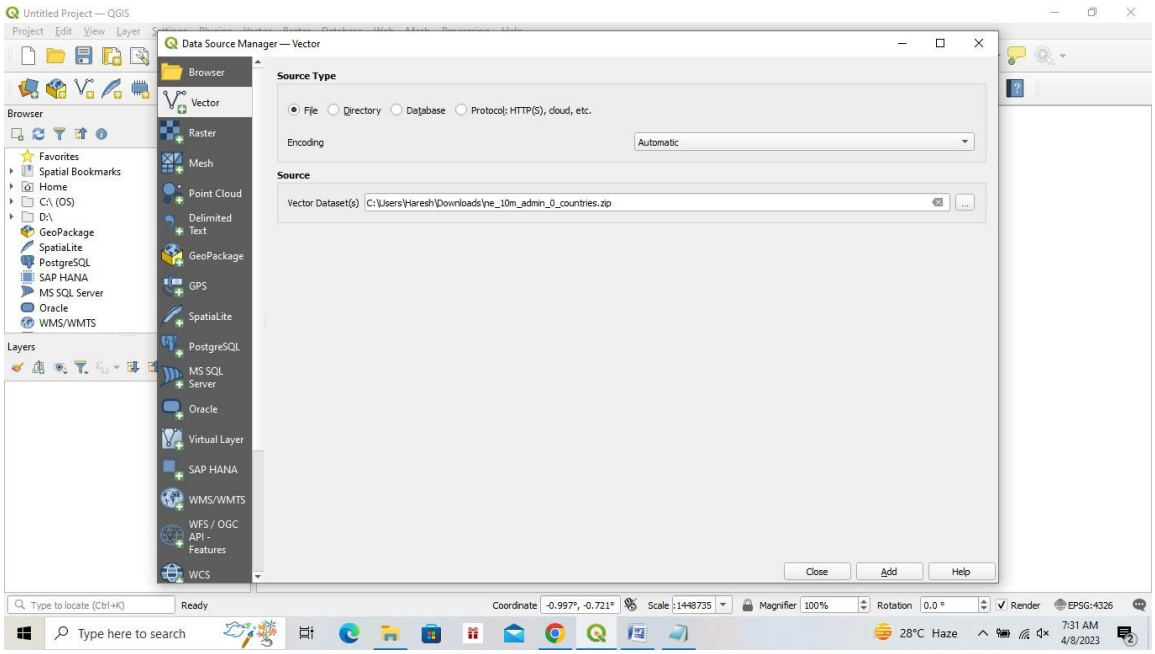


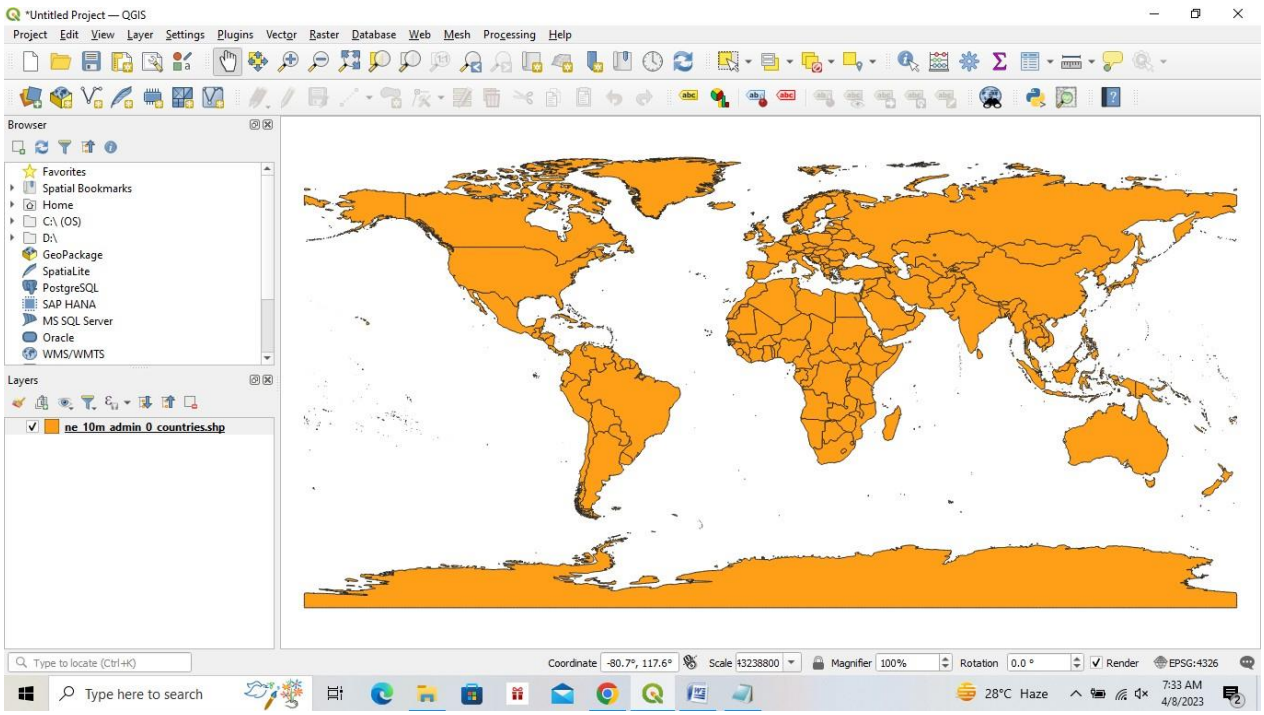
## Practical 5: Working with Projections and WMS Data

A Web Map Service (WMS) is a standard protocol developed by the Open Geospatial Consortium in 1999 forserving georeferenced map images over the Internet. These images are typically produced by a map serverfrom data provided by a GIS database Step 1: Create a new Project. Go to Layer → Add Layer → Add Vector Layer



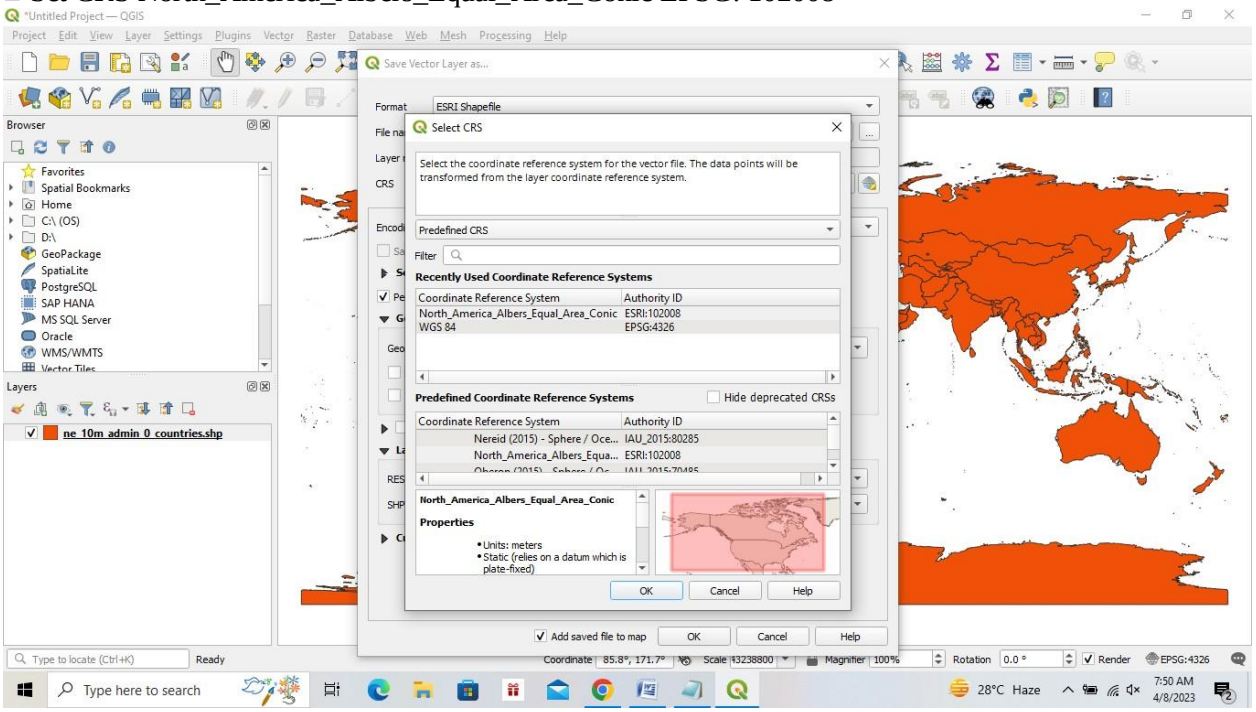

Step 2: Select "\GIS_Workshop\Practicals\Practical_05\Data\ne_10m_admin_0_countries.zip" Layer from data folder."
Click Add and close the window. (https:/ / carto.com/dataset/ ne_10m_populated_places_simple)



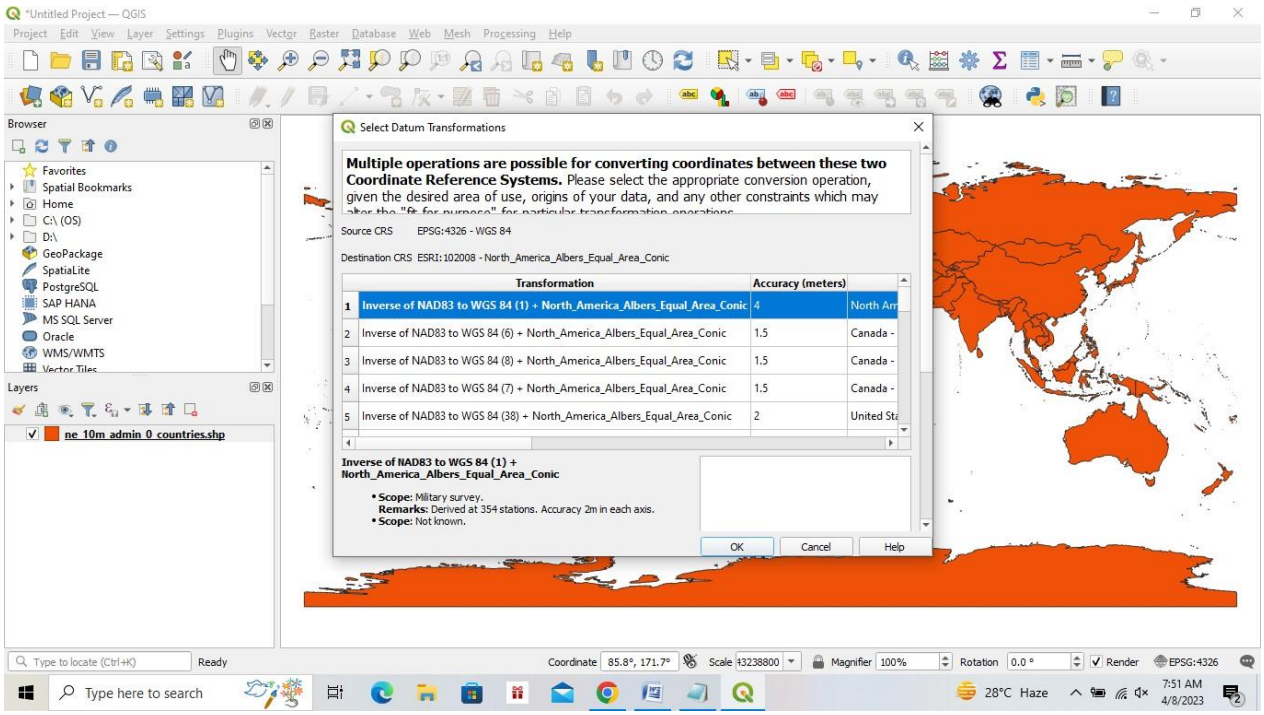


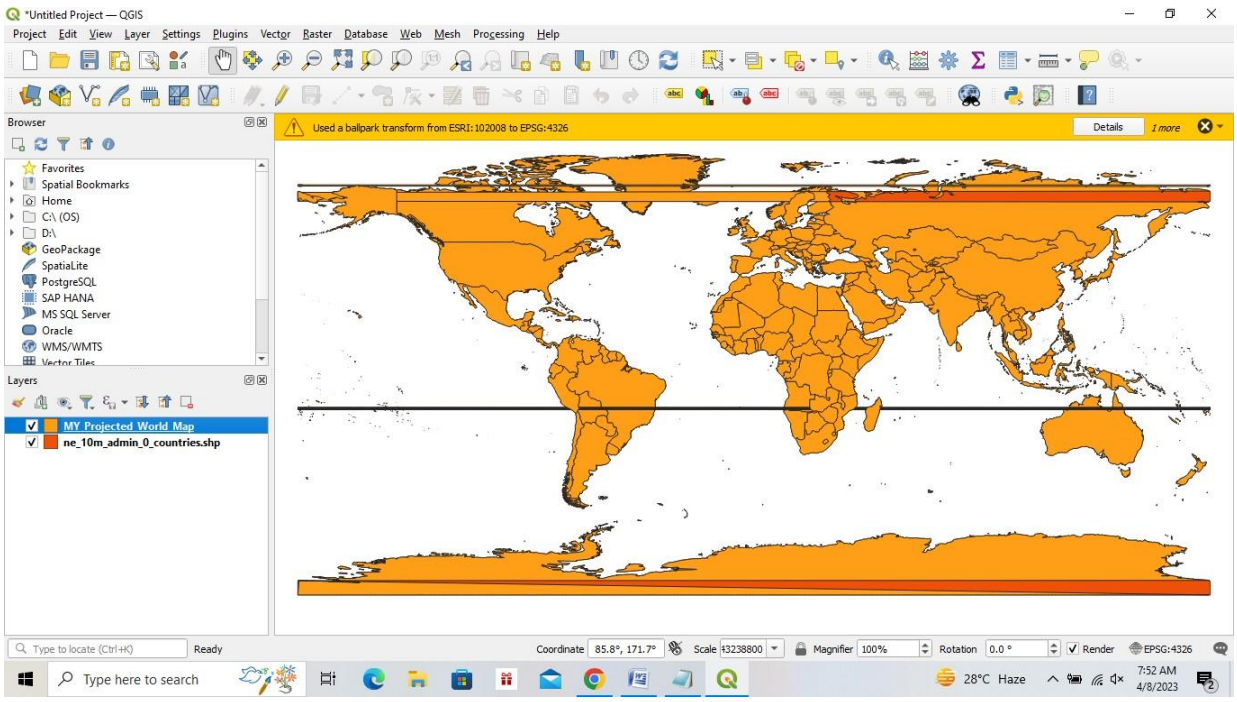

Step 3: Go to Layer → Save As

- Select format as ESRI Shape File
- Select folder location and file name
- Set CRS North_America_Albers_Equal_Area_Conic EPSG: 102008

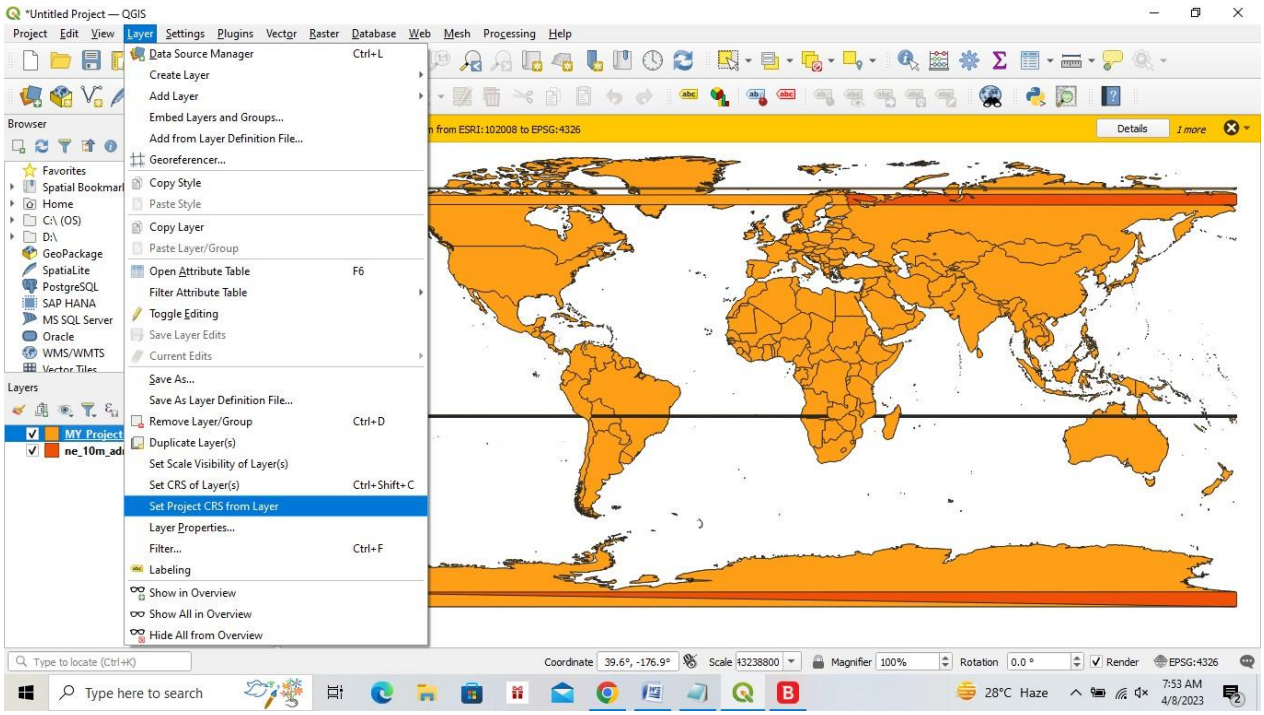


Step 4: Press “OK”. Deselect the original Image and keep the projected layer visible.

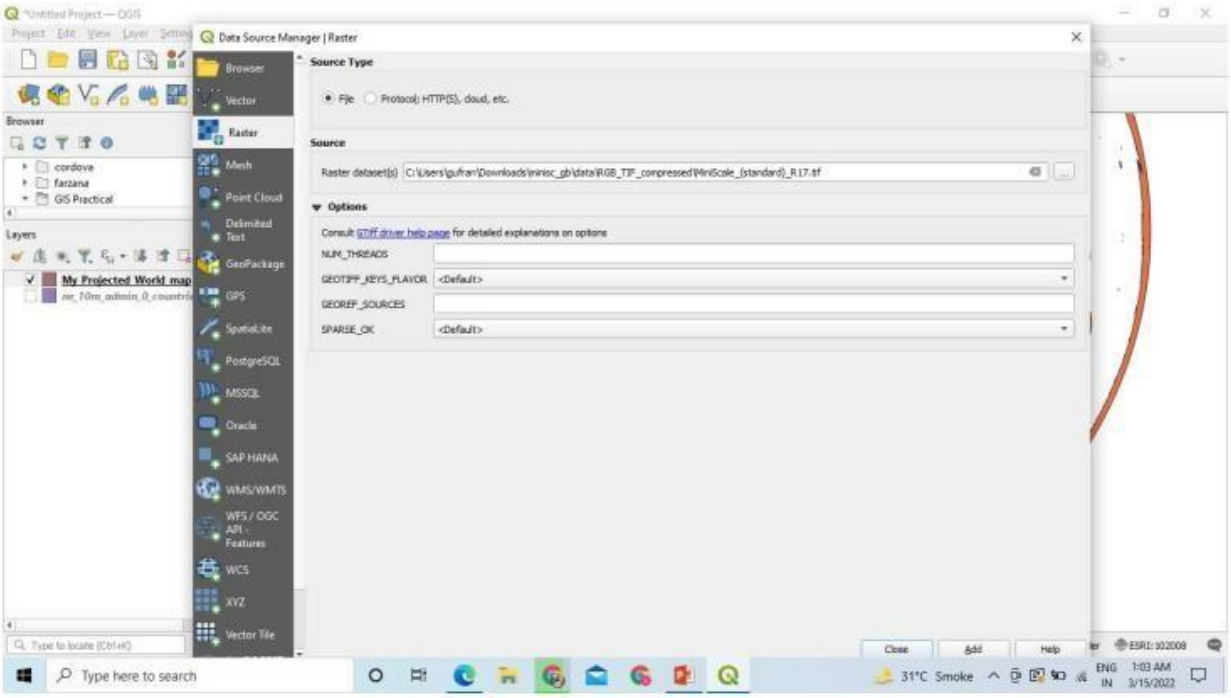


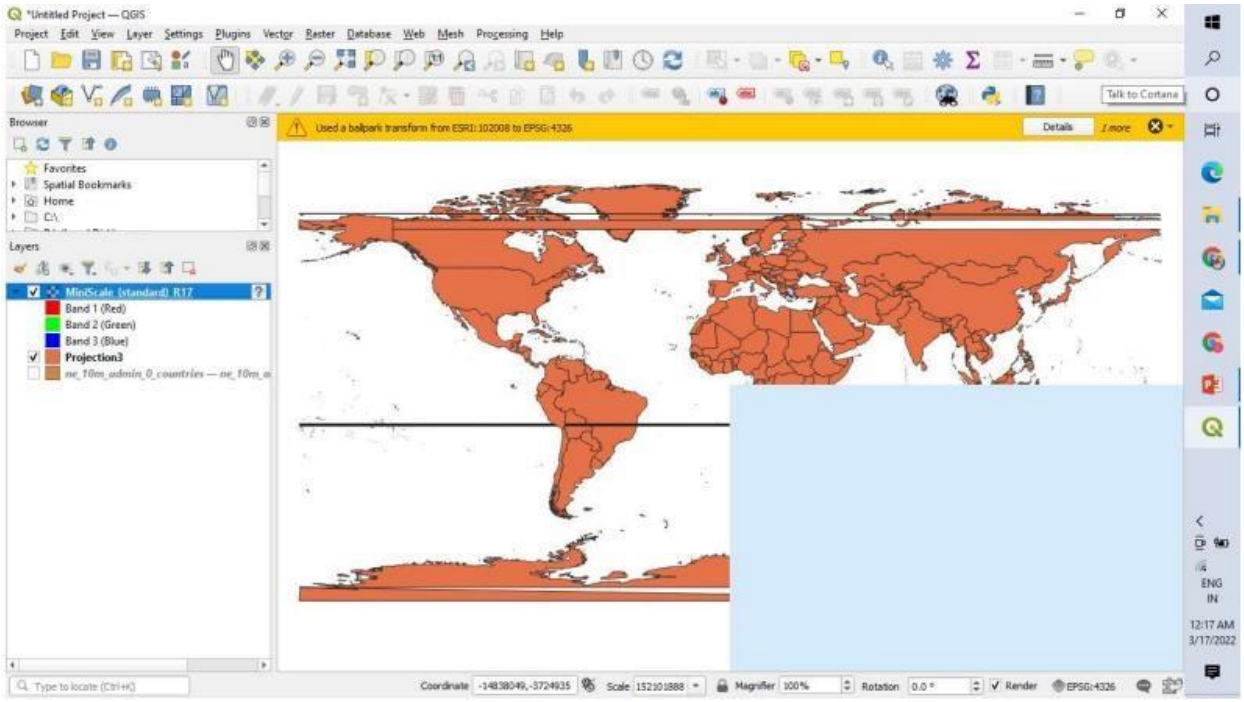
Step 5: Select Layer □ Set Project CRS from Layer



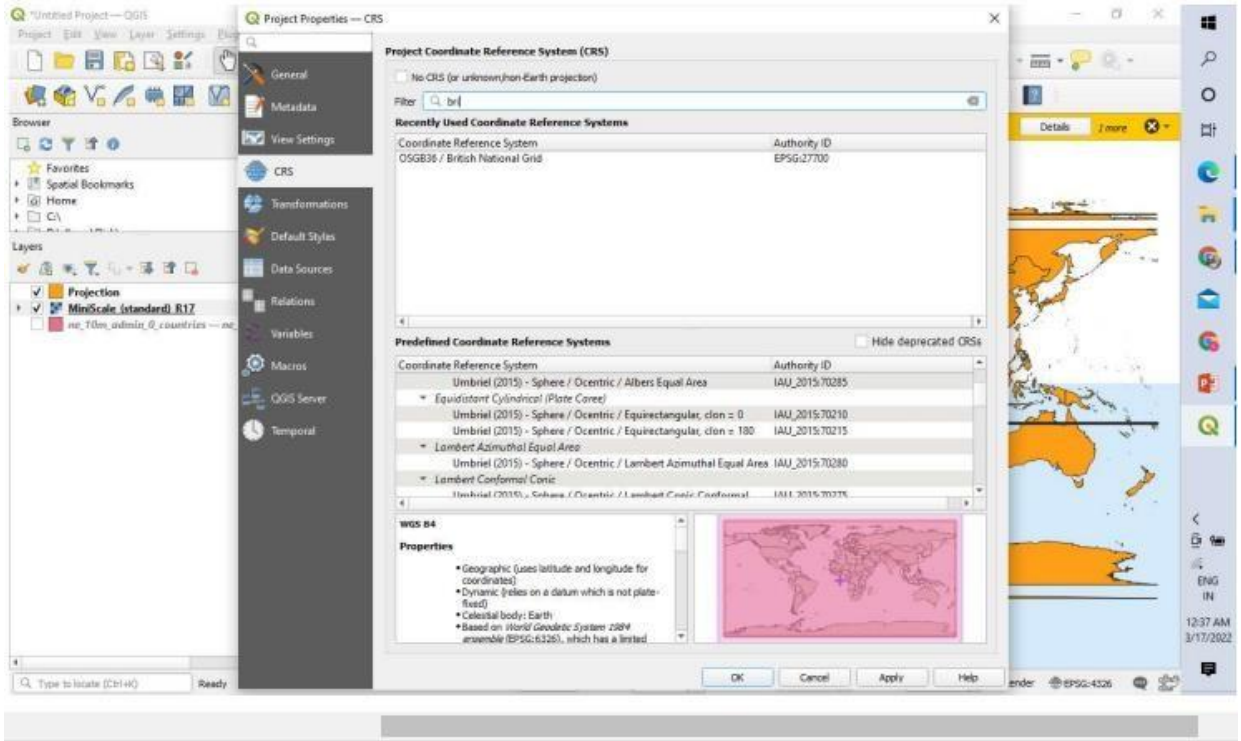

Step 6: Select Layer → Add Layer → Add Raster Layer → Select C:\Users\gufran\Downloads\minisc_gb\data\RGB_TIF_compressed\MiniScale_(standard)_R17.tif from Location.

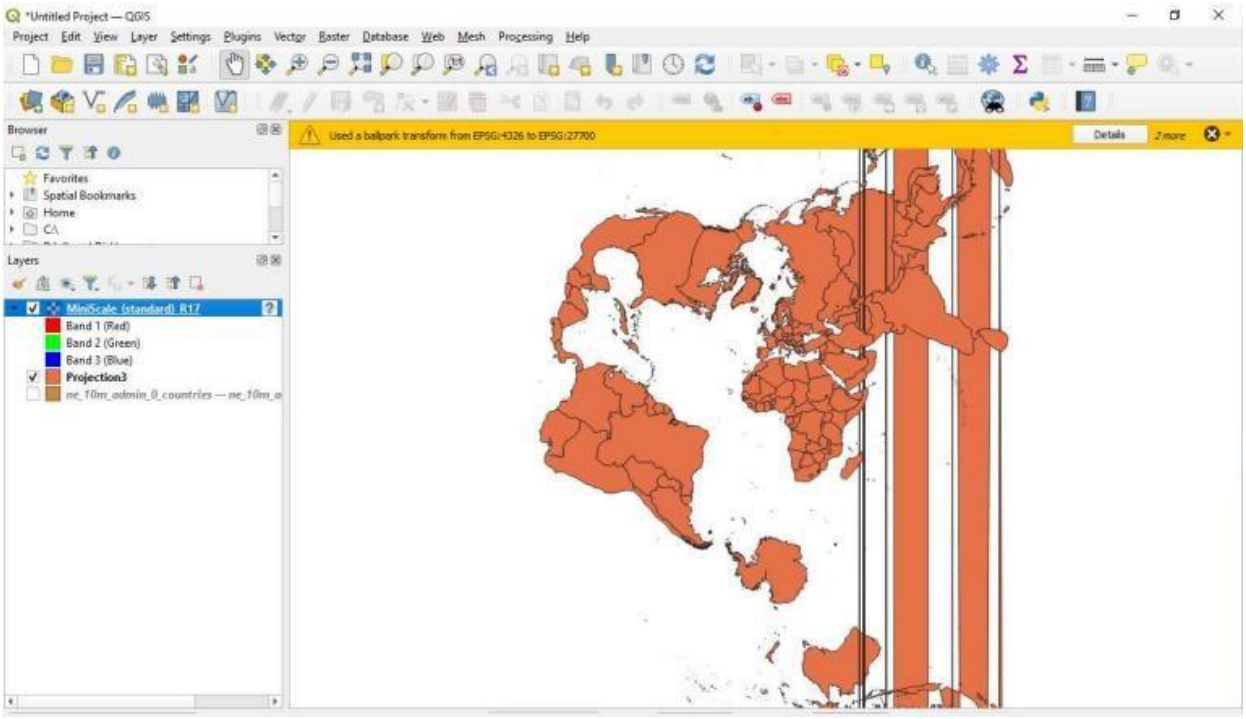


Step 7: The Layer appears on a different location than the location where Great Britain is shown on Map.

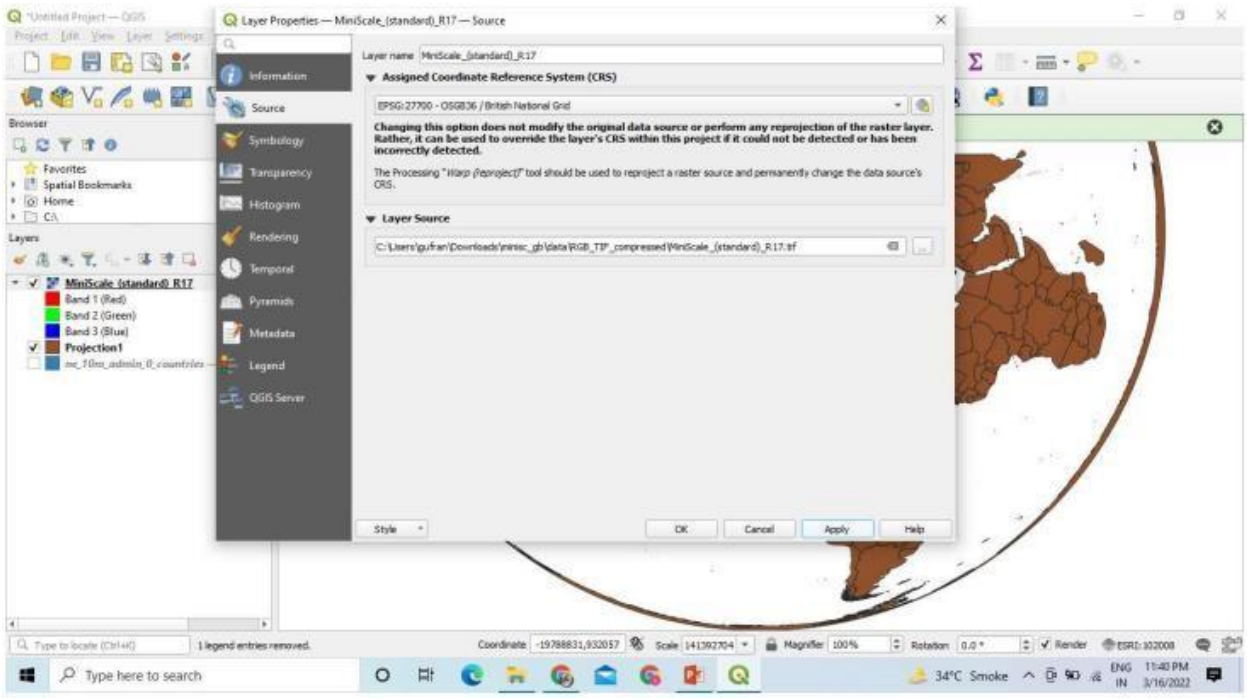



Step 8: Open Project ⁻ Properties → CRS → Search bri → select British National Grid EPSG 27700.

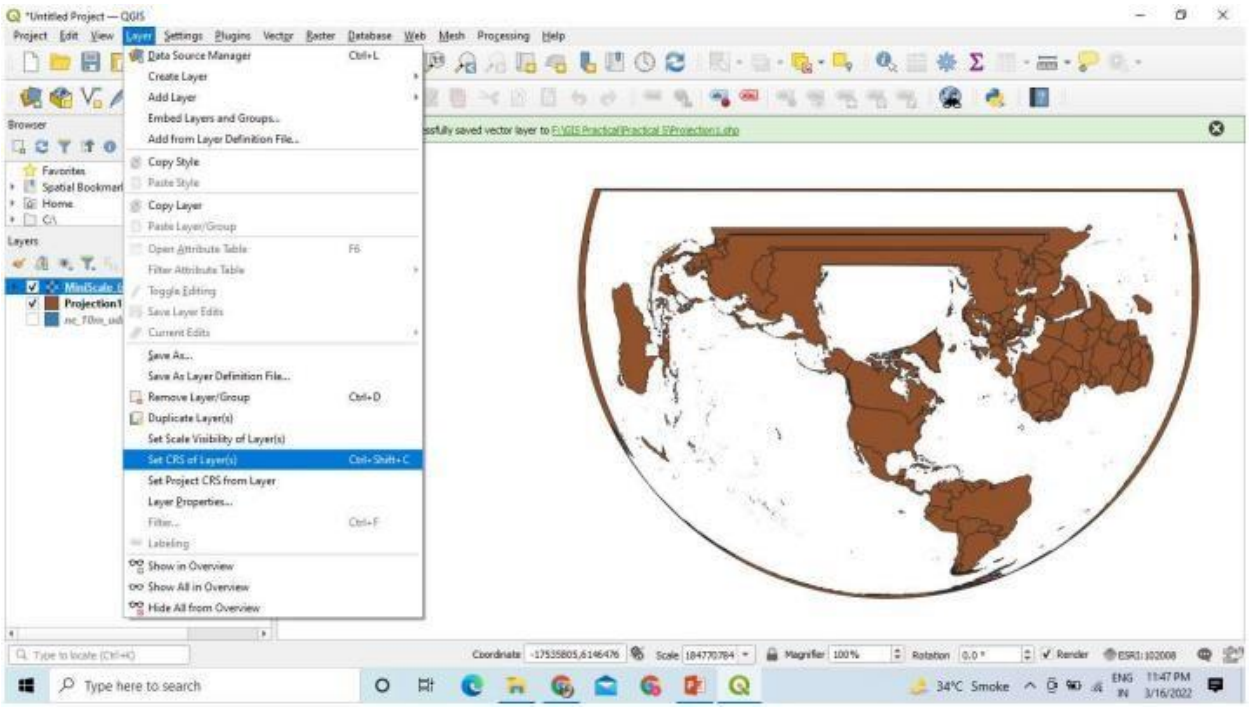





Step 9: Open Layer ProperƟes→CRS → Search bri → select British National Grid EPSG 27700. Select format as ESRI Shape File¬ Set CRS British National Grid EPSG 27700¬



Step 10: Open Layer ProperƟes→CRS → Search bri → select British National Grid EPSG 27700. Select format as ESRI Shape File¬ Set CRS British National Grid EPSG 27700¬

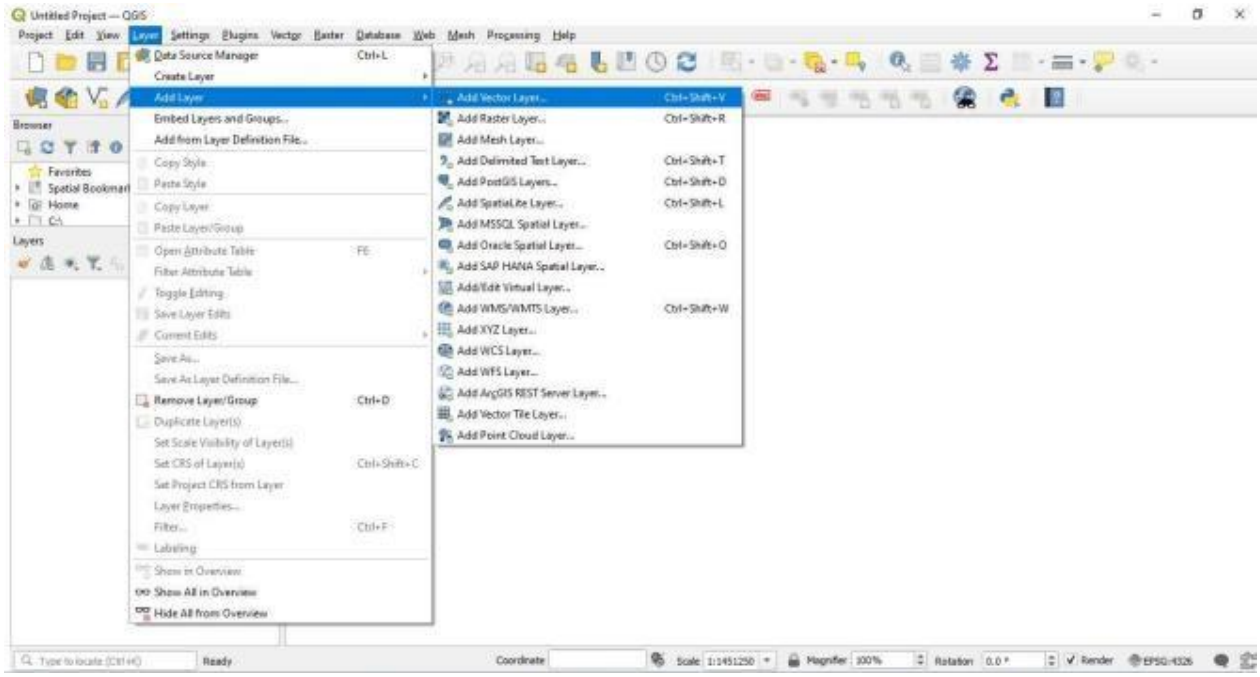



Step 11: Processing may take some time. ➢ Locate United Kingdom on Layer; the vector layer exactly coincides by the raster layer covering United Kingdom

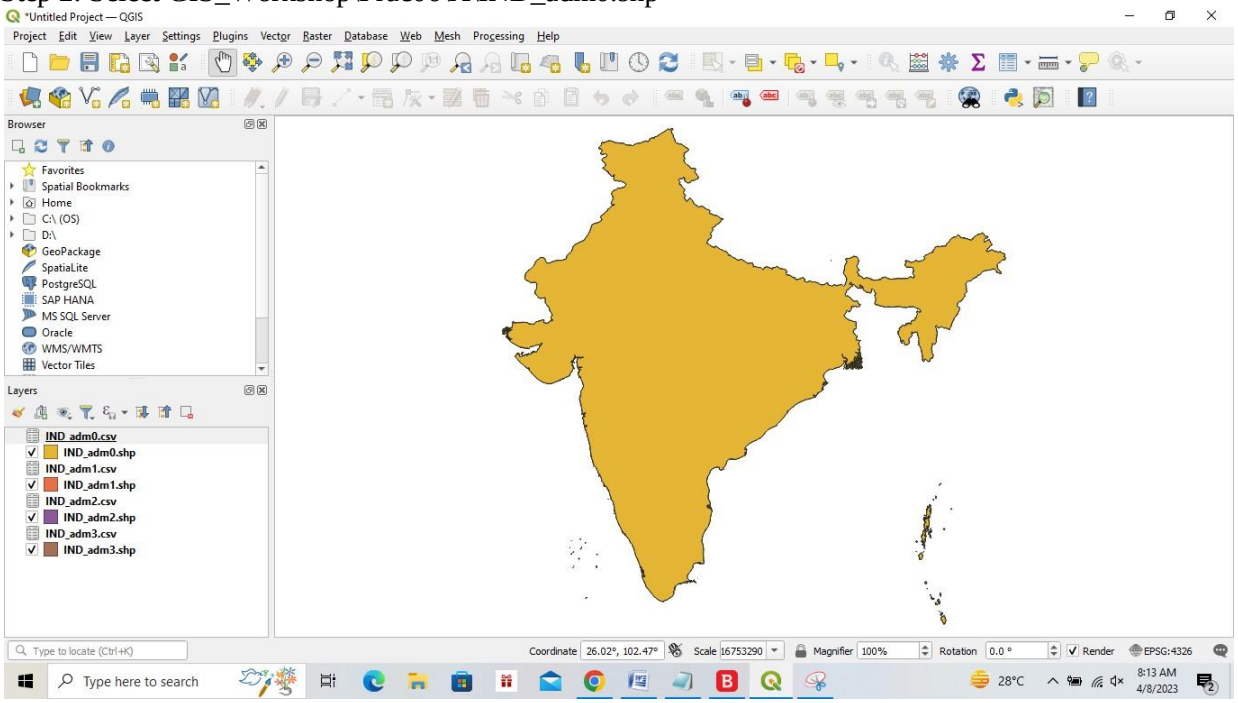
## Practical 6: Georeferencing

### A. Georeferencing Topo Sheets and Scanned Maps

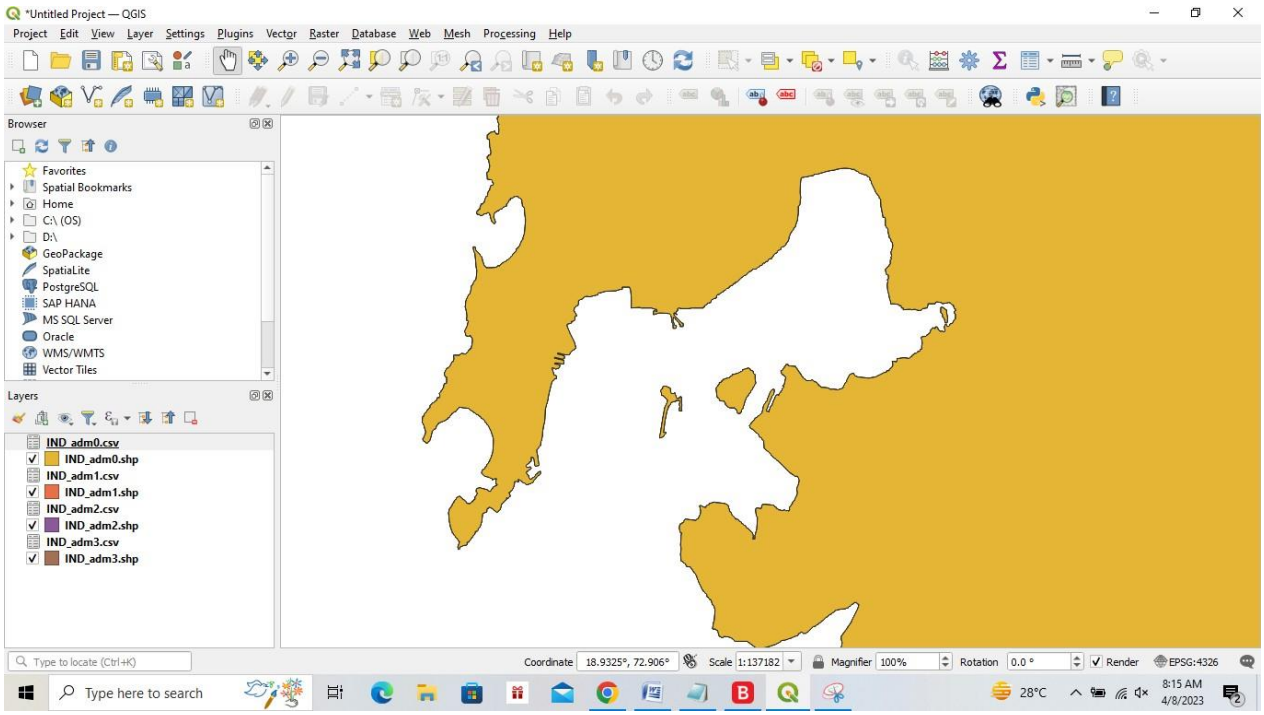
Step 1: Create a new Project. Go to Layer → Add Layer → Add Vector Layer



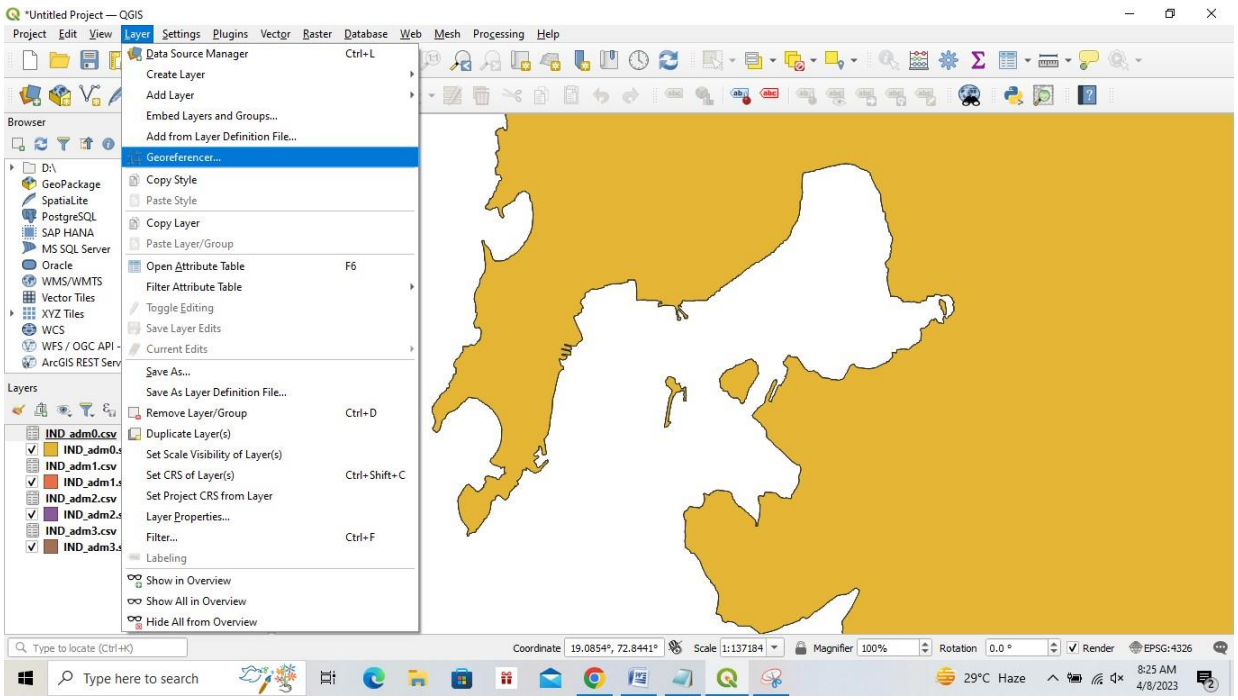

Step 2: Select GIS_Workshop\Prac06\A\IND_adm0.shp



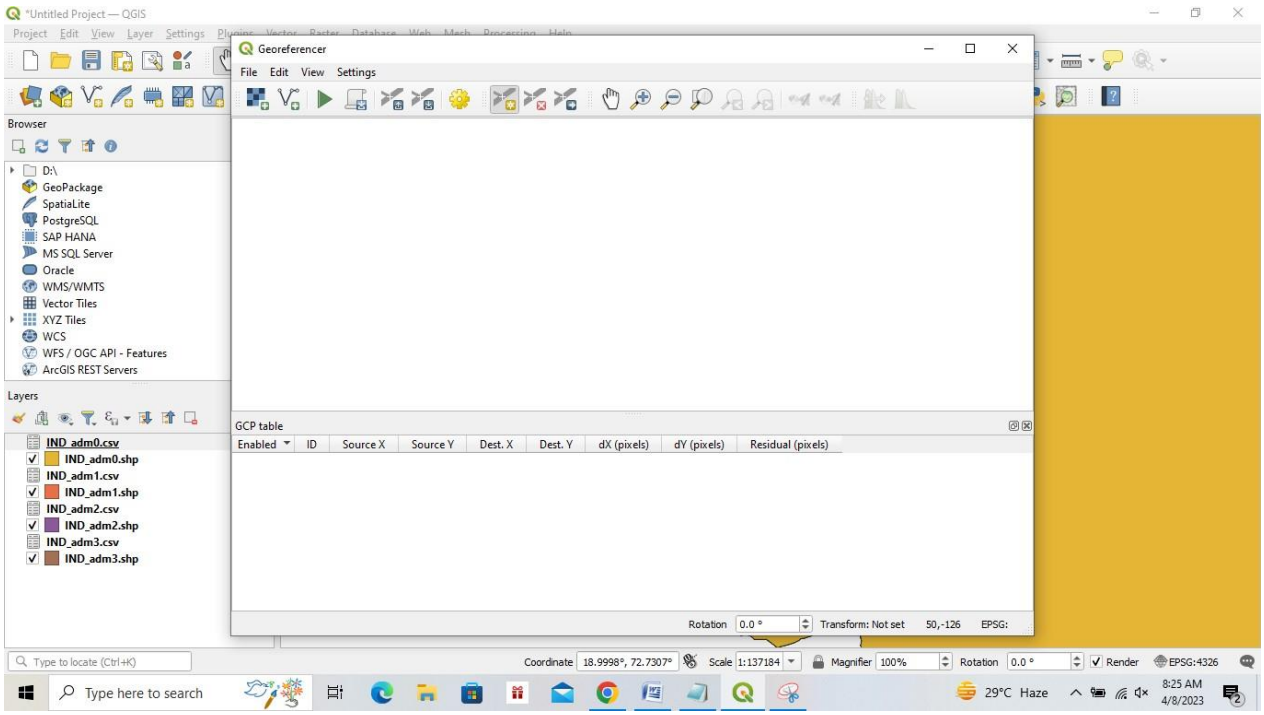
Step 3: Zoom in to Mumbai region in the layer



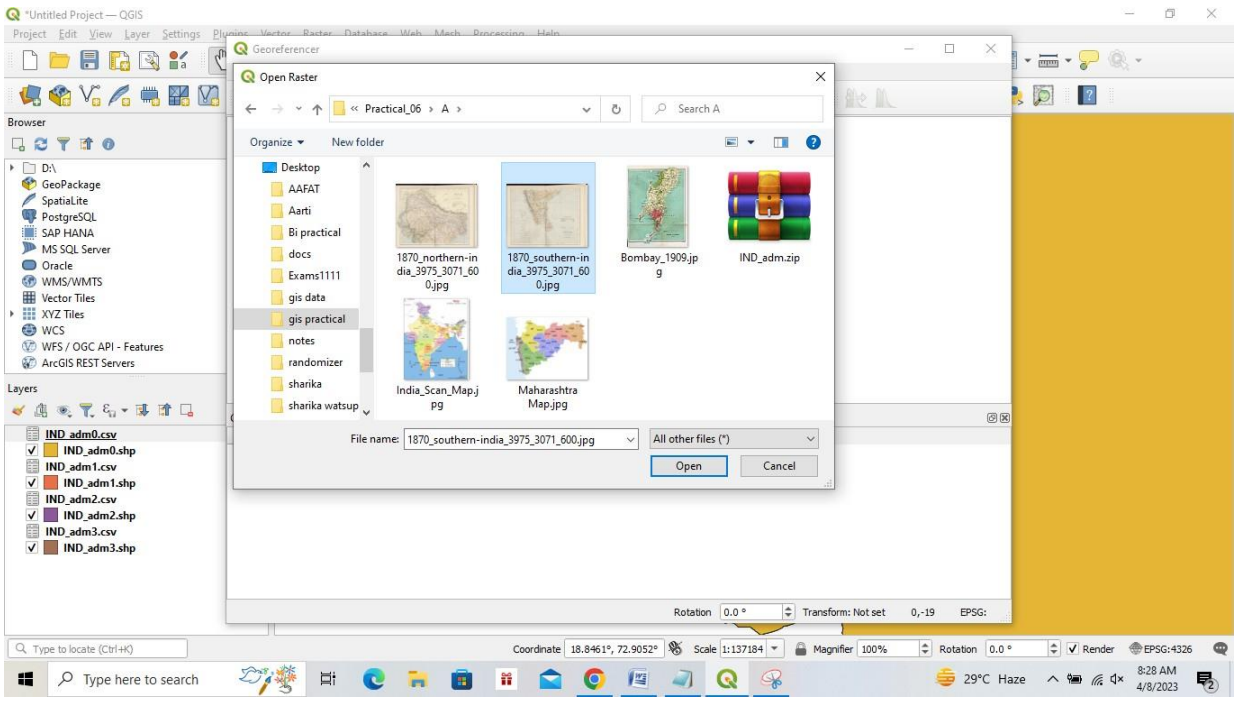

Step 4: Go to Plugins □ Manage and Install Plugins
Step 5: Ensure that is checked, if not install Georeferencer GDAL plugin (Not required in latest version).
Step 6: Go to Raster □ Georeferencer



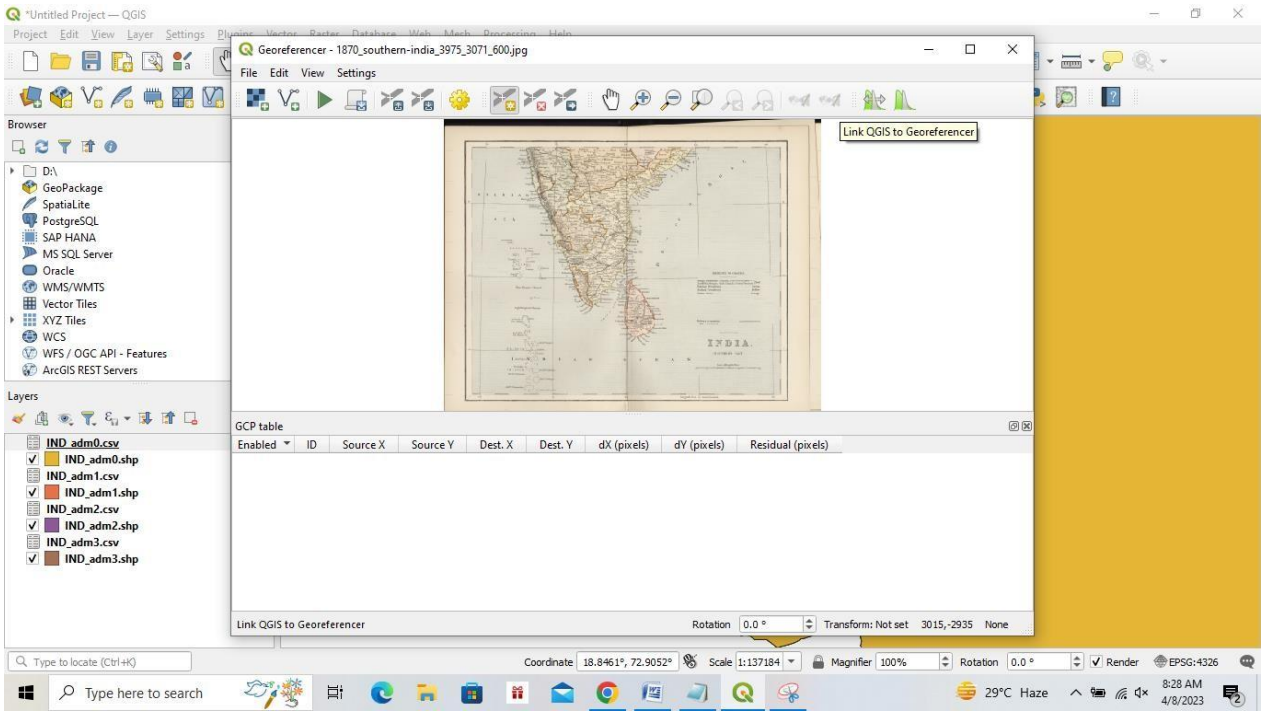
Step 7: A new Georeferencer window will appear.



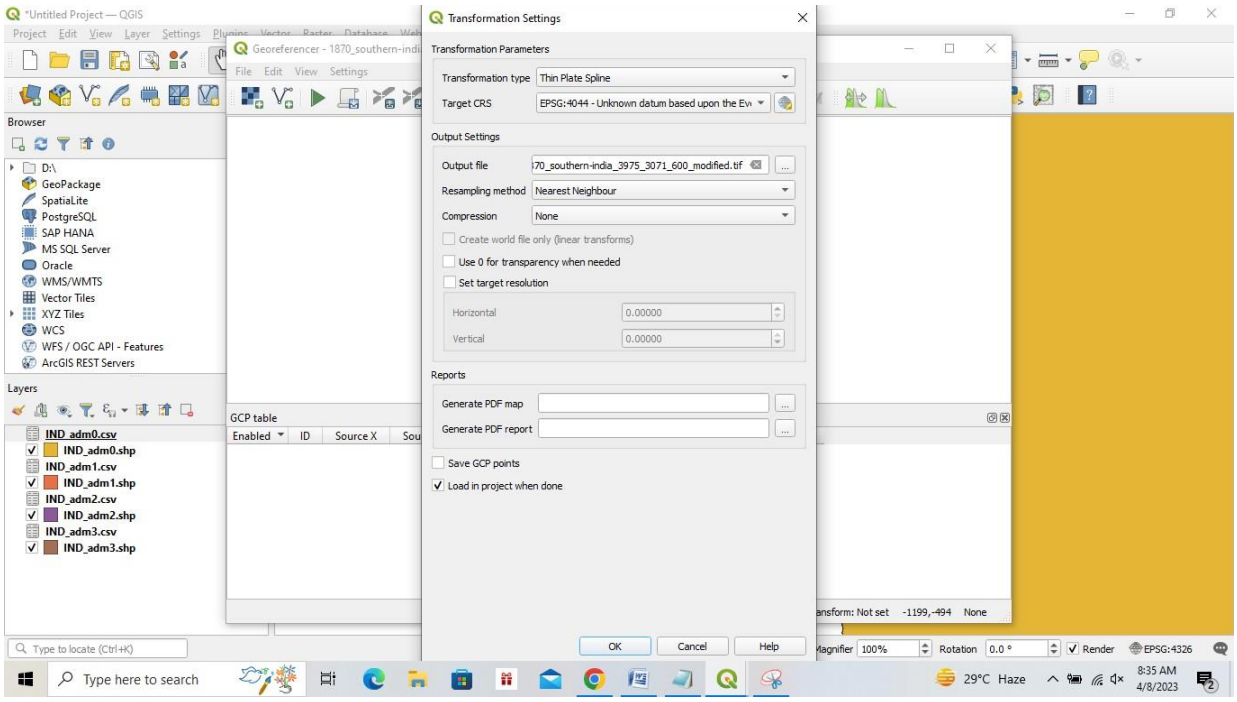

Step 8: File ▯ Open Raster ▯ Select file "1870_southern-india_3975_3071_600.jpg" from project data folder.



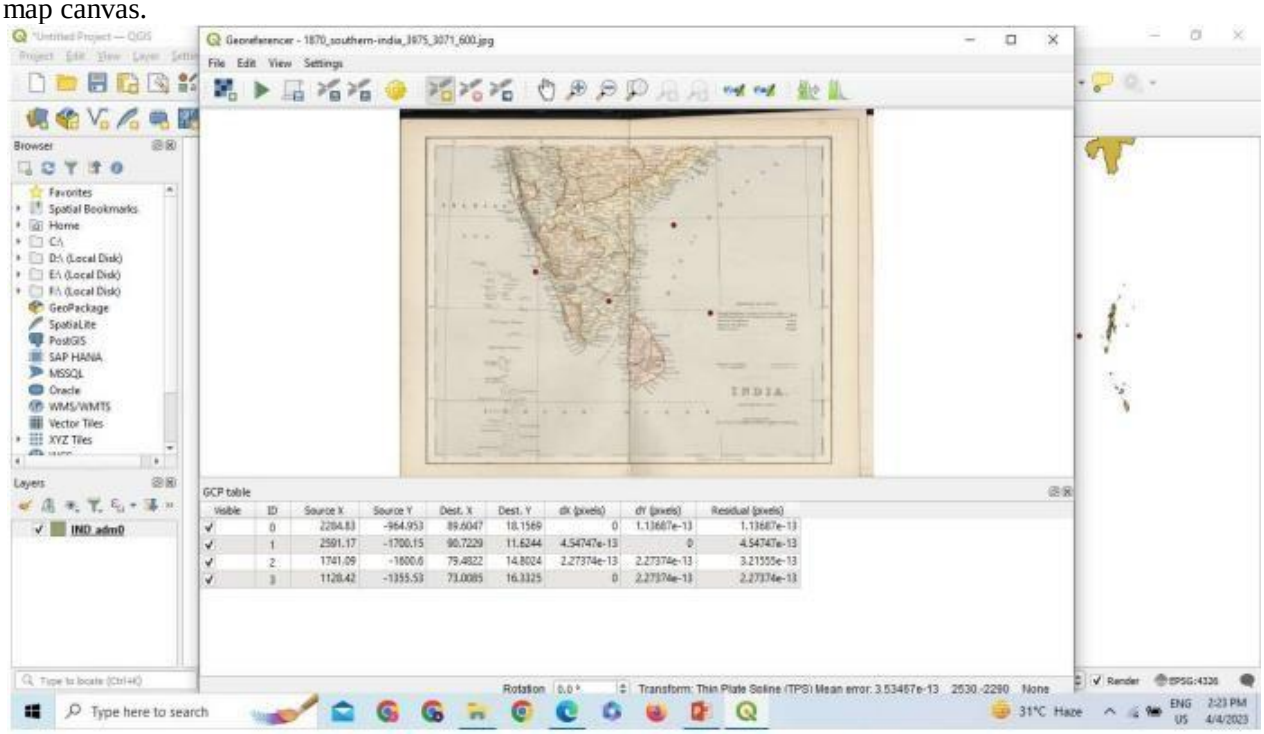
Step 9: The following screen will appear



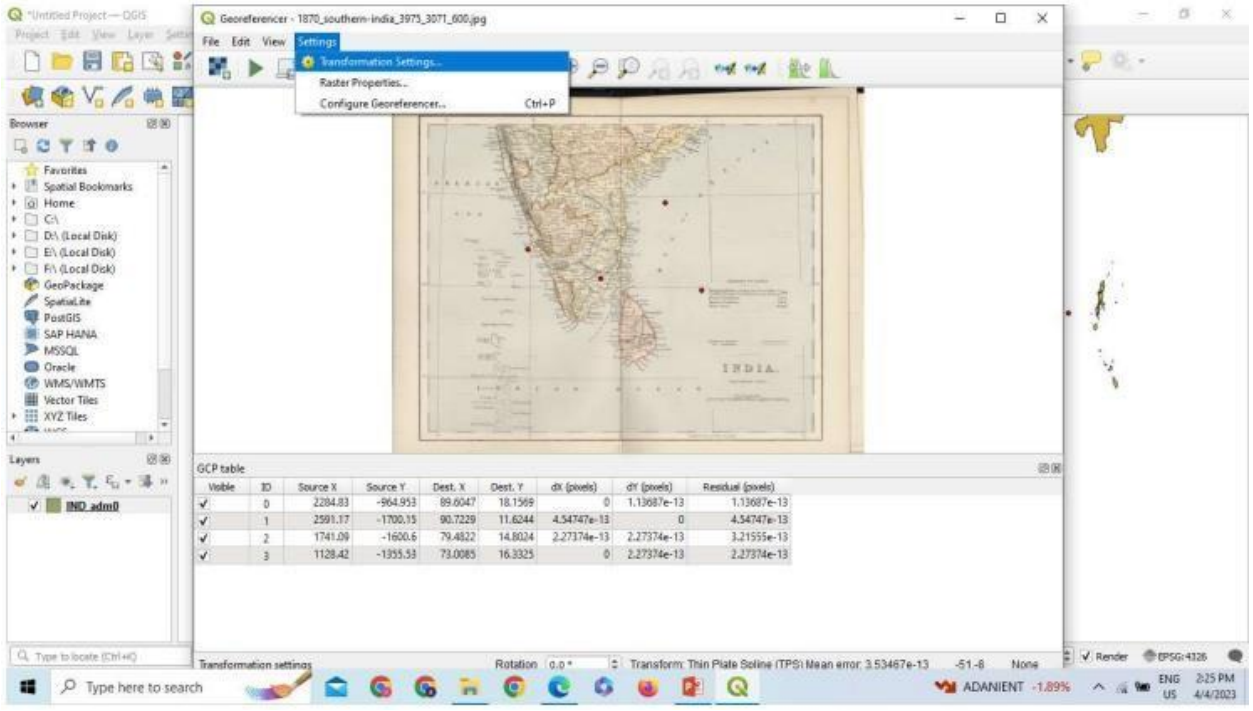

Step 10: Go to Settings □ Transformation Settings □Select Transformation type □Thin Plate SplineRe-sampling Method □ Nearest Neighbour
Target SRS □ Everest 1830 datum: EPSG 4044
Select Output Raster Name and Location
Check the “Load in QGIS when done” option
Press “OK”



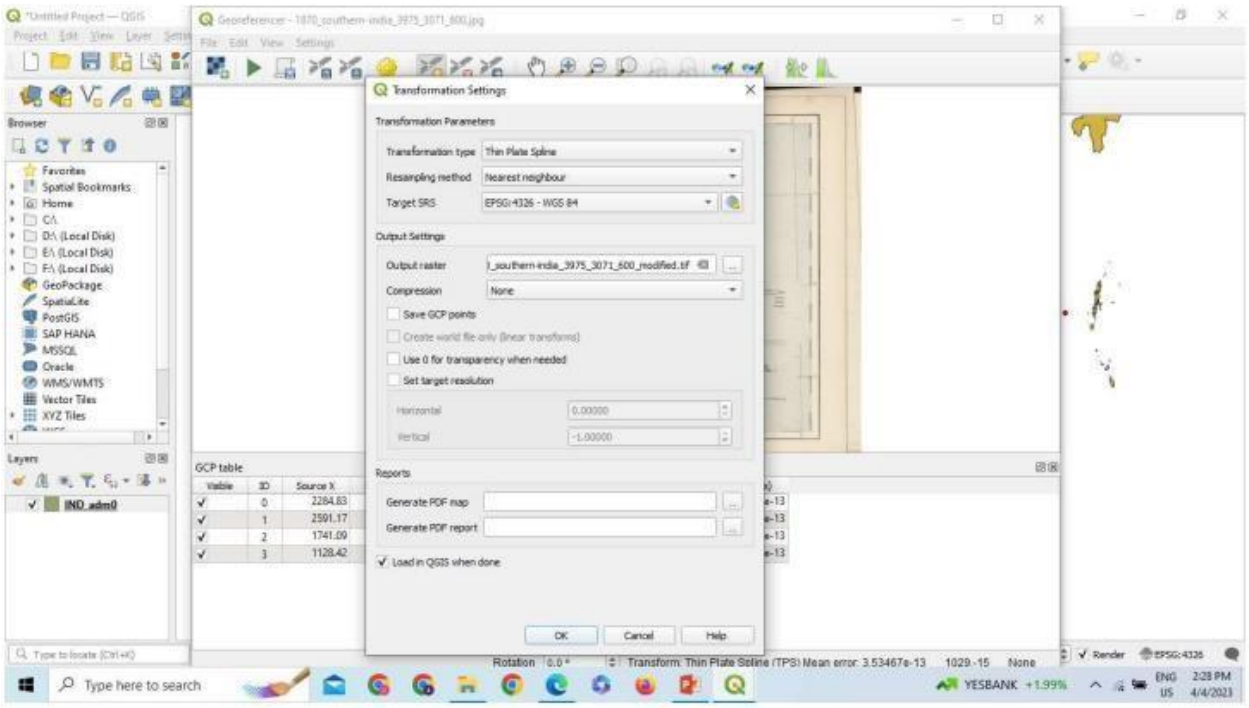
Step 11: In Georeferencer window Go to Edit □ Add Points □ Select the set of control points □ From map canvas.



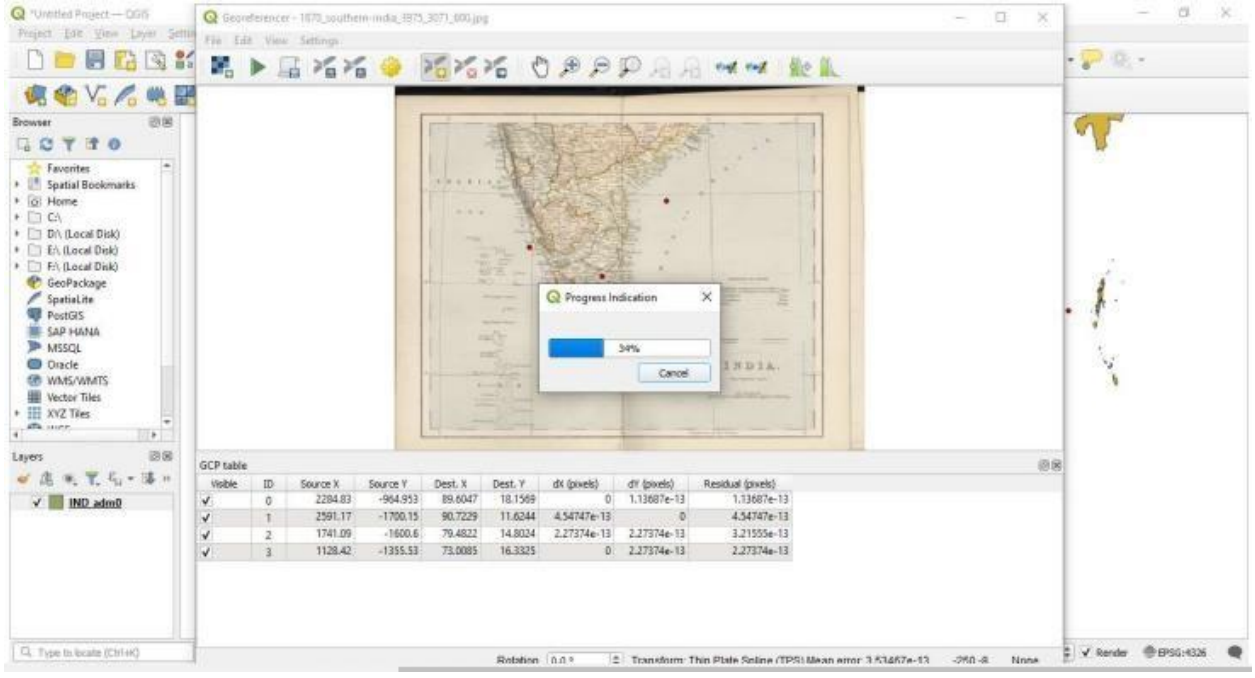

Step 12: Go to, Setting _ Transformation Settings

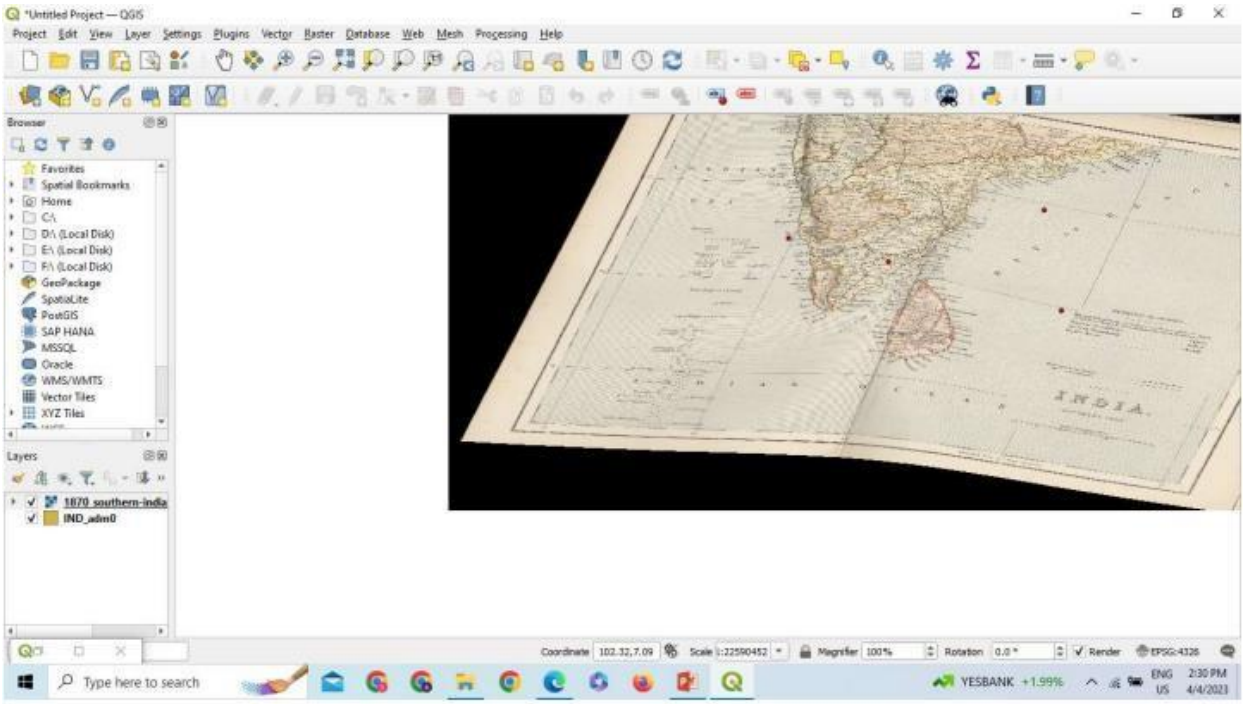


Step 13: Go to, Setting □ Transformation Settings □ Set Target SRS □ EPSG: 4326 – WGS 84

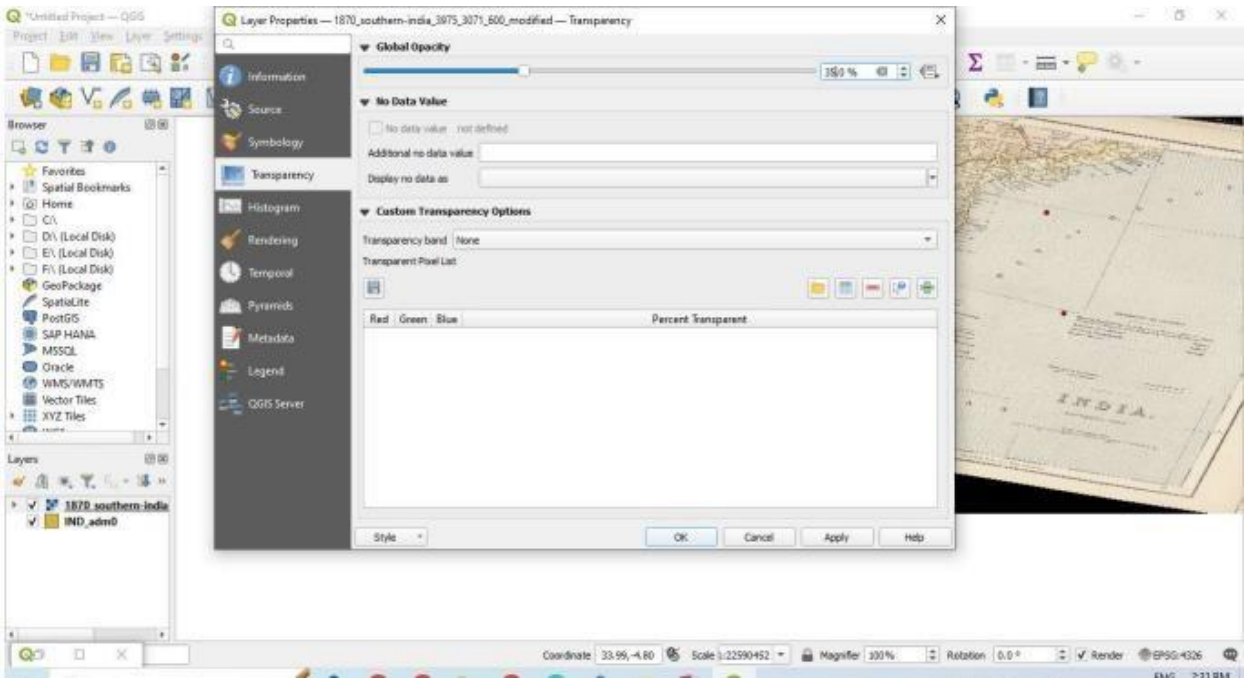


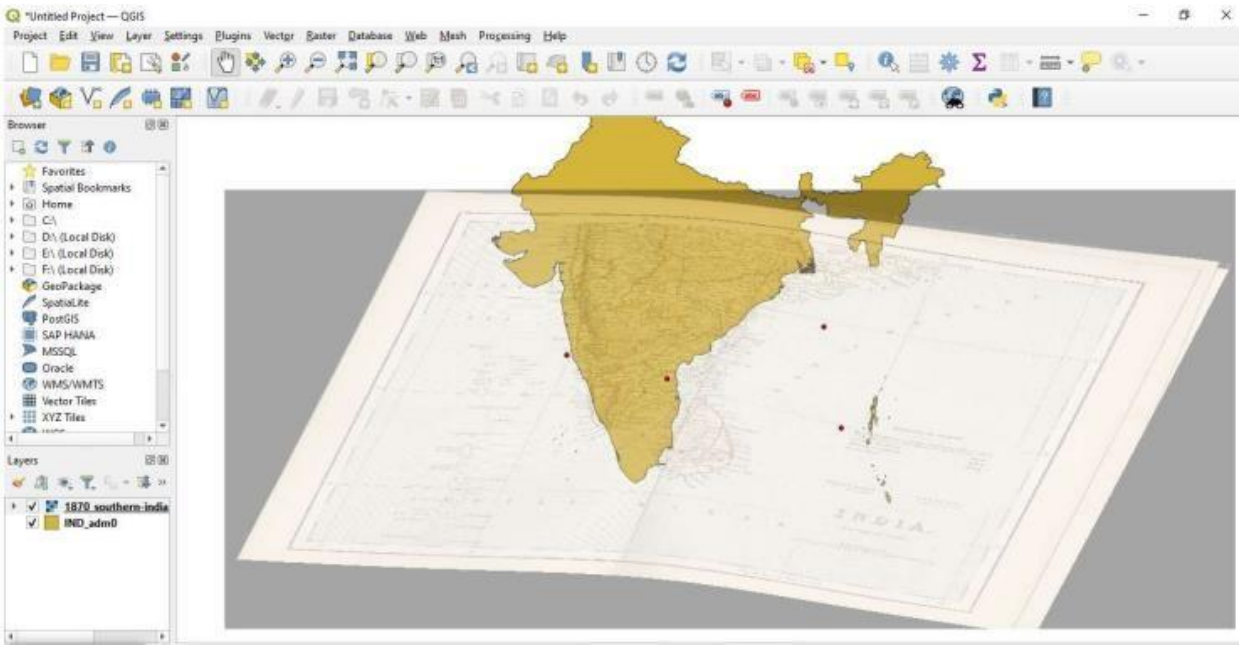

Step 14: Press Run






Step 15: Set Transparency level of raster layer to appropriate level.
Right Click 1870_southern-india □ Properties □Transparency □Global Opacity □35%

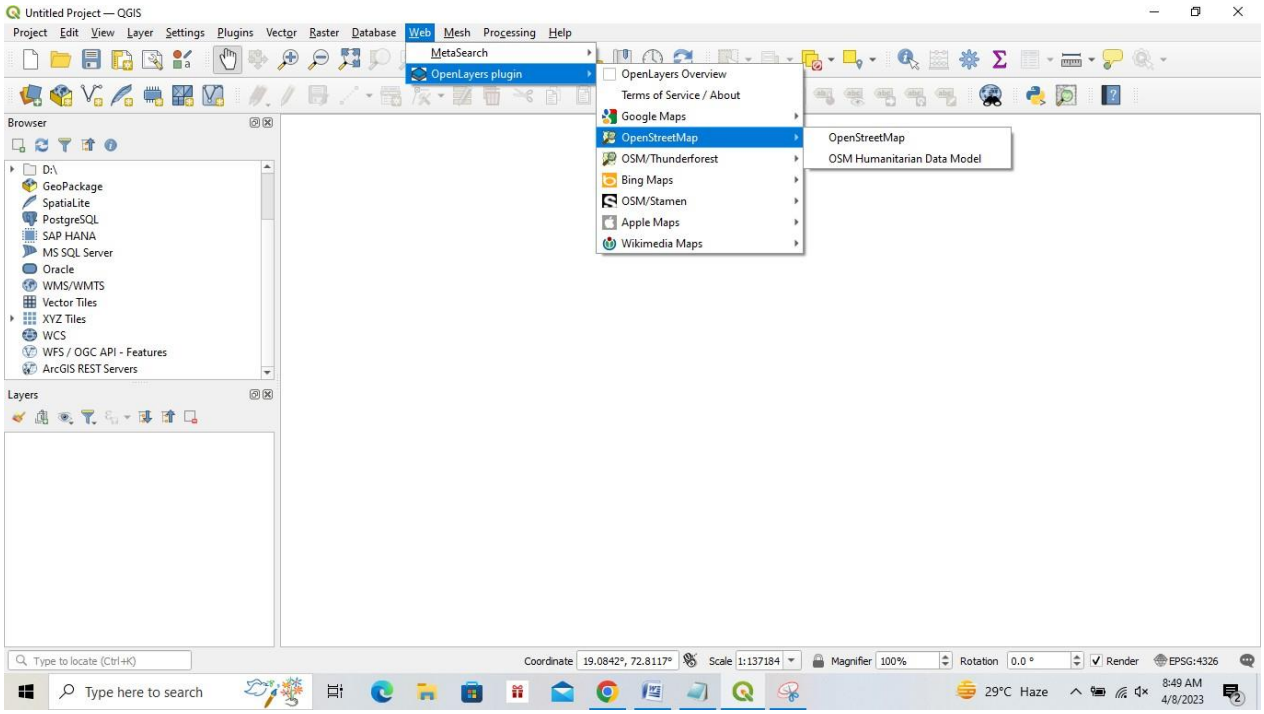



*Untitled Project — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Home
C:\
D:\ (Local Disk)
E:\ (Local Disk)
F:\ (Local Disk)
GeoPackage
SpatiaLite
PostGIS
SAP HANA
MSSQL
Oracle
WMS/WMTS
Vector Tiles
XYZ Tiles
Layers
1870_southern-india
IND_adm0
INDIA

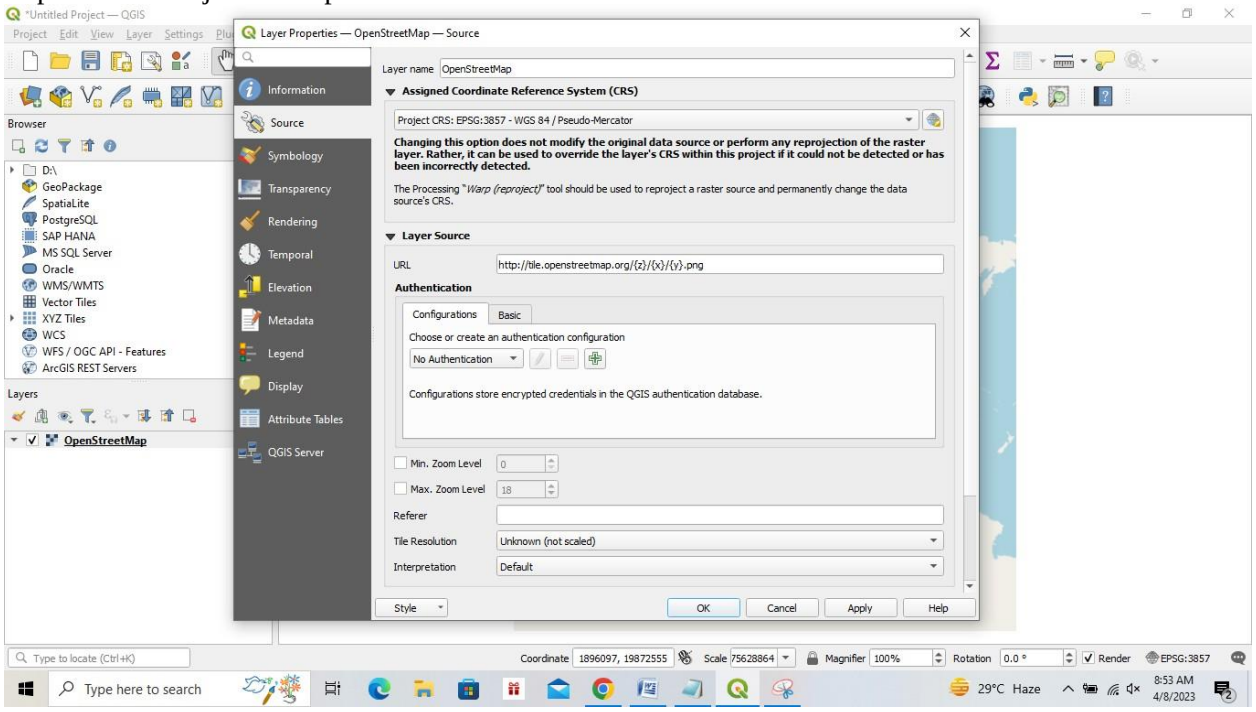
## Practical 6: Georeferencing

**B.** Georeferencing Aerial Imagery

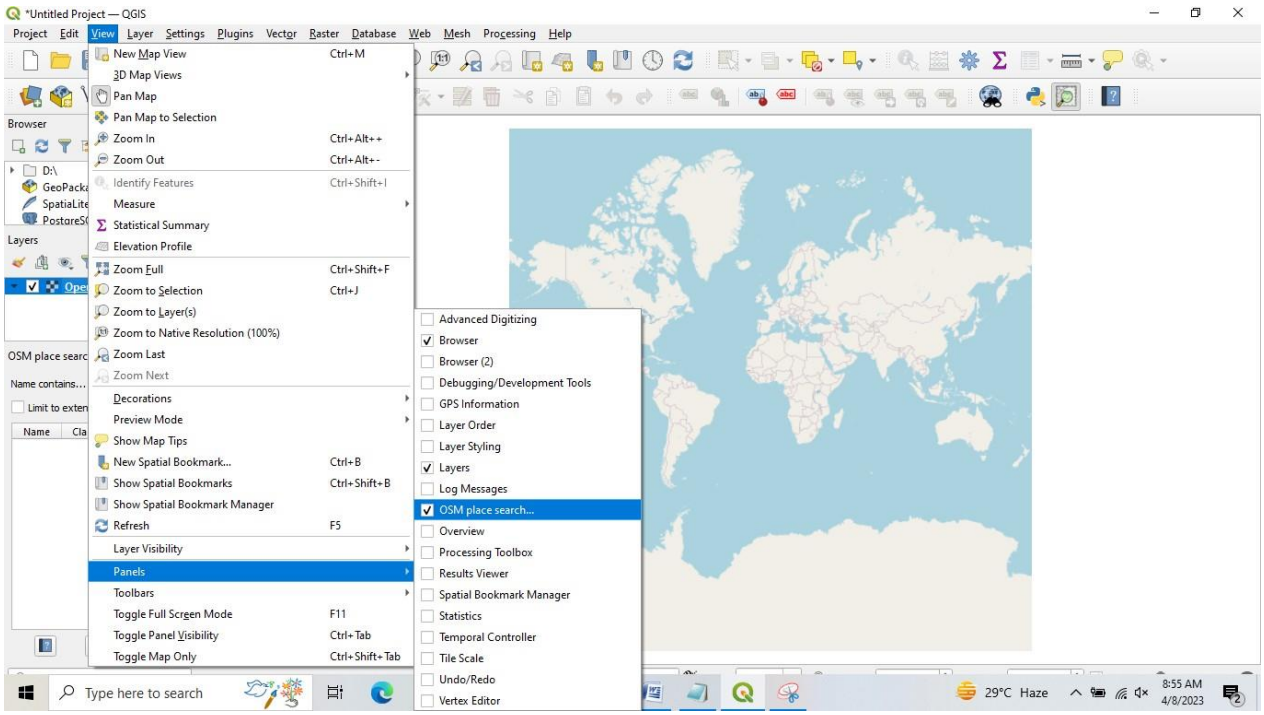
Step 1: Install plugin OpenStreetMap
Go to Web Menu → OpenLayerPlugin → OpenStreetMap →OpenStreetMap



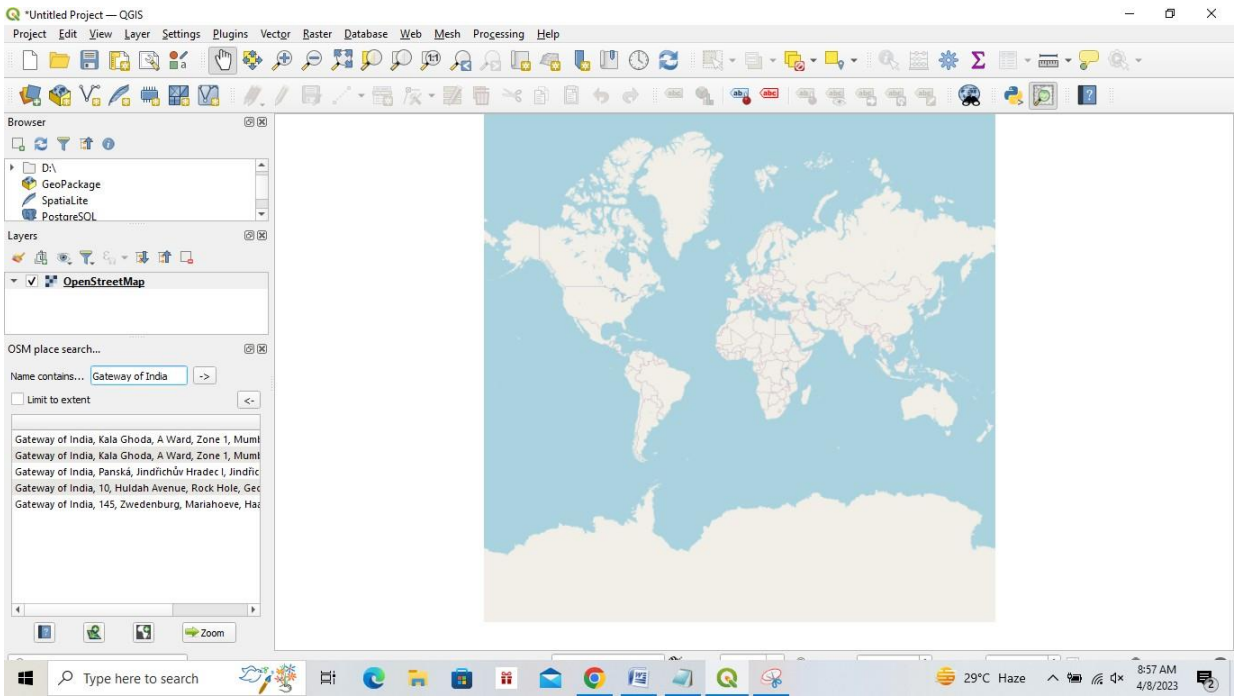

Step 2: Go to Project _ Properties _ Set CRS to EPSG 3857



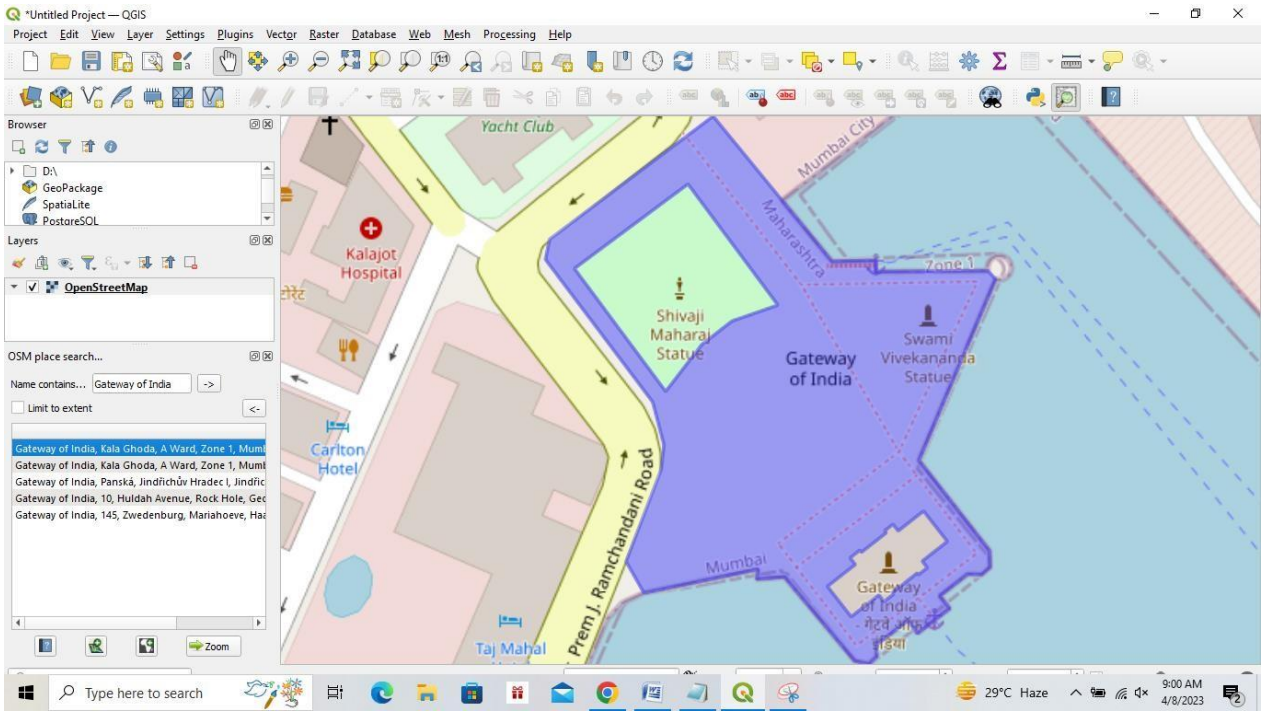
Step 3: Go to View → Panels → select OSM Place search



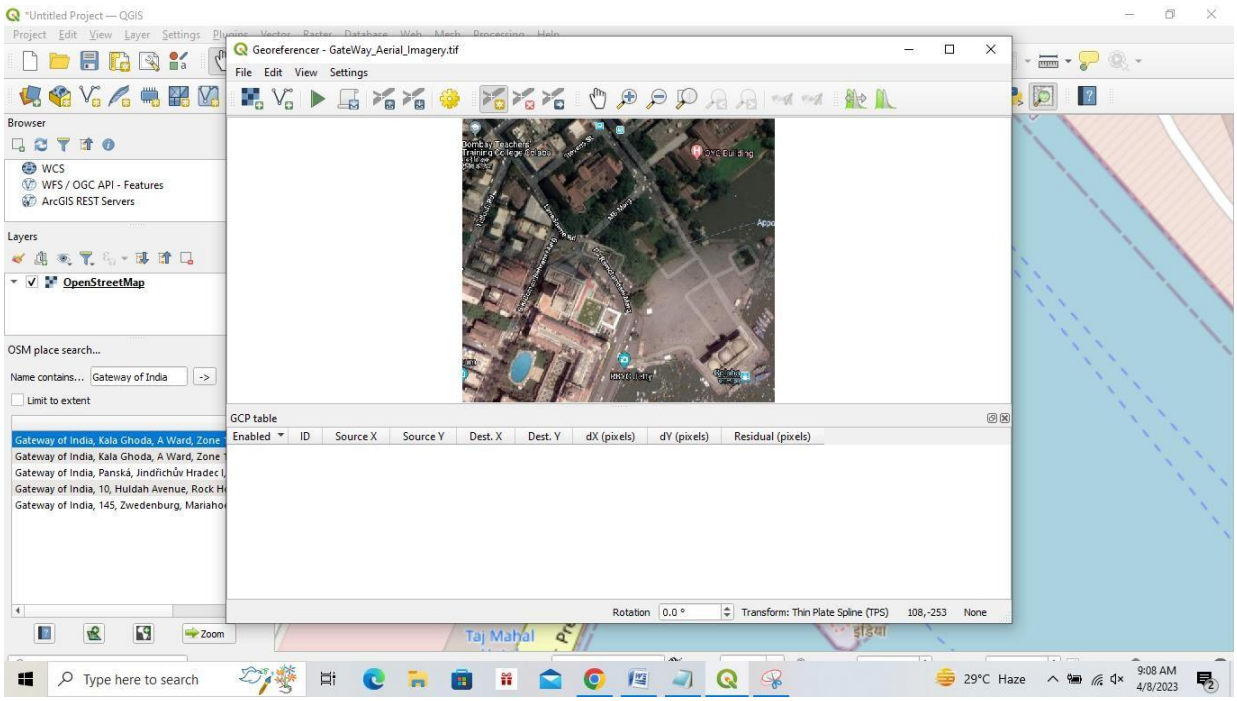

Step 4: The Gateway of India, Mumbai is located at 18.92°N 72.83°E
Search Gateway of India in OSM Search Panel



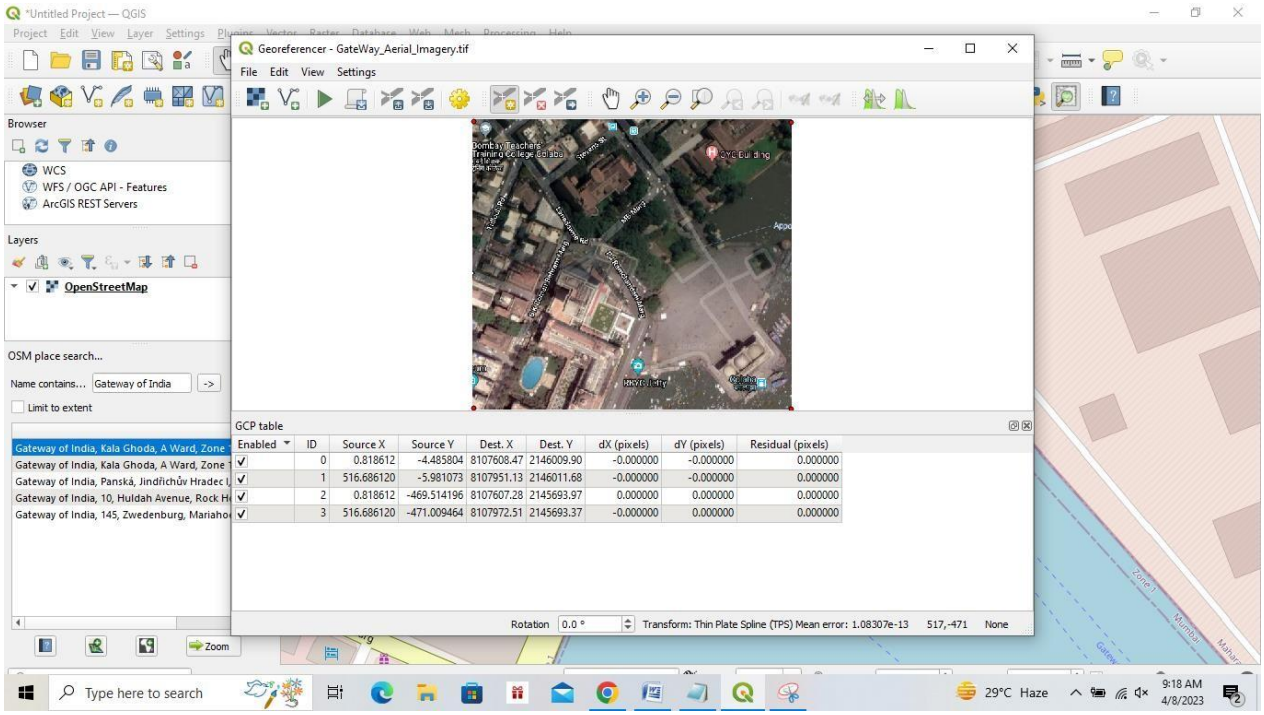
Step 5: Zoom in to appropriate level. The map will appear like this.



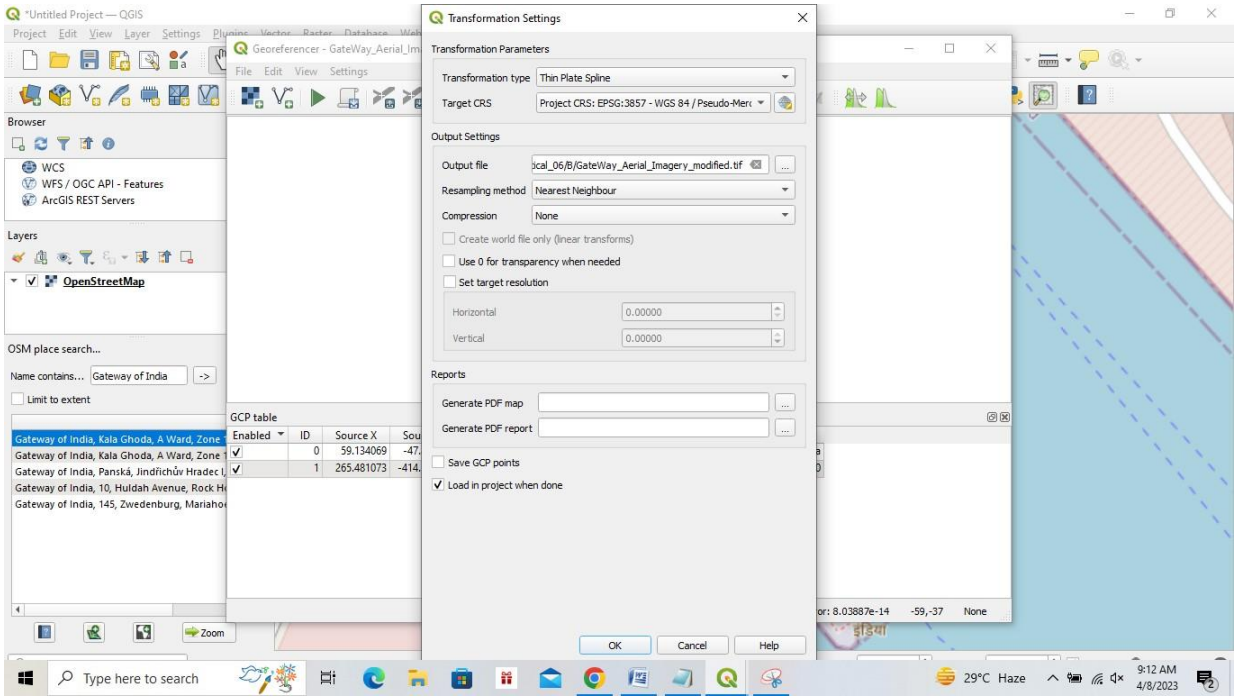

Step 6: File → Open Raster. Select file “Gateway_Aerial_Imagery.tif” from project data folder



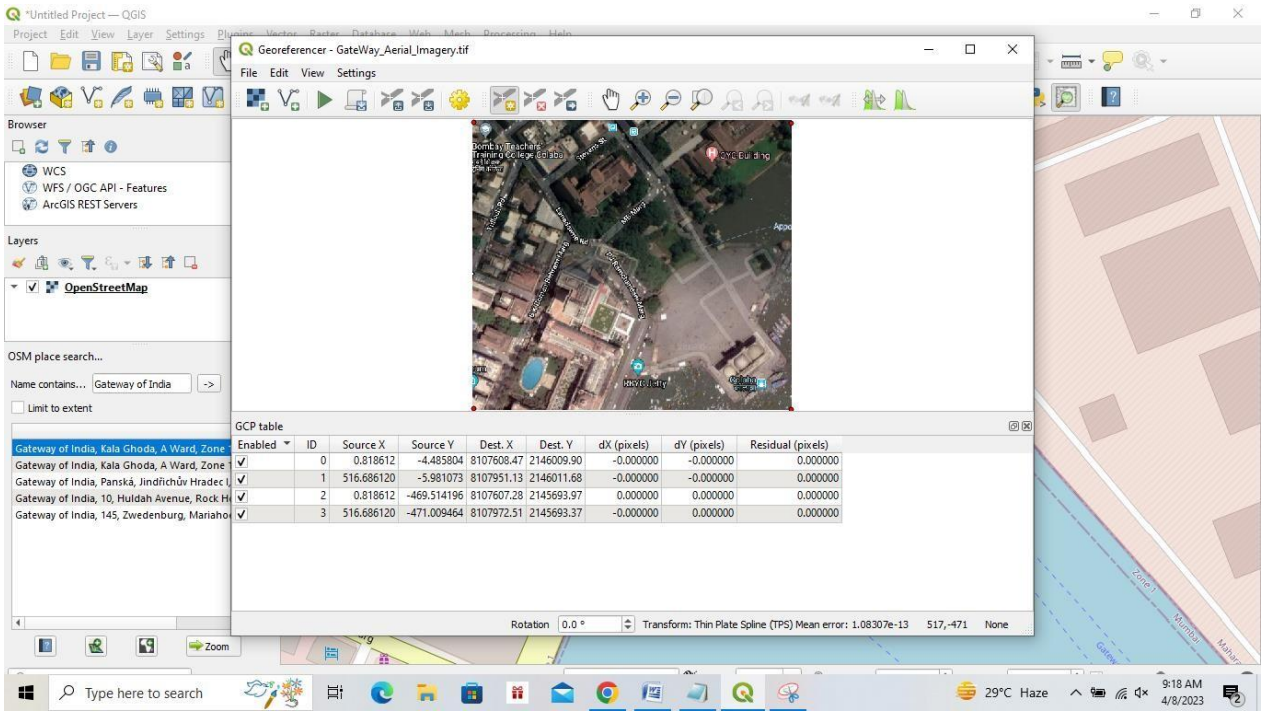
Step 7: Go to Edit □ Add Point. Select control points from map (Indicated in red color) □From Map Canvas.



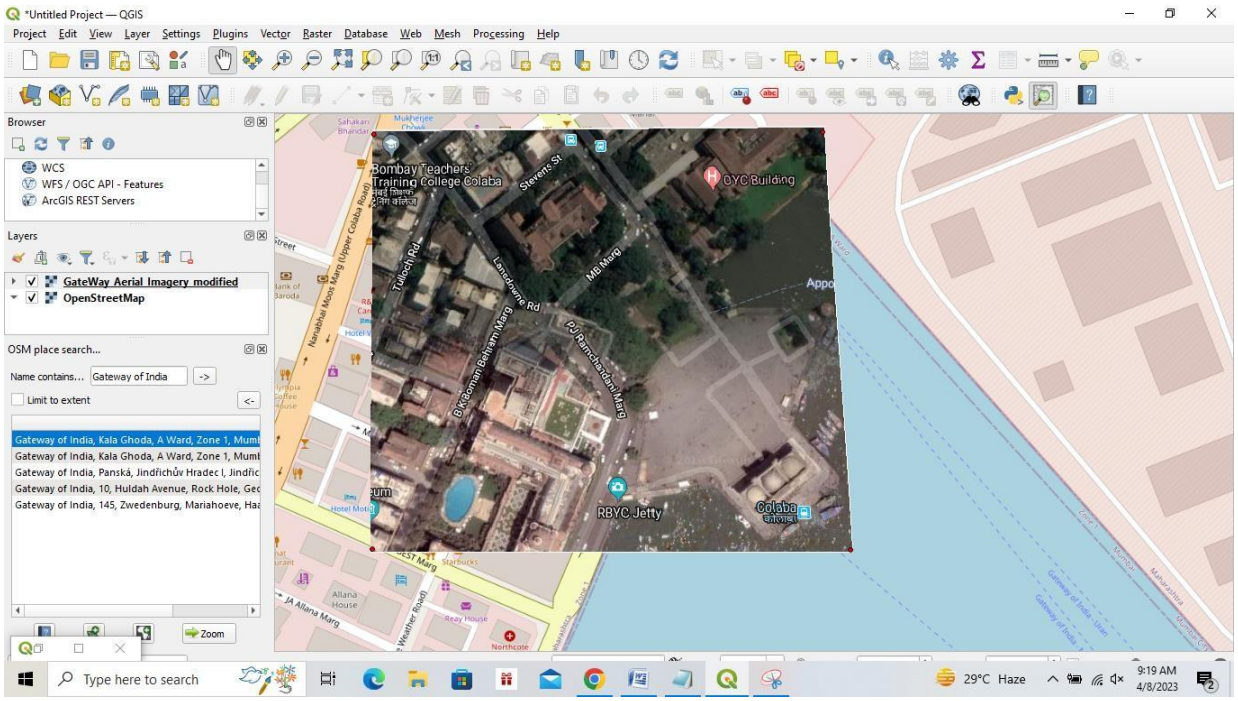

Step 8: Go to Setting □ Transformation Setting □ Set Target SRS □ EPSG:3857 – WGS 84 and Output raster path.



Step 9: Press Run



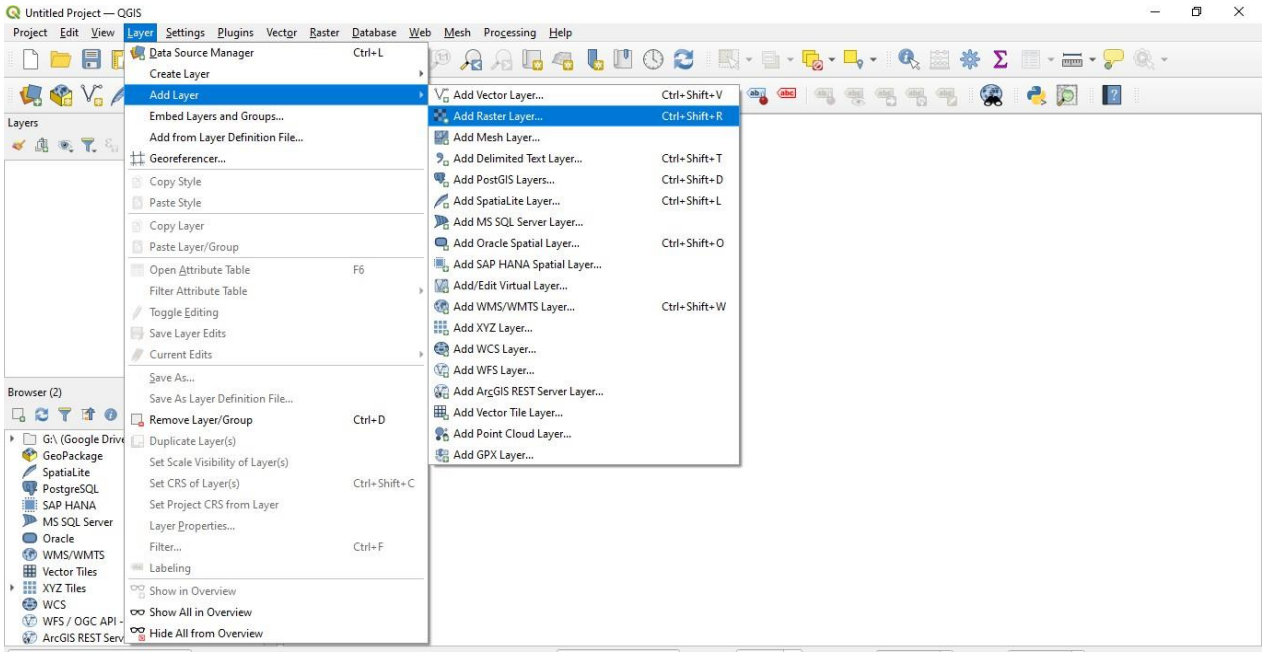

Step 10: Observe that the aerial image of the Gateway of India is georeferenced on OSM in the map canvas.

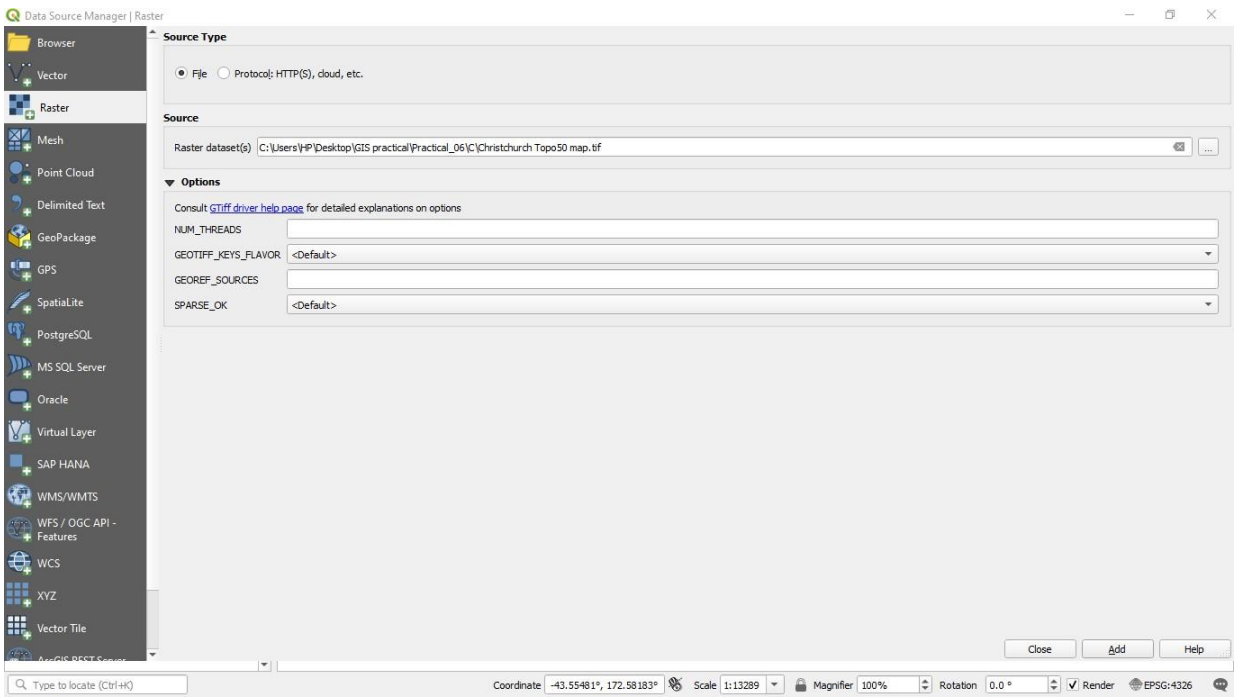


## Practical 6: Georeferencing

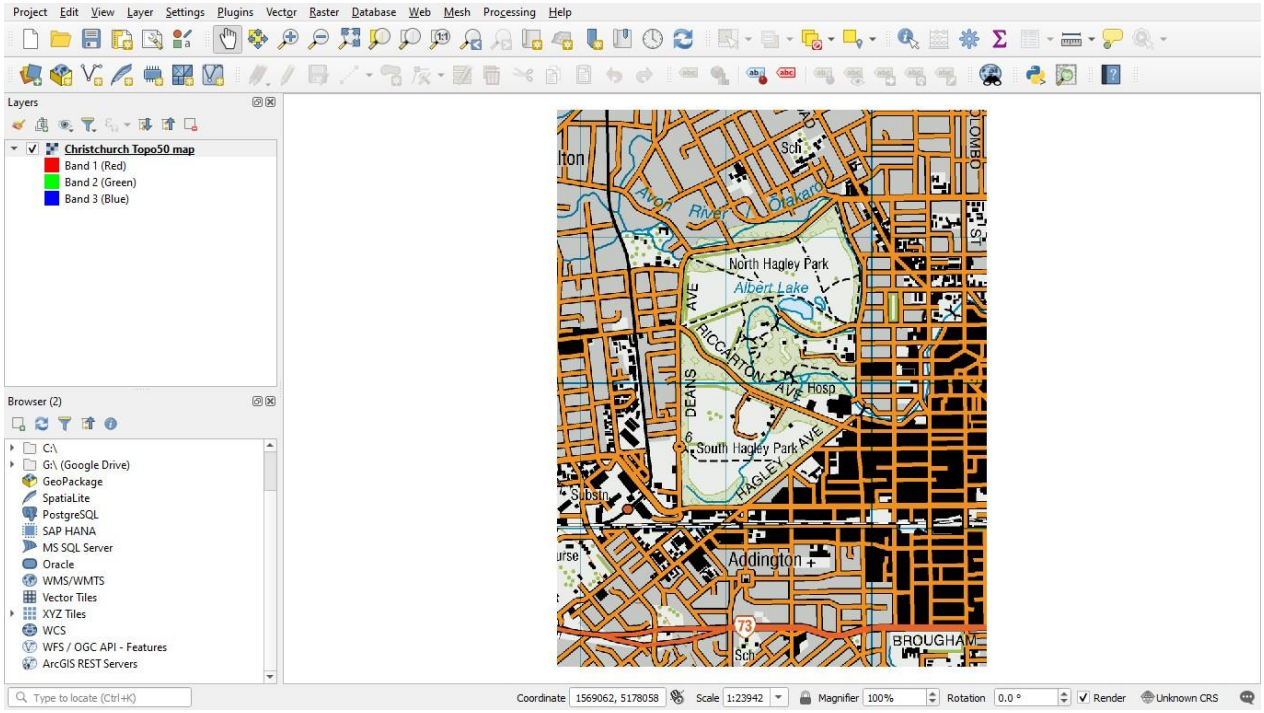
**C.** Digitizing Map Data

Step1: Go to layer →Add raster →Select "Christchurch Topo50 map.tif" from project Folder

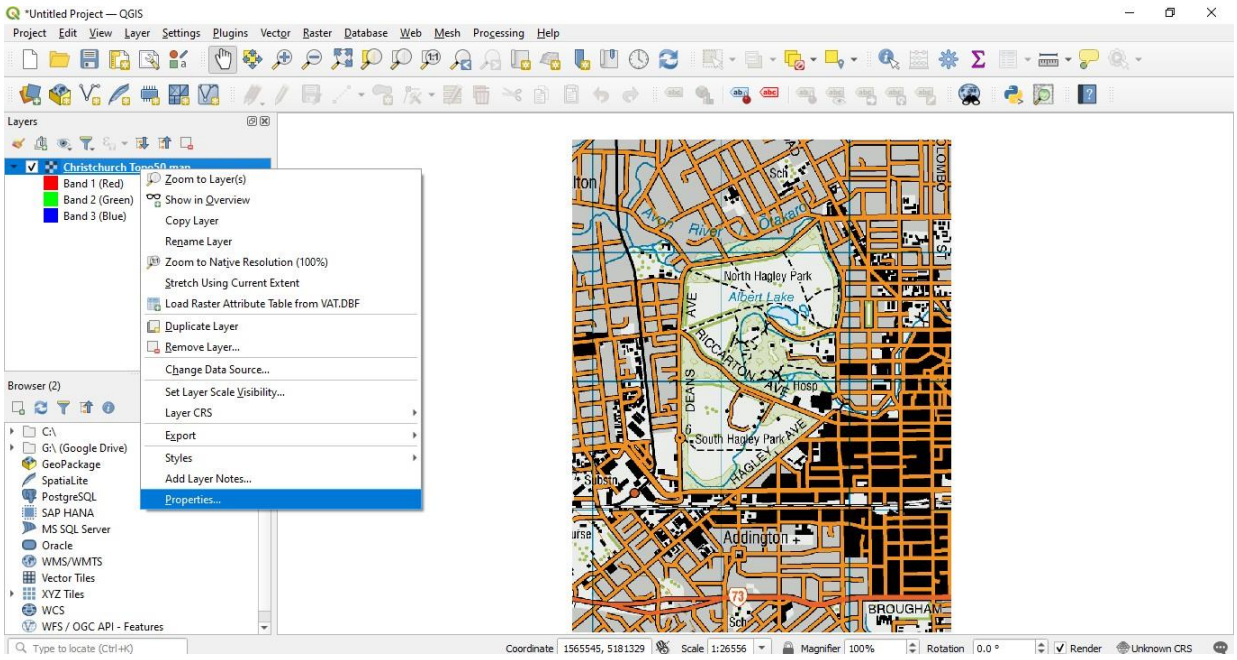


Step 2: QGIS offers a simple solution to make raster load much faster by using Image Pyramids

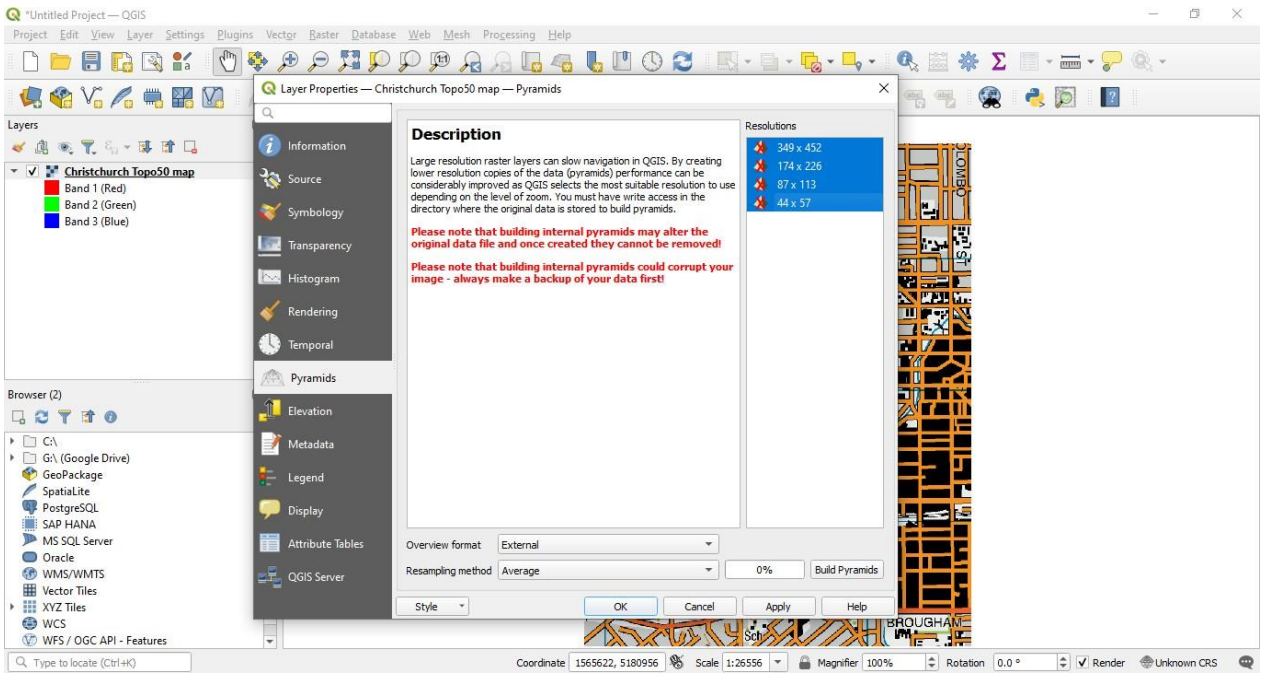



Step 3: Right-click the Christchurch Topo50 map.tif layer and select Properties

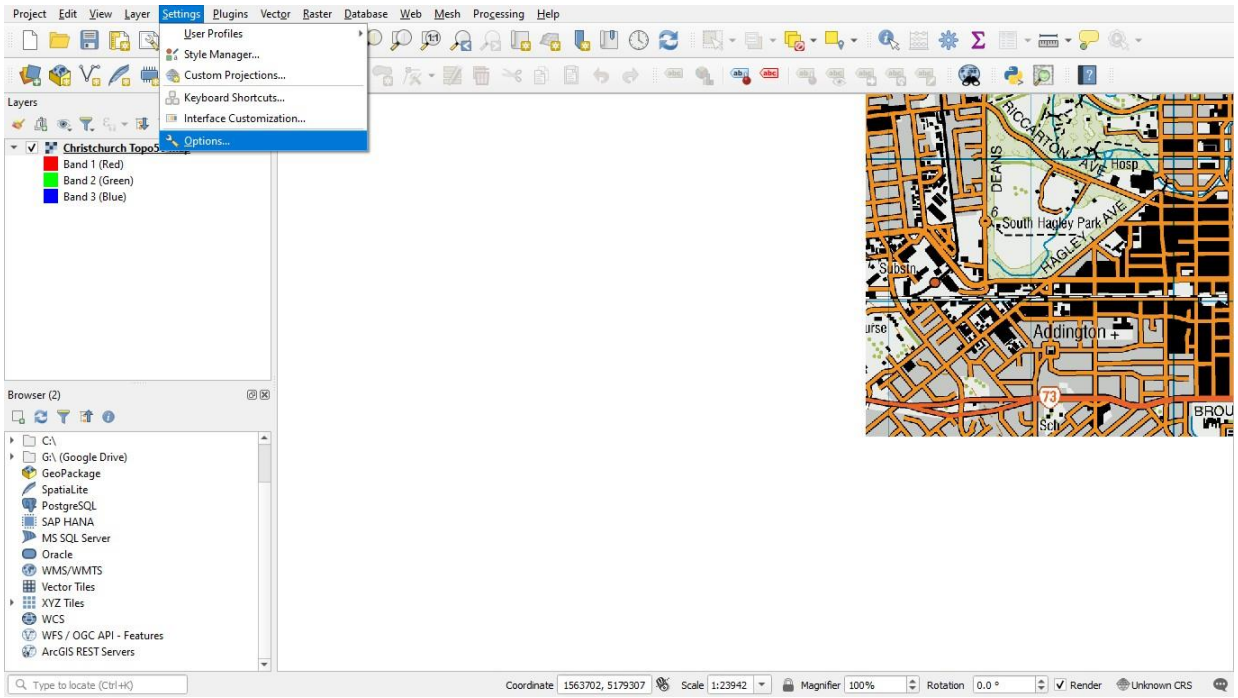


Step 4: Choose the Pyramids tab. Hold the Ctrl key and select all the resolutions offered in the Resolutions panel.

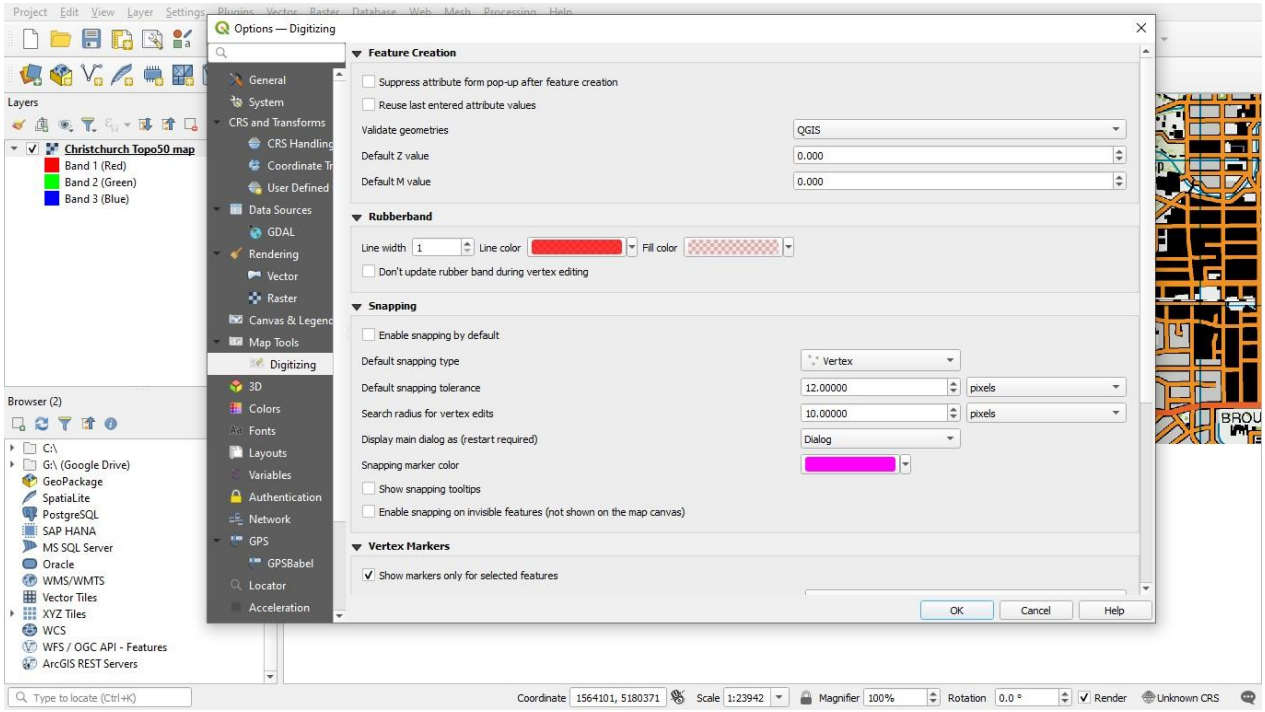
Step 5: Click Build pyramids. Then click OK.



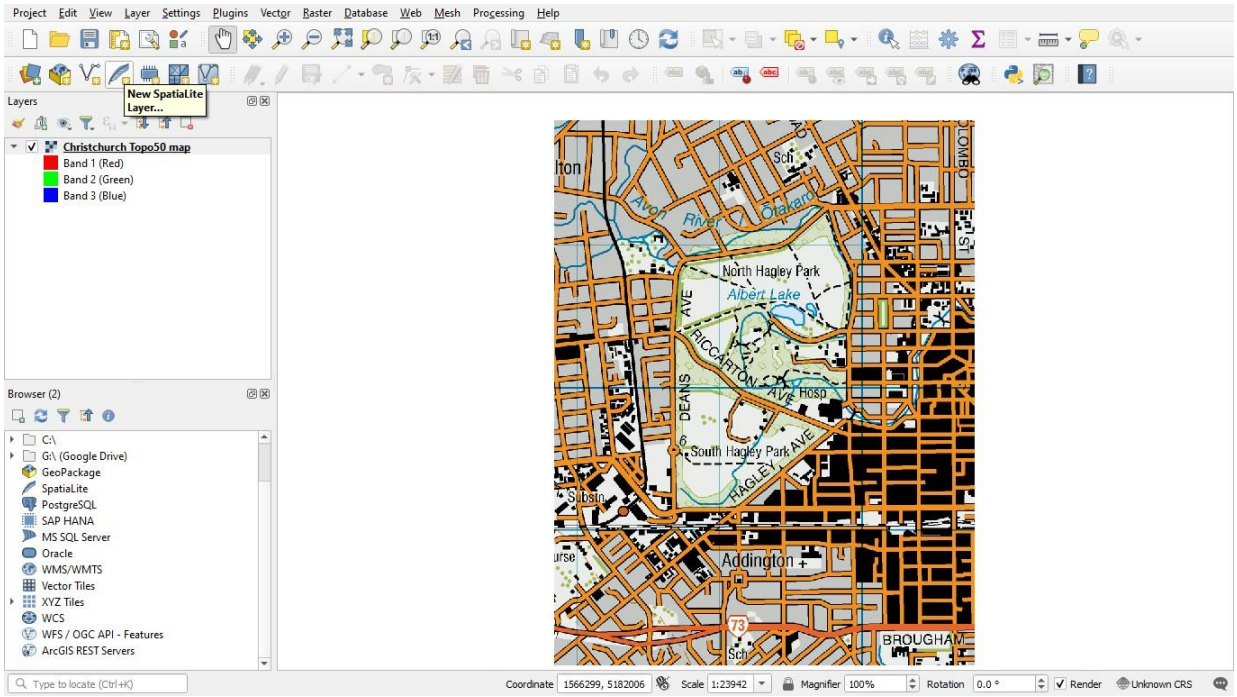

Step 6: Go to Settings → Options



Step 7: Select the Digitizing tab in the Options dialog. Set the Default snap mode to vertex and segment. Press OK.

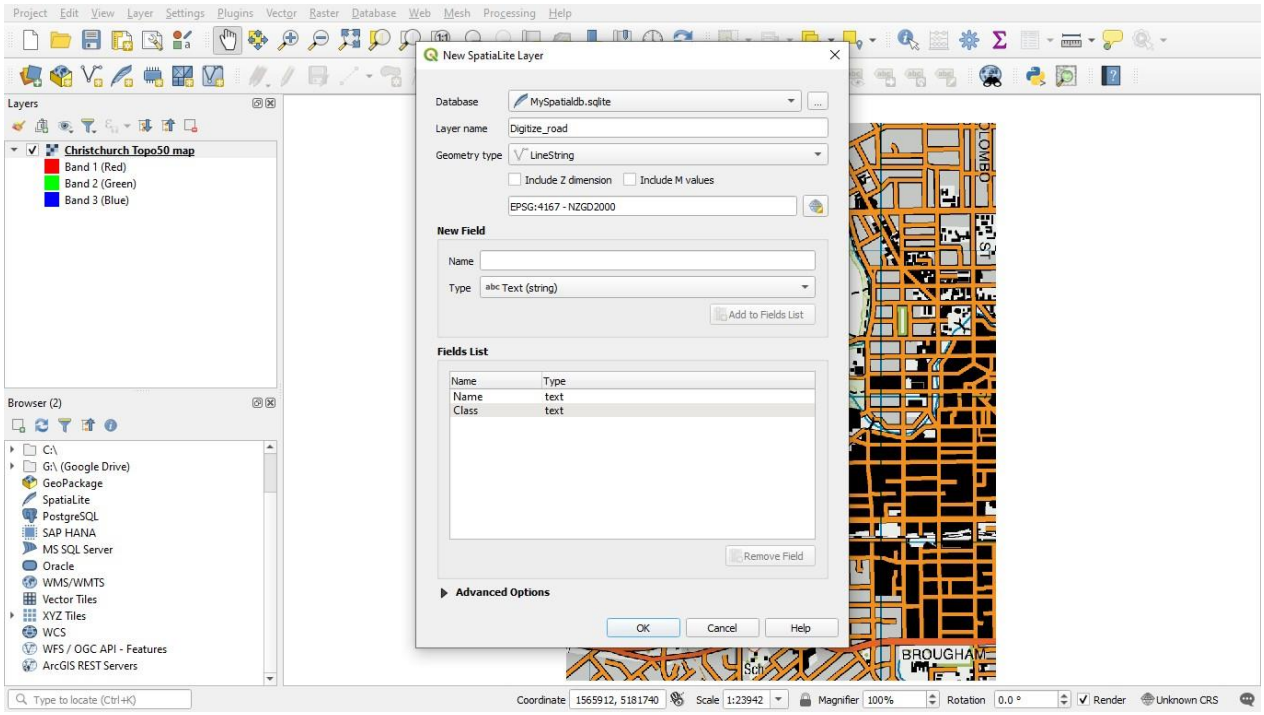



Step 8: Click New SpatialLite Layer

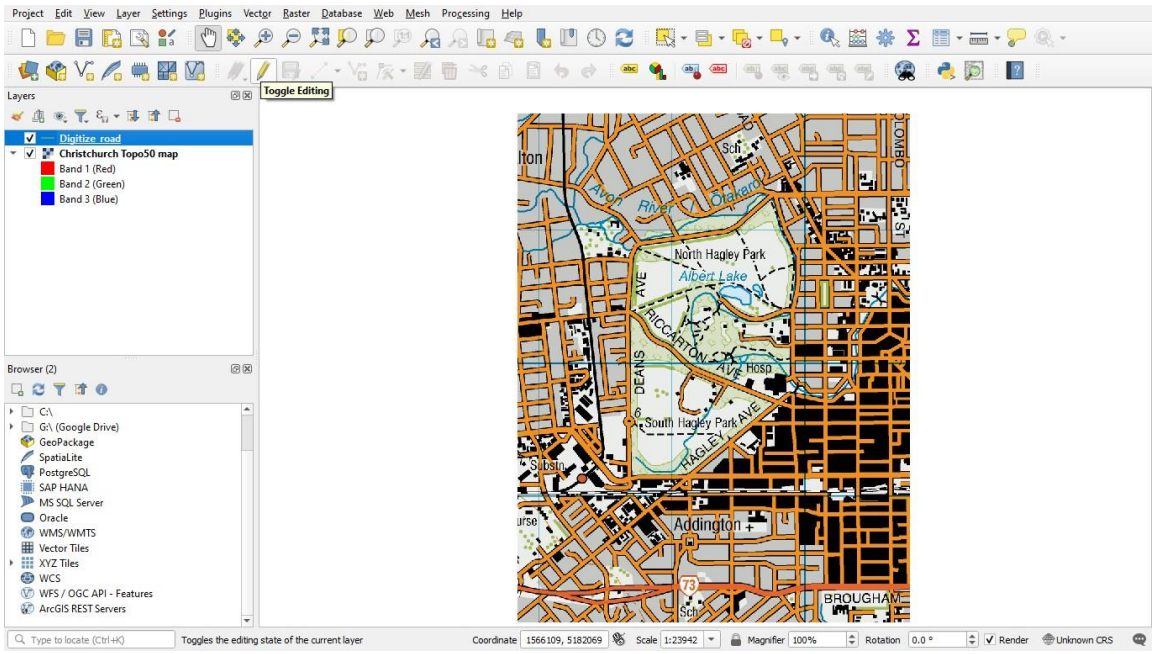


Step 9: Select the name and location for Spatial database eg: “GIS_Workshop\Practicals\Practical_06\C\MySpatialDataBase.sqlite”. Name the Layer as “Digitized_Road. Set Geometry type as “Line”. Set CRS EPSG:4167 – NZGD2000

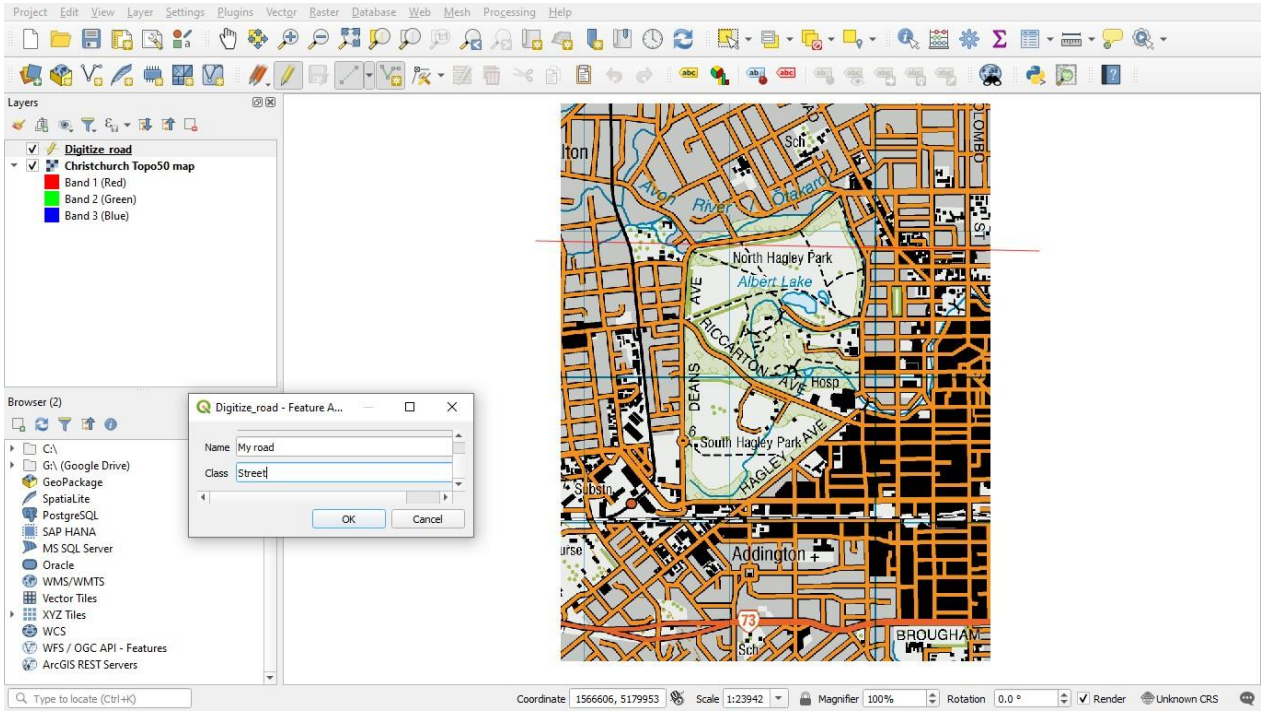
Step 10: Add “Name” and “Class” fields using “Add to Fields List”



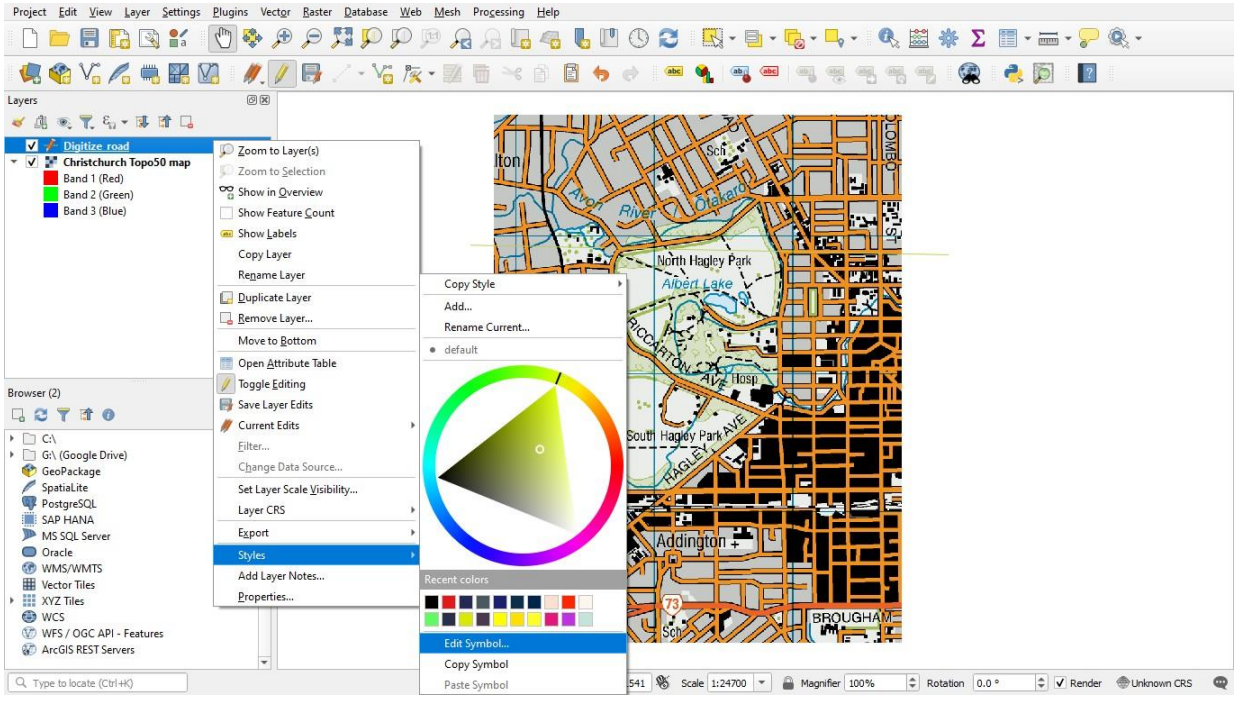

Step 11: Once the layer is loaded, click the Toggle Editing button to put the layer in editing mode. Click the Add feature button



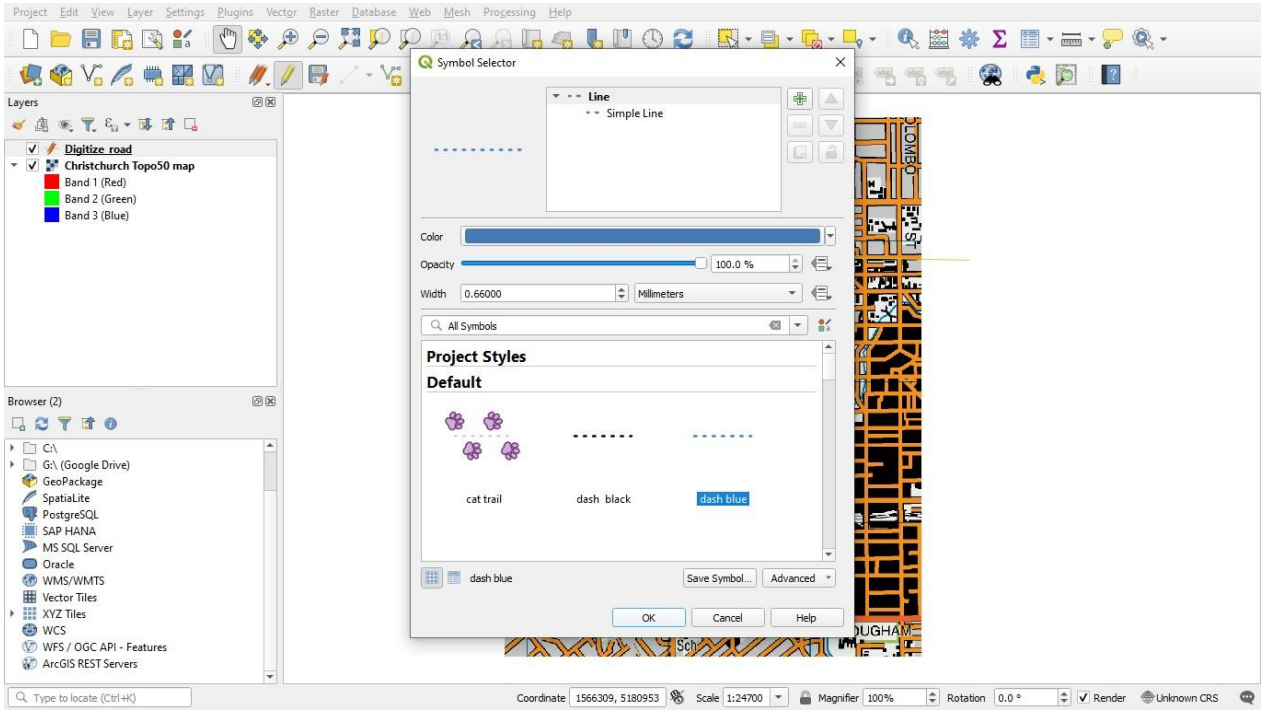
Step 12: Click on the map canvas to add a new vertex. Add new vertices (red line) along the roadfeature. Once you have digitized a road segment, right-click to end the feature



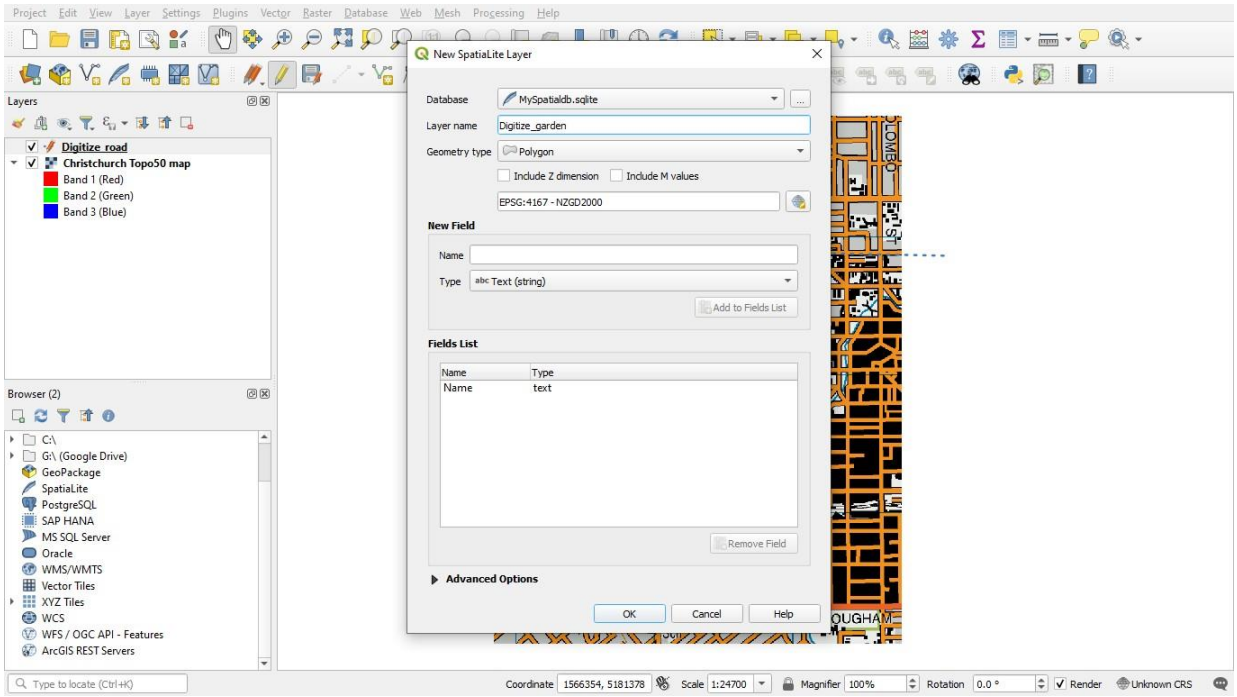

Step 13: On Layer Panel Right Click on Digitize_Road, Select the Style tab in the Layer Properties dialog



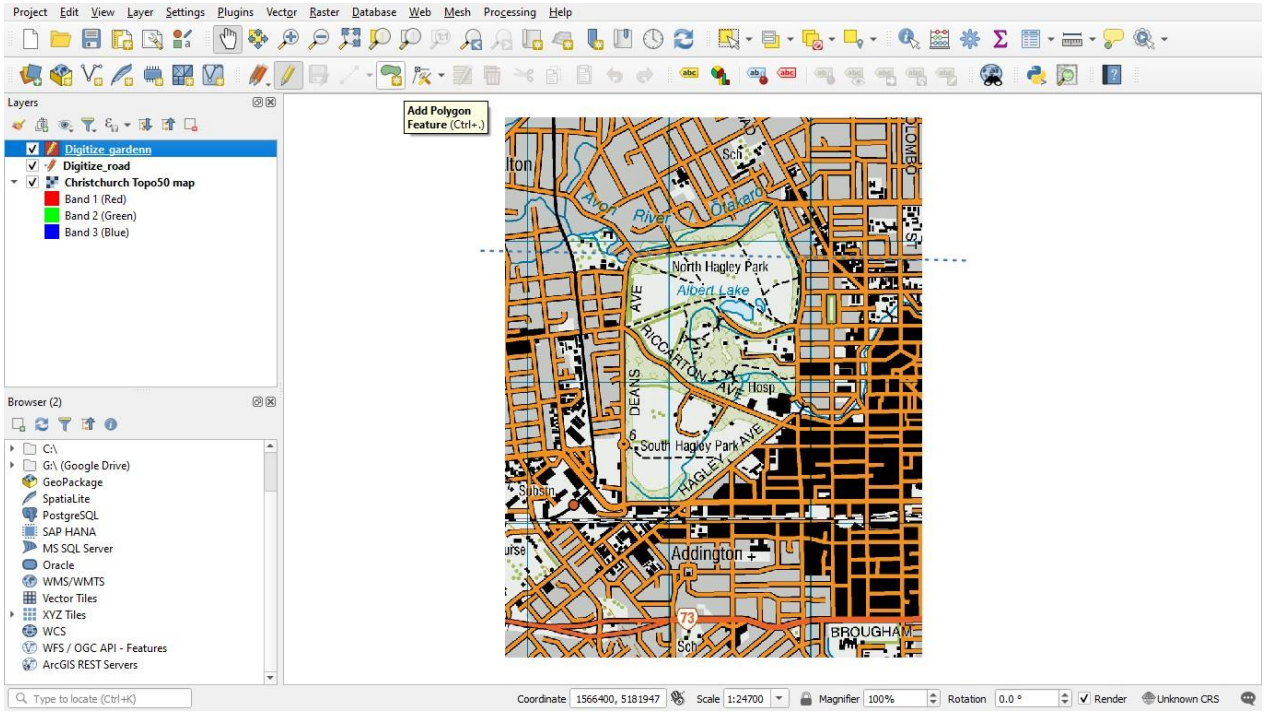
Step 14: Click on the “OK” button after choosing your appropriate style.

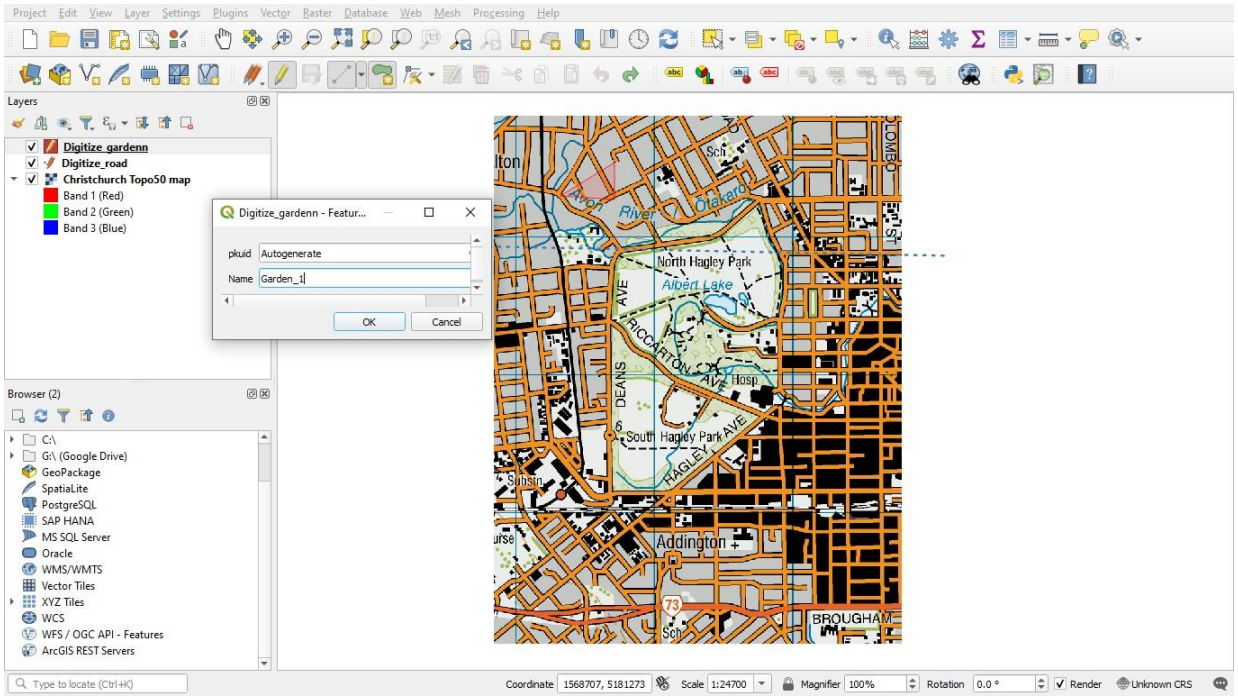



Step 15: Create a new spatial layer once again, but this time it should be a polygon based layer. Set the CRS to 4167 and name as Digitized_Garden. Add new Field “Name”.

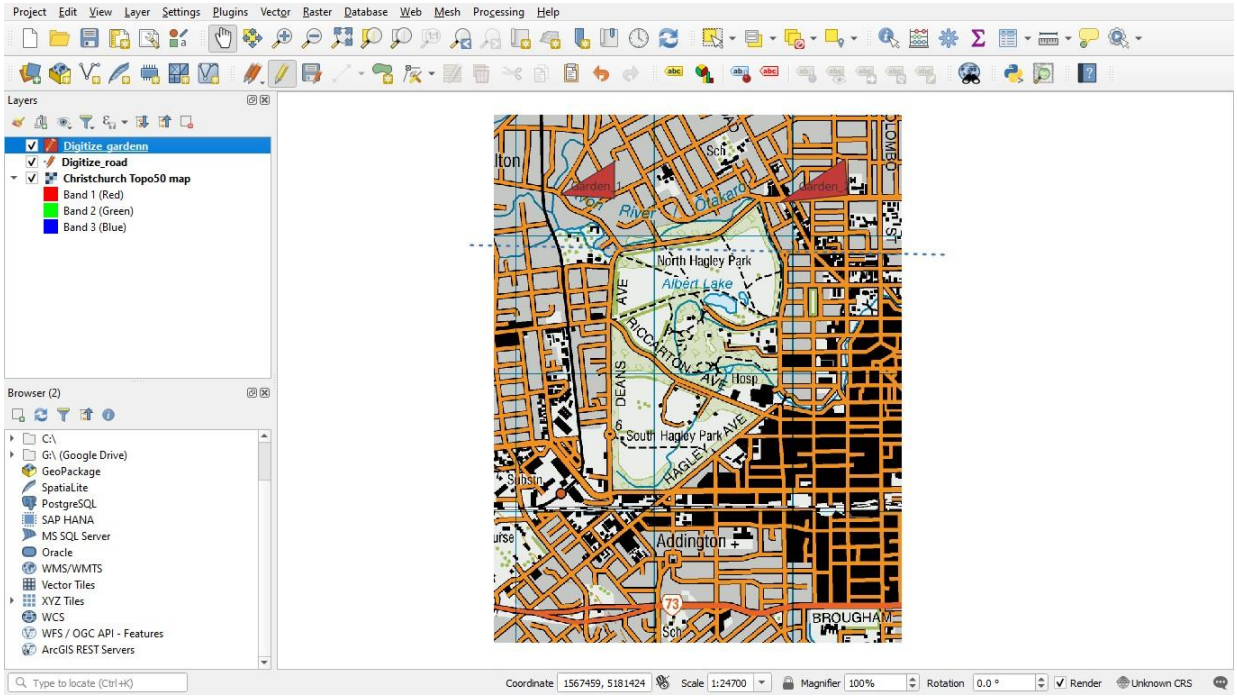


Step 16: Select Digitized_Garden layer in Layer Panel and click on Toggle Editing button and then AddPolygon Feature button on the tool bar. Add gardens to the region by adding polygon. The layer will appear on map canvas.



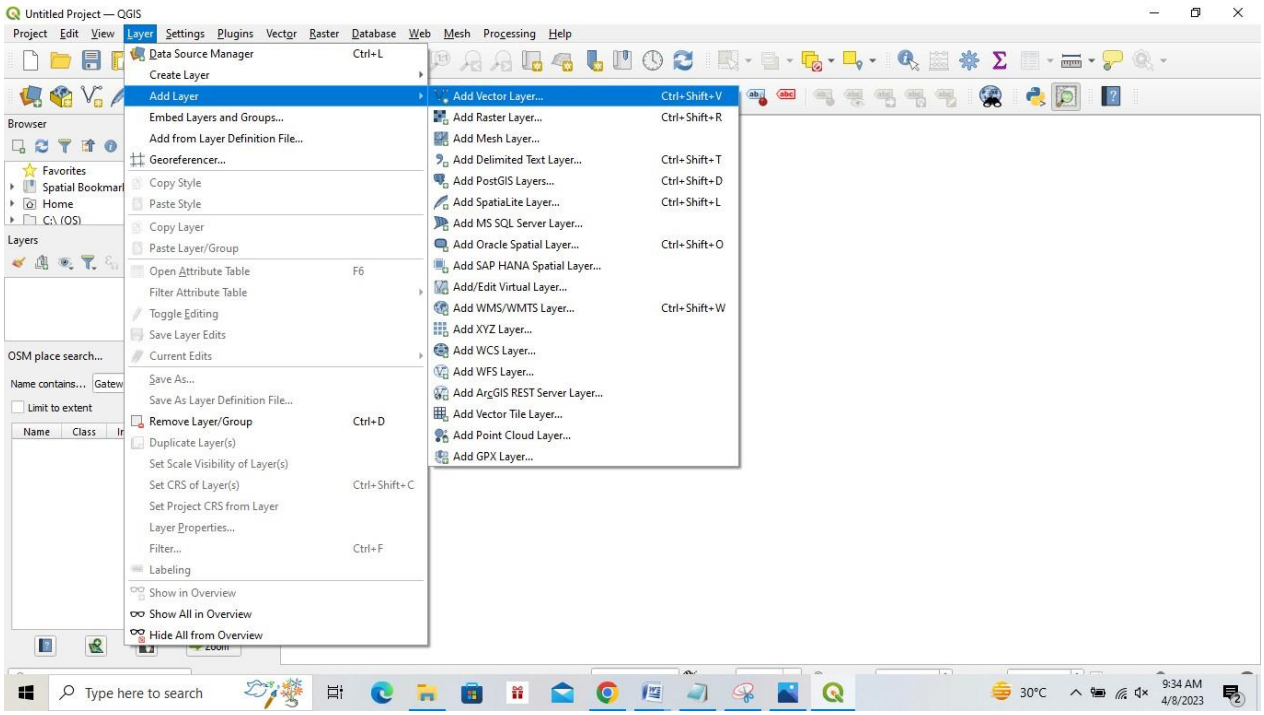
Step 17: Add one more polygon “Garden_2”



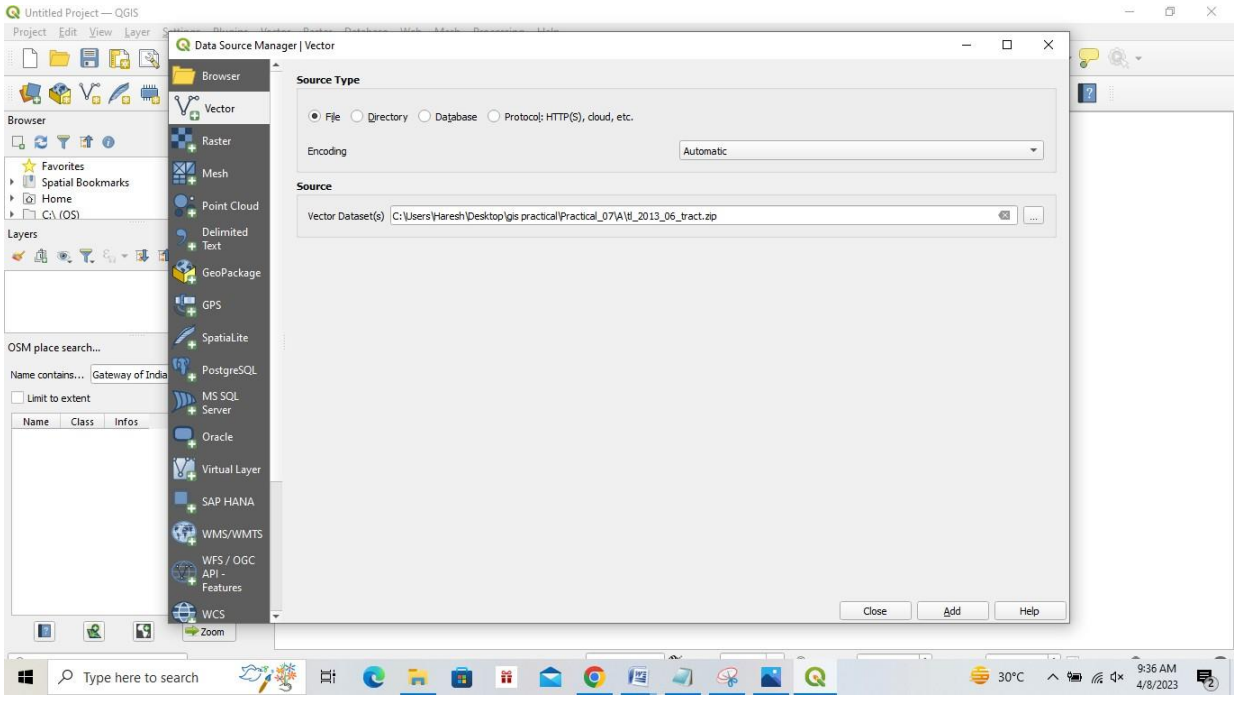
**Practical 7: Managing Data Tables and Saptial data Sets**

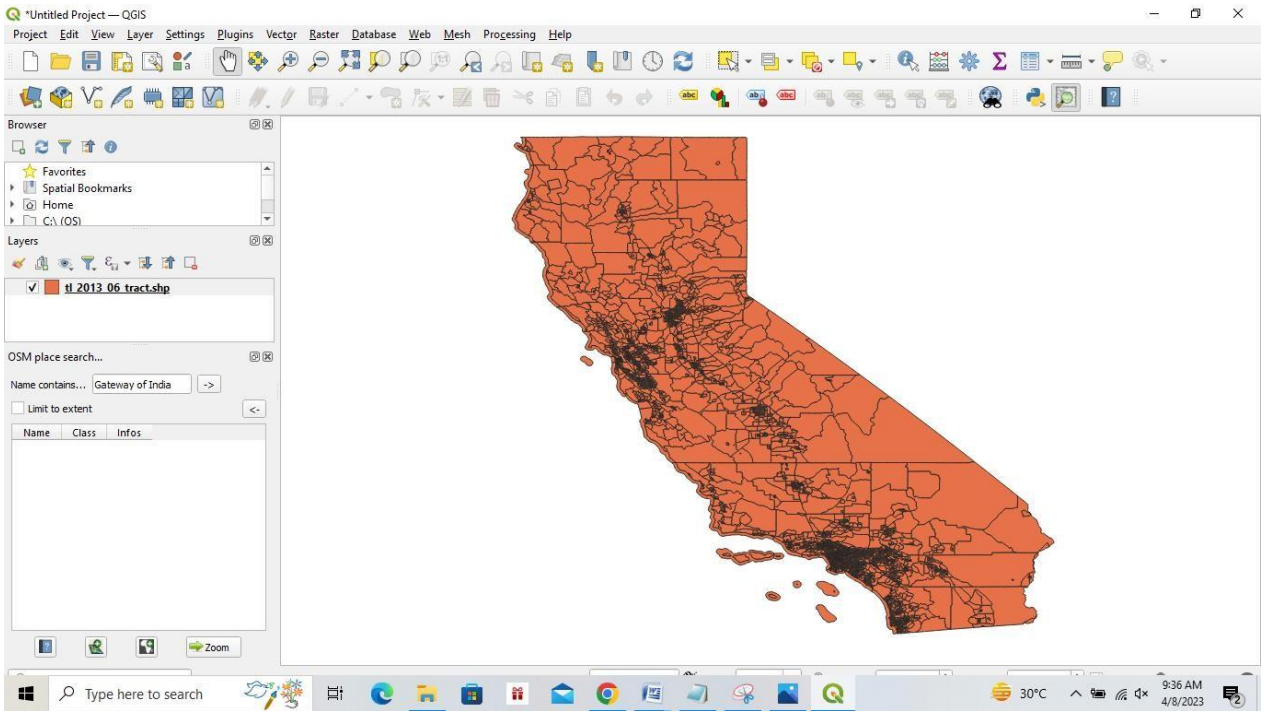
Step 1: Start a new Project.

Step 2: Go to Layers □ Add Layer □ Add Vector Layer

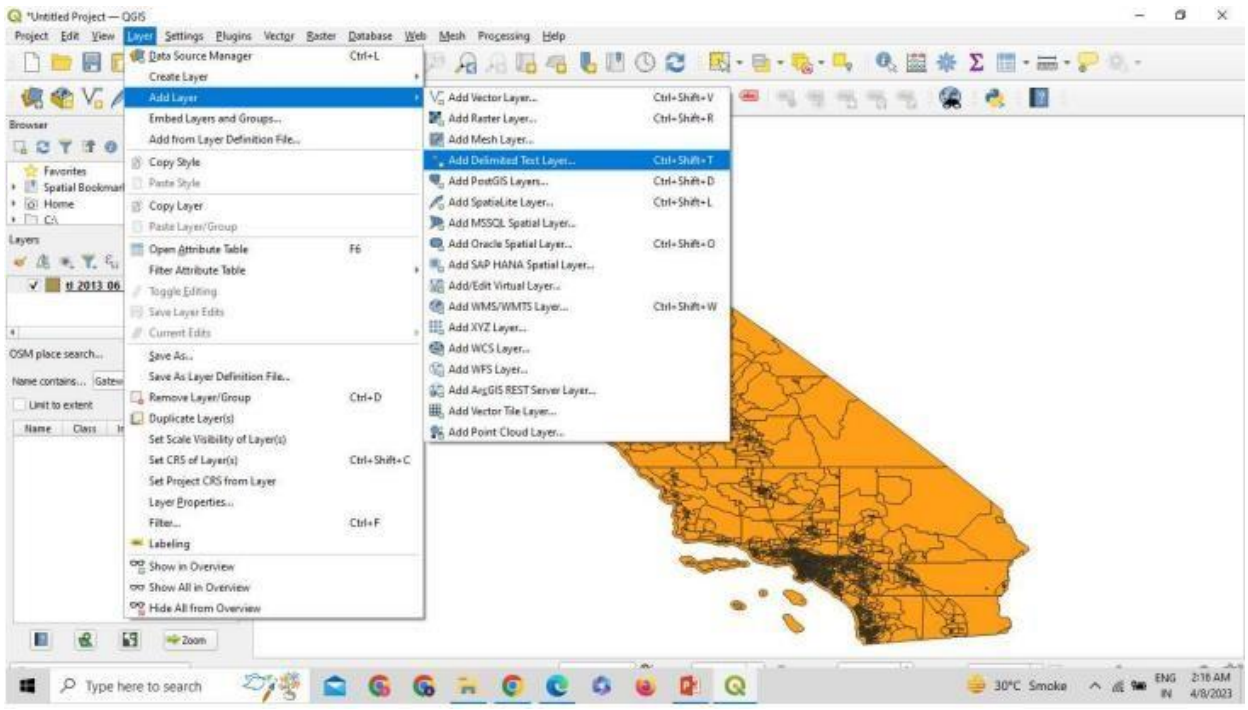


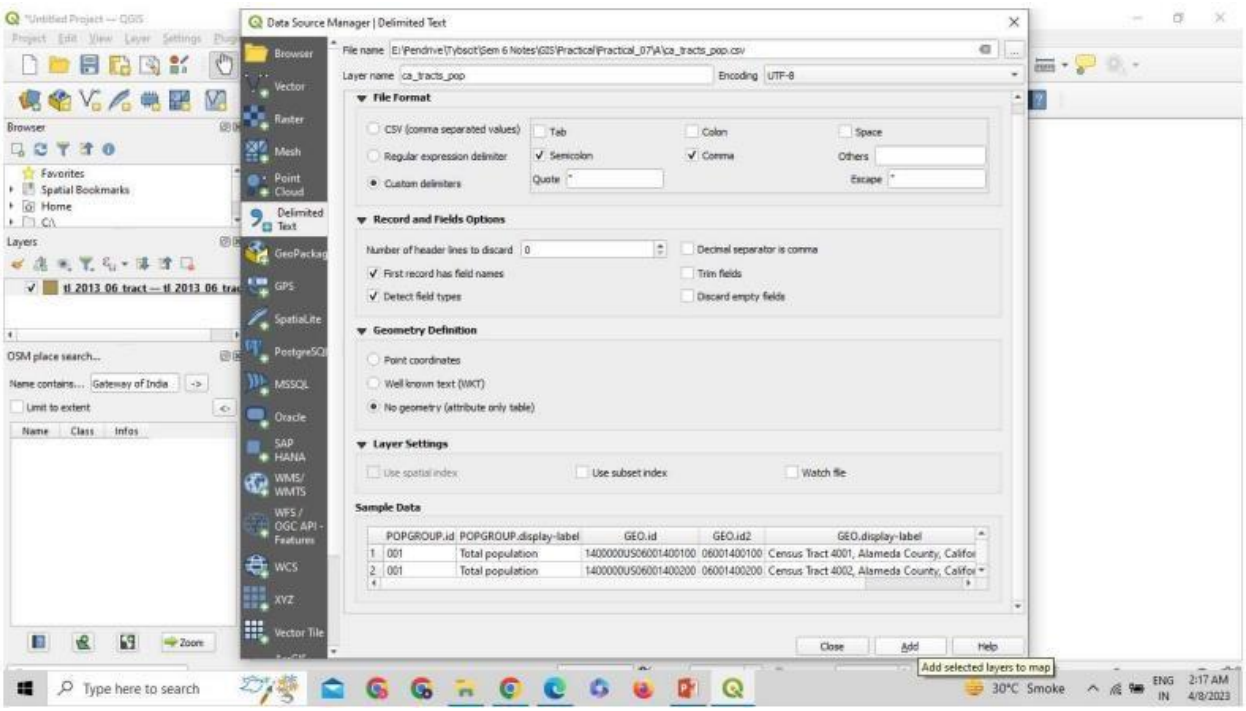

Step 2: Select E:\Pendrive\Tybscit\Sem 6 Notes\GIS\Practical\Practical_07\A\tl_2013_06_tract.zip



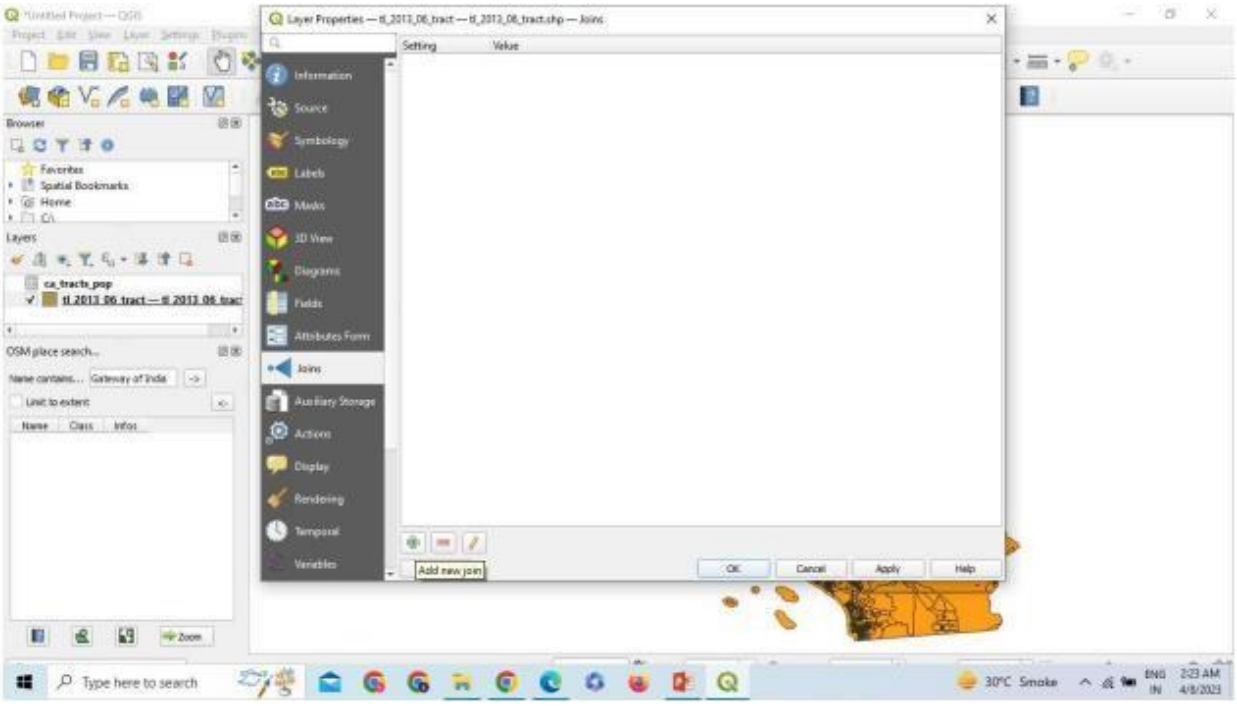


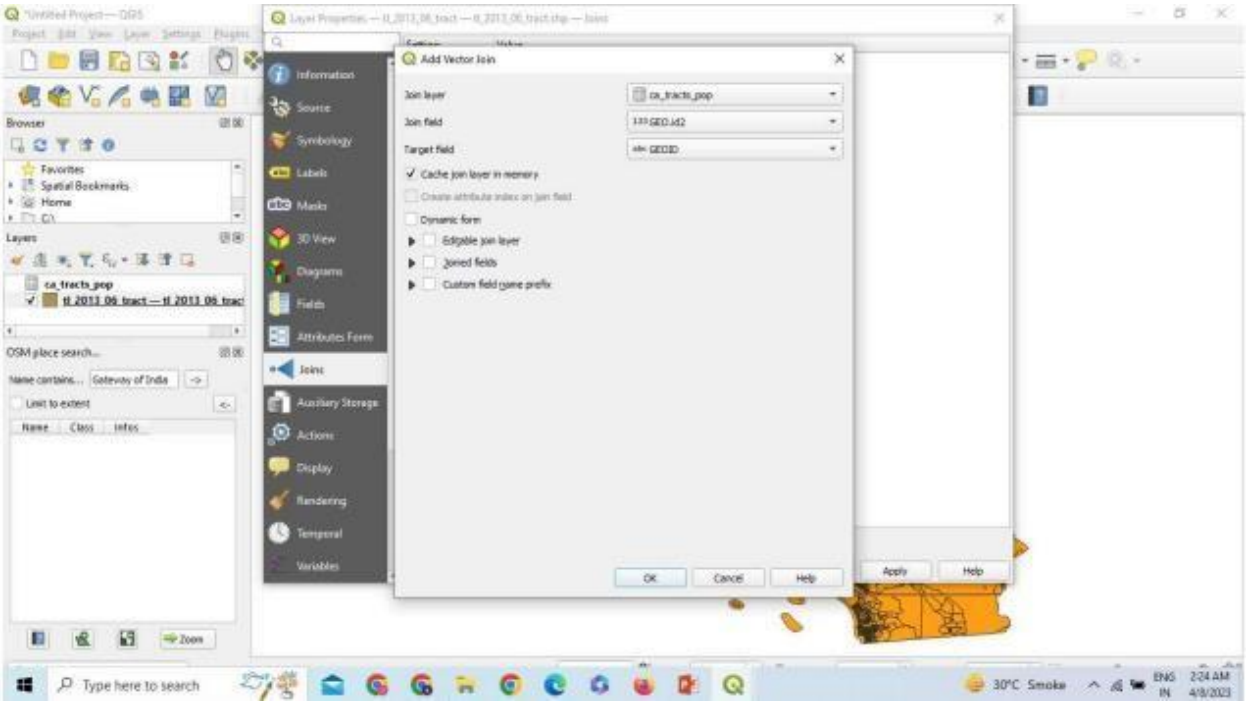

step 3 go to layer > add layer > add delimited text layer

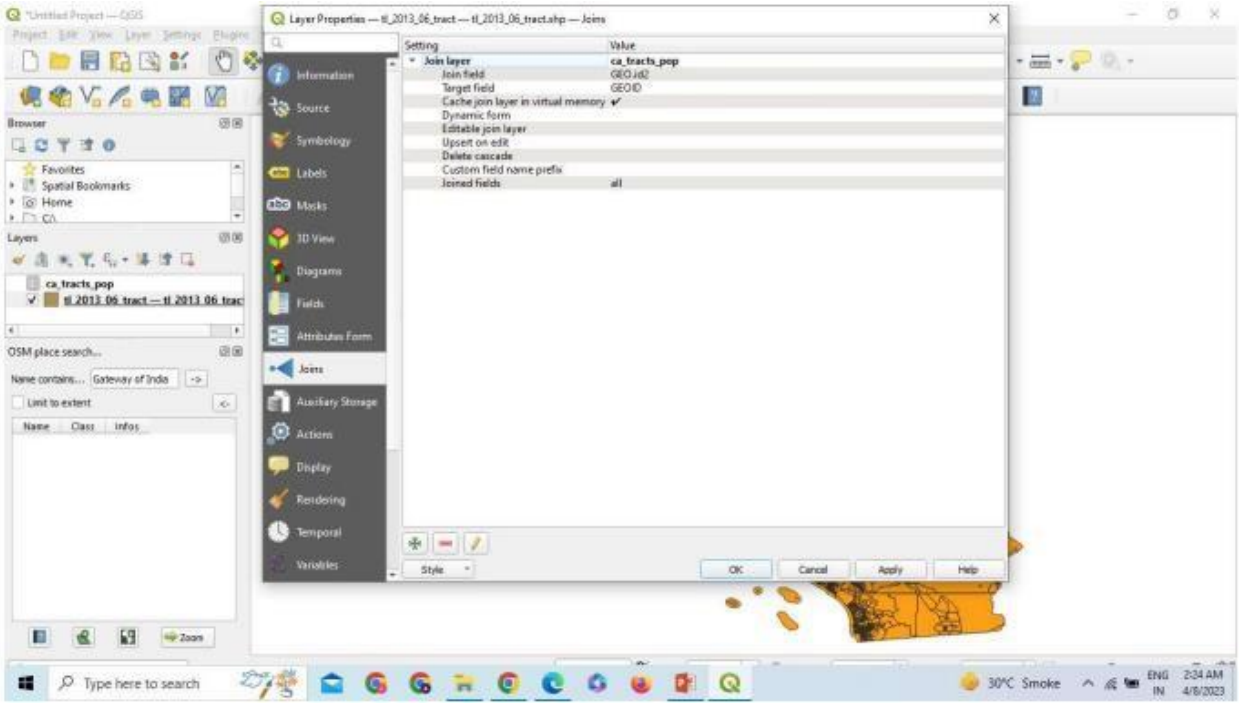


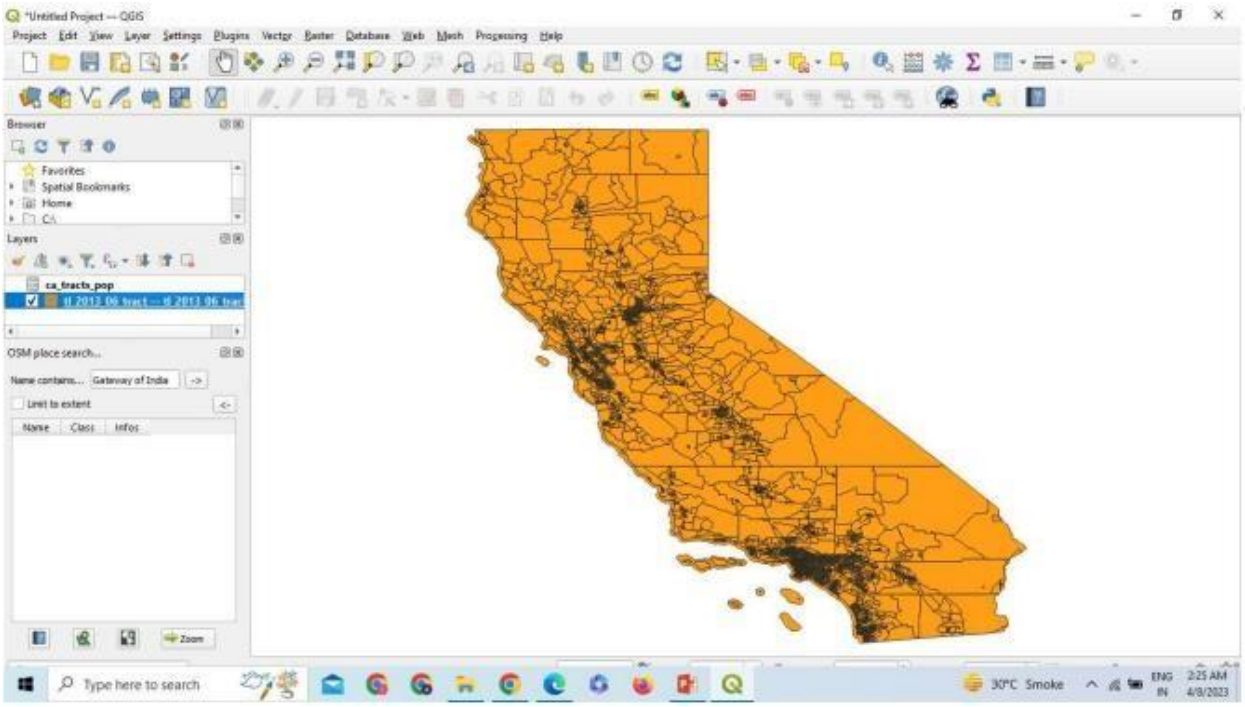



Step 4 - select layer properties >joins >add new joins > press ok

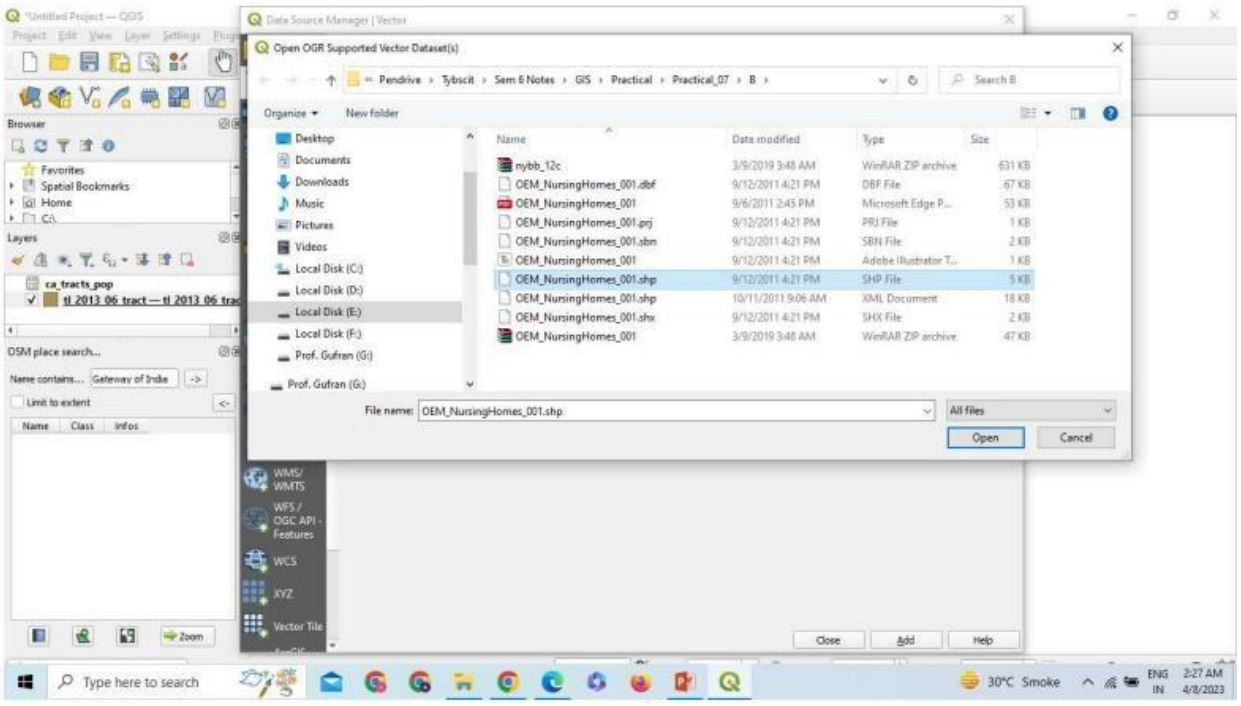


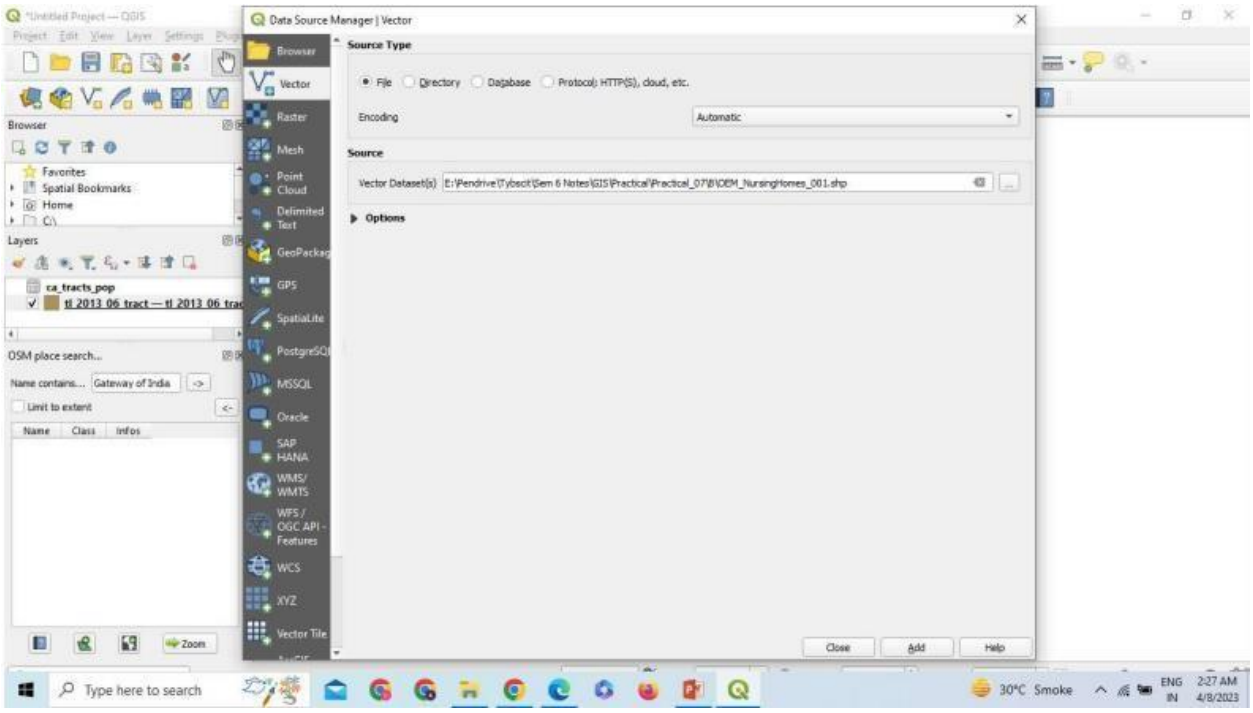

Add Vector Join
Join layer
ca_tracts_pop
Join field
GEO.id2
Target field
GEOID
Cache join layer in memory
Dynamic form
Editable join layer
Joined fields
Custom field name prefix
OK
Cancel
Help
Apply
Information
Source
Symbology
Labels
Masks
3D View
Diagrams
Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Temporal
Variables


Layer Properties — tl_2013_06_tract — tl_2013_06_tract.shp — Joins
Setting
Value
Join layer
ca_tracts_pop
Join field
GEO.id2
Target field
GEOID
Cache join layer in virtual memory
Dynamic form
Editable join layer
Upsert on edit
Delete cascade
Custom field name prefix
Joined fields
all
Style
OK
Cancel
Apply
Help

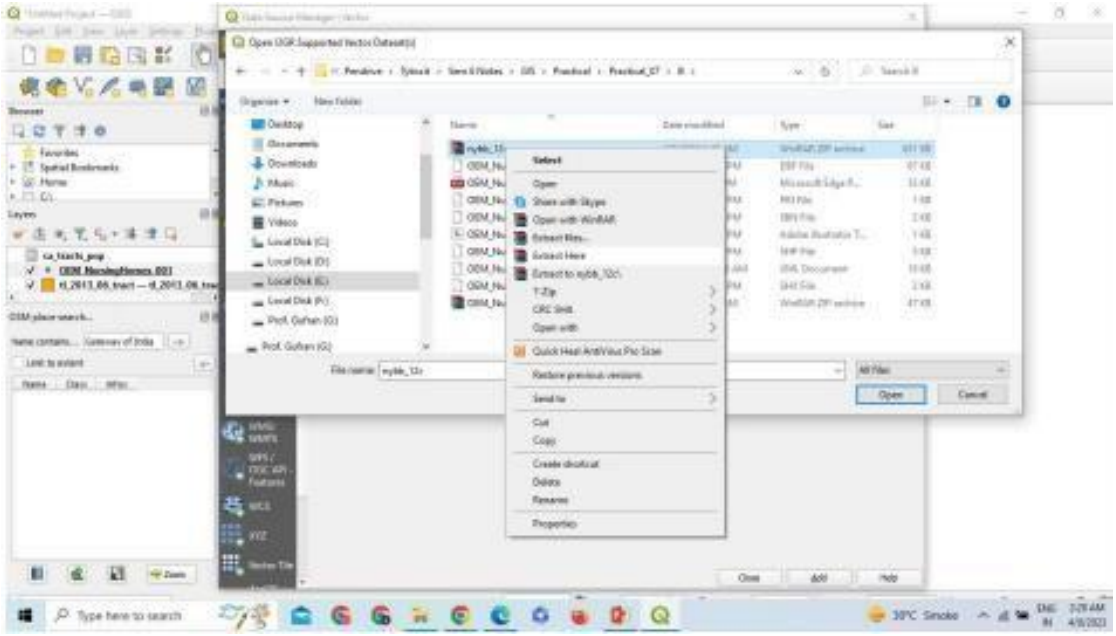


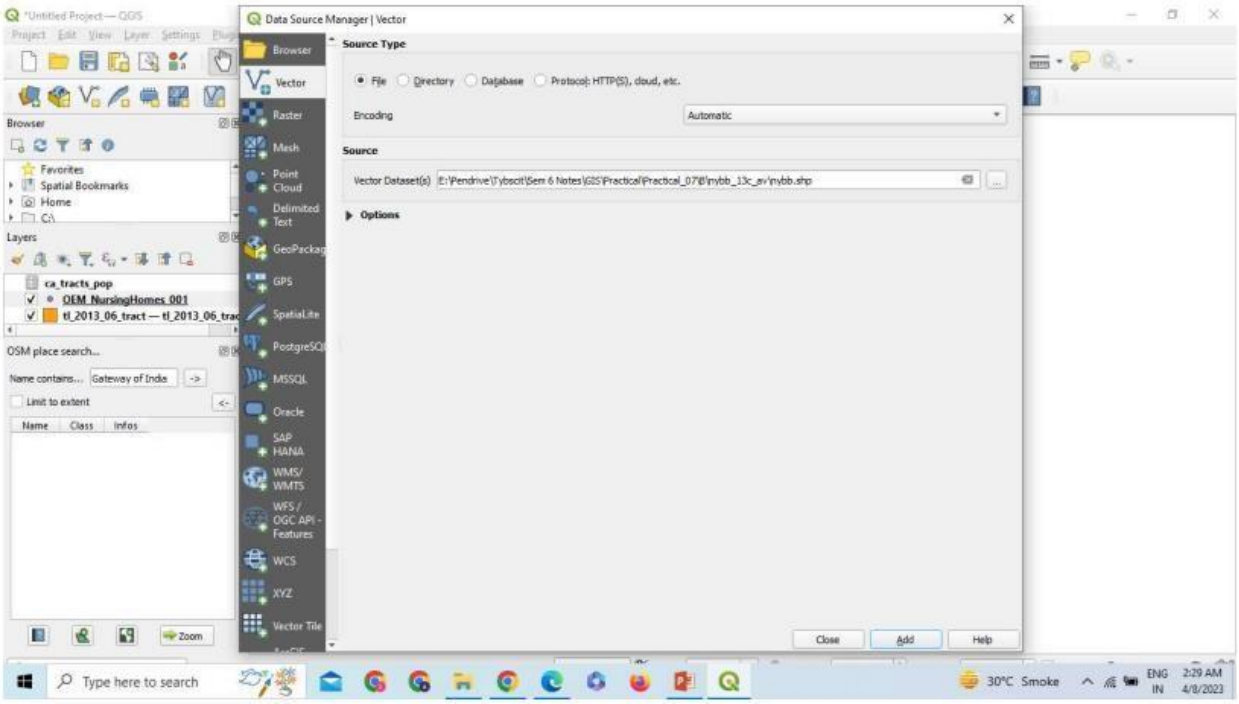
**Step 5-** Go to Layer > add layer > add vector layer
open OEM_NursingHome_001.zip >add

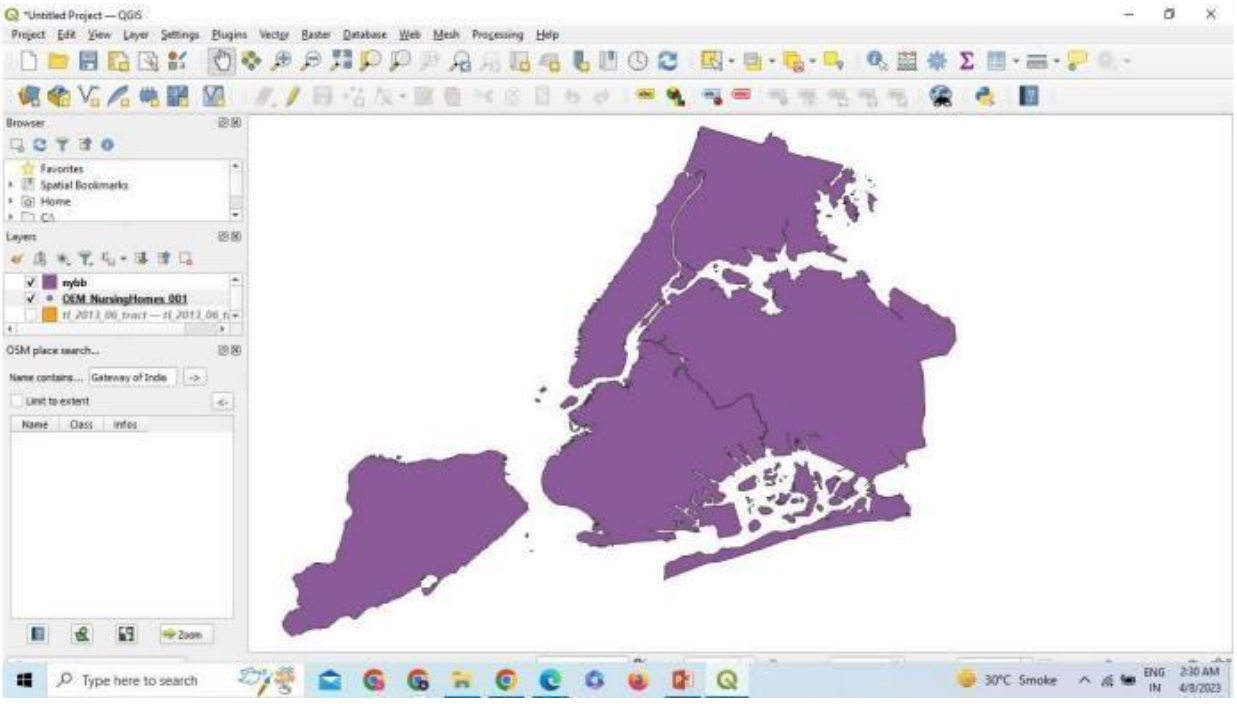




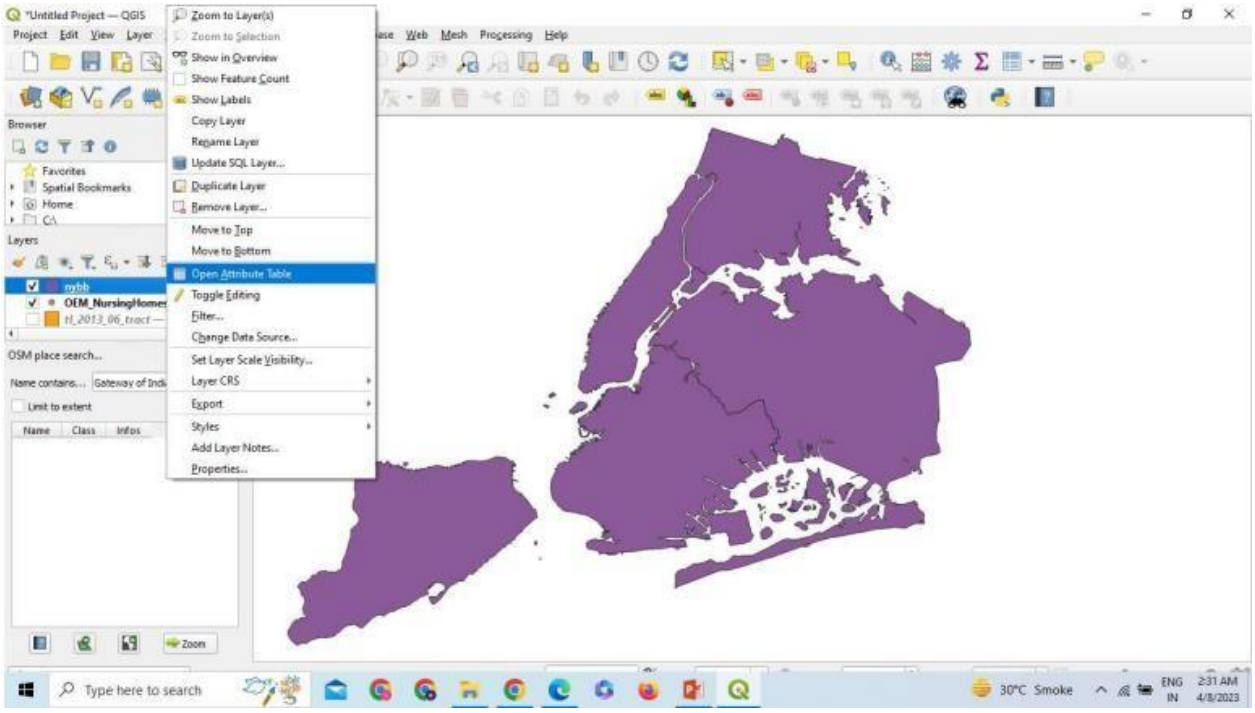

**Step 6-** add nybb_12c > click on extract here/ you will get nybb_13c_av /open file nybb_13c_av

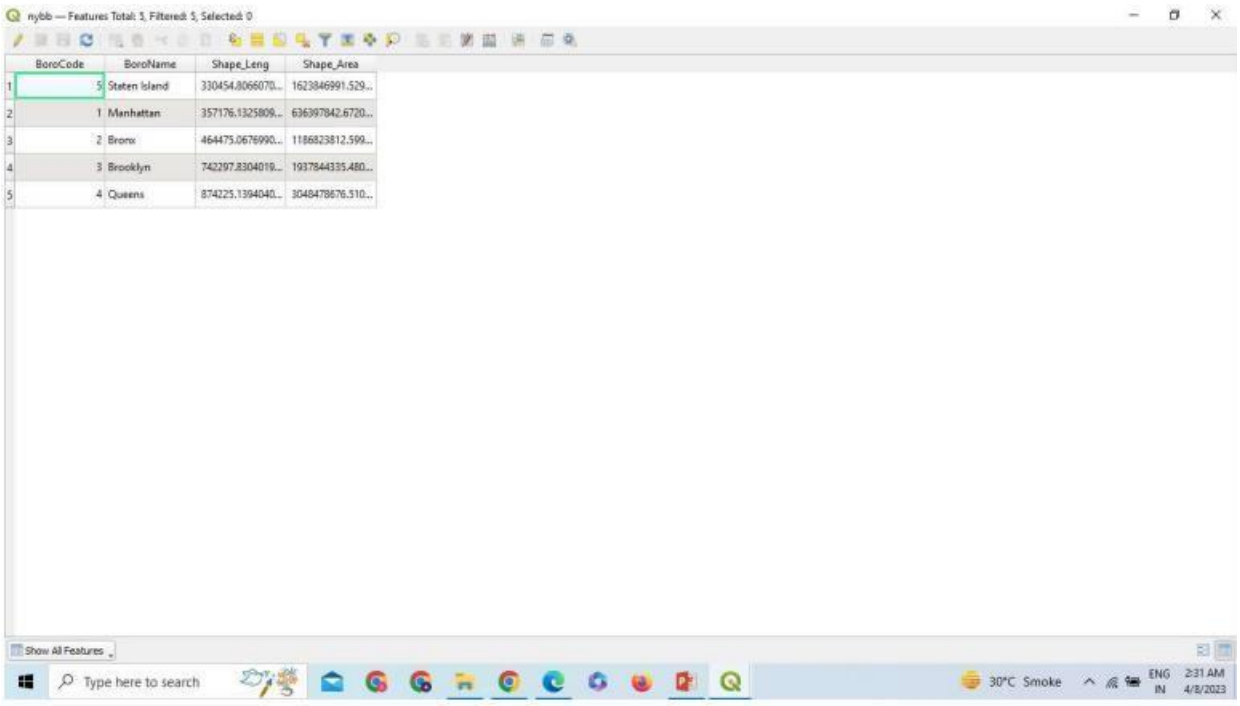



Data Source Manager | Vector
Source Type
File
Directory
Database
Protocol: HTTP(S), cloud, etc.
Encoding
Automatic
Source
Vector Dataset(s)
Options
Close
Add
Help
Browser
Vector
Raster
Mesh
Point Cloud
Delimited Text
GeoPackage
GPS
SpatiaLite
PostgreSQL
MSSQL
Oracle
SAP HANA
WMS/ WMTS
WFS / OGC API - Features
WCS
XYZ
Vector Tile
Layers
ca_tracts_pop
OEM_NursingHomes_001
OSM place search...
Name contains...
Gateway of India
Limit to extent
Name
Class
Infos
Zoom
Type here to search
30°C Smoke
ENG IN
2:29 AM
4/8/2023


*Untitled Project — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Home
Layers
nybb
OEM_NursingHomes_001
OSM place search...
Name contains...
Gateway of India
Limit to extent
Name
Class
Infos
Zoom
Type here to search
30°C Smoke
ENG IN
2:30 AM
4/8/2023

**Step 7-** open attibute table

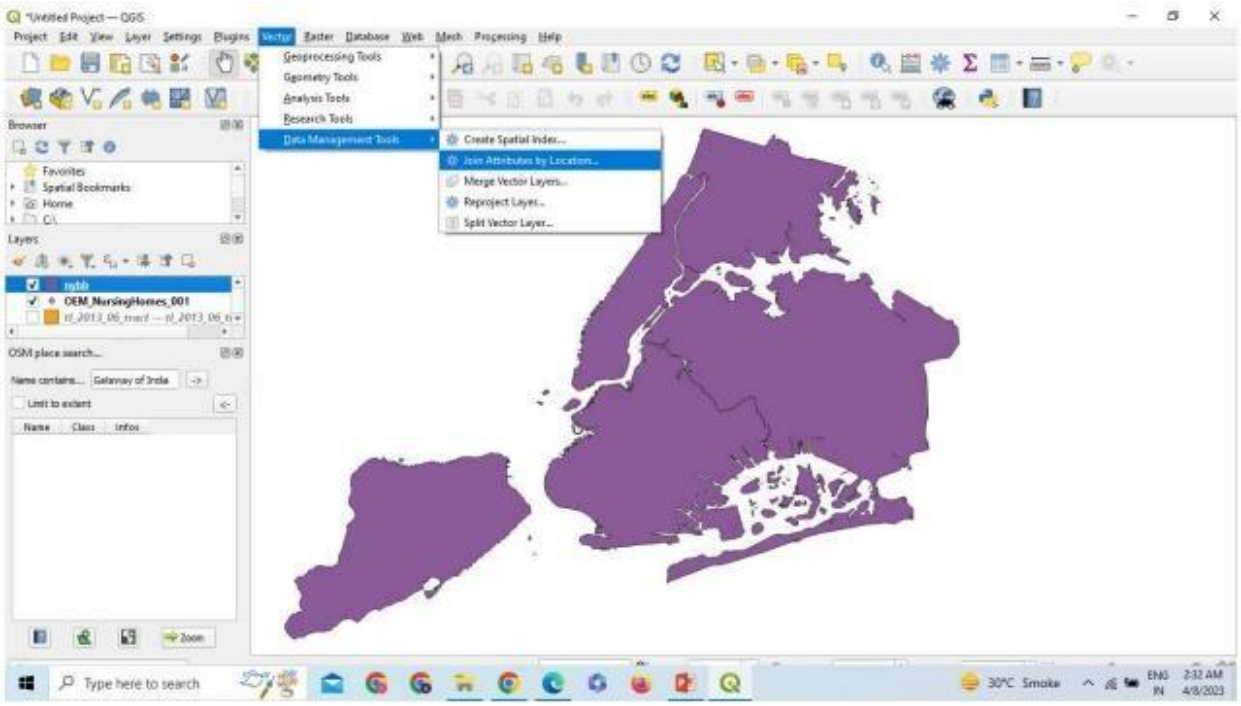


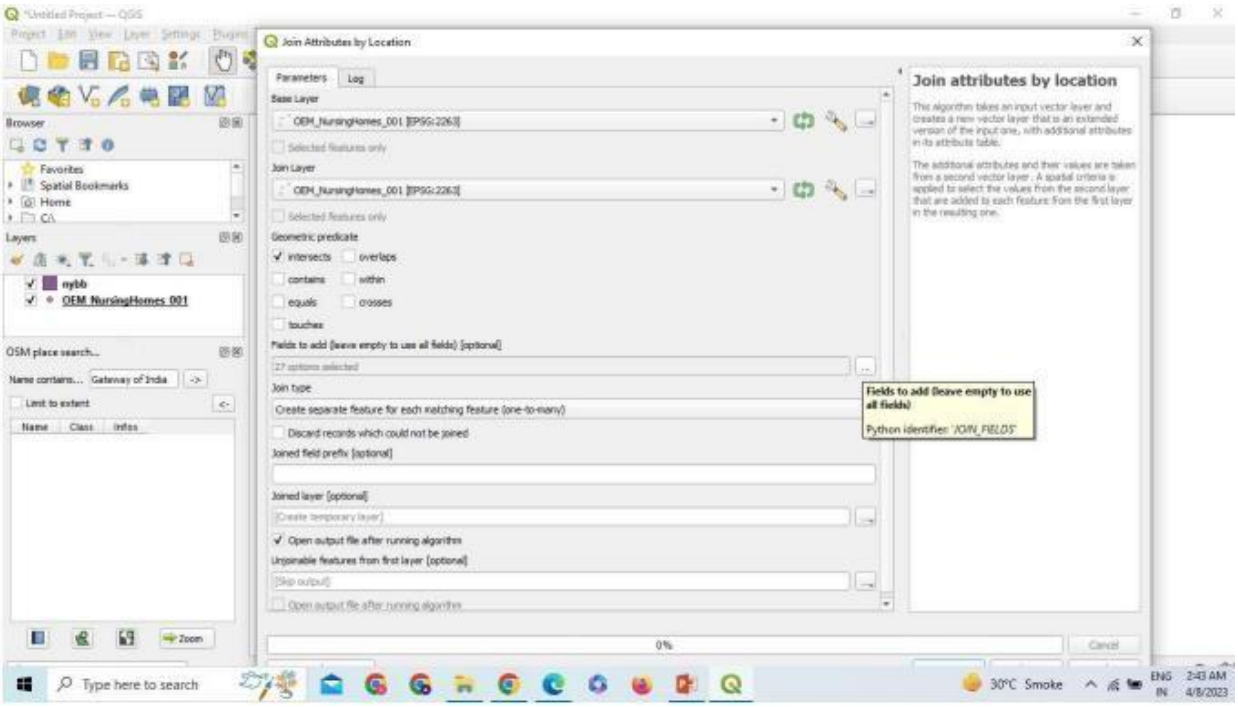



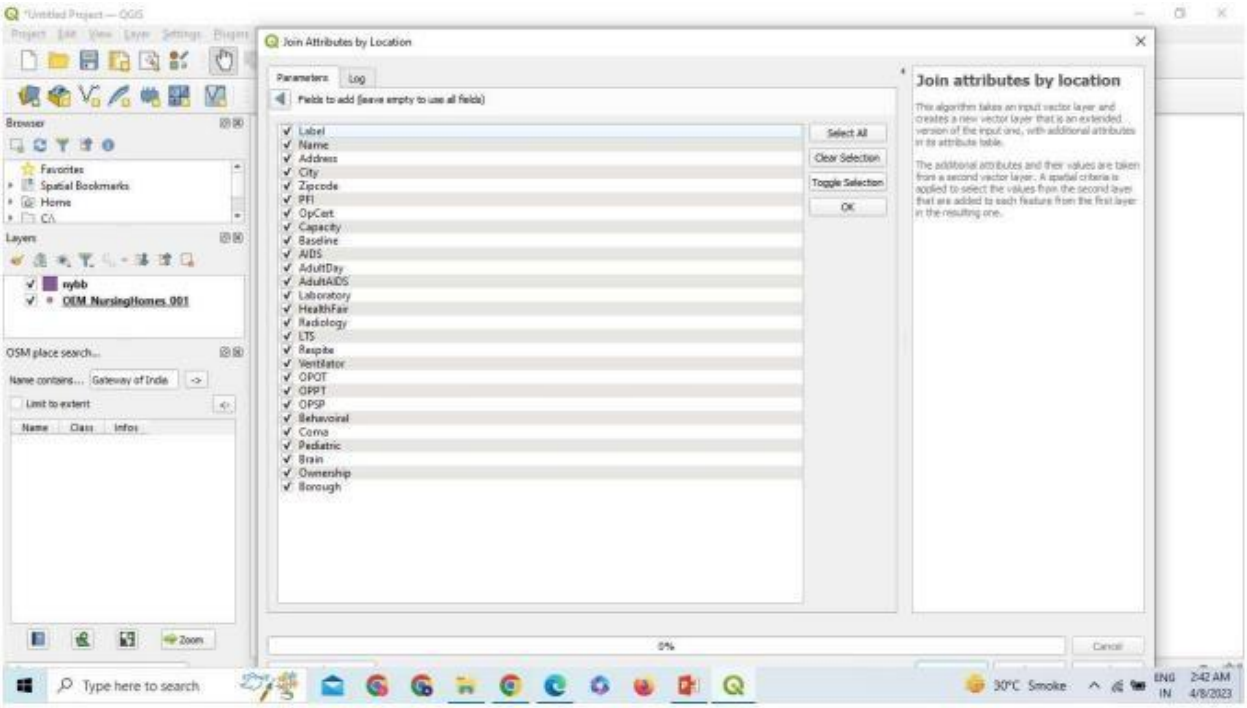
**Step 8-** Go to vector > Data management tools > join Attribute by location

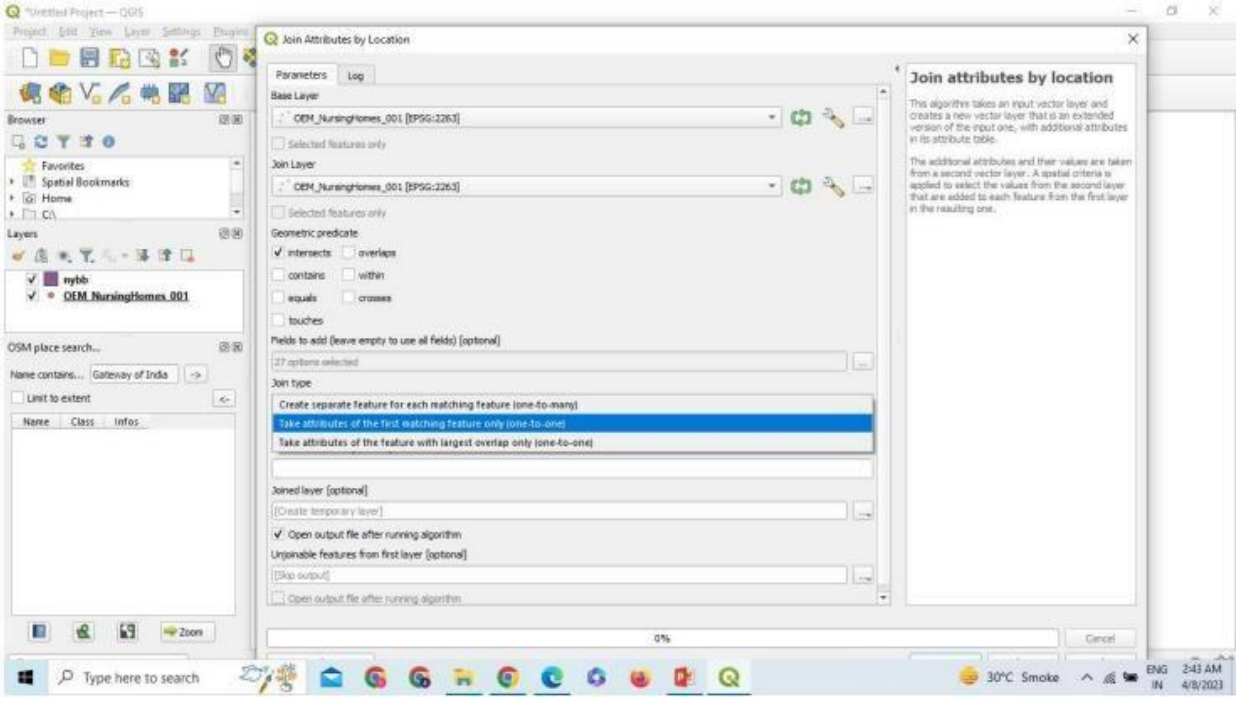
1) A window will be shown >click on filed to add

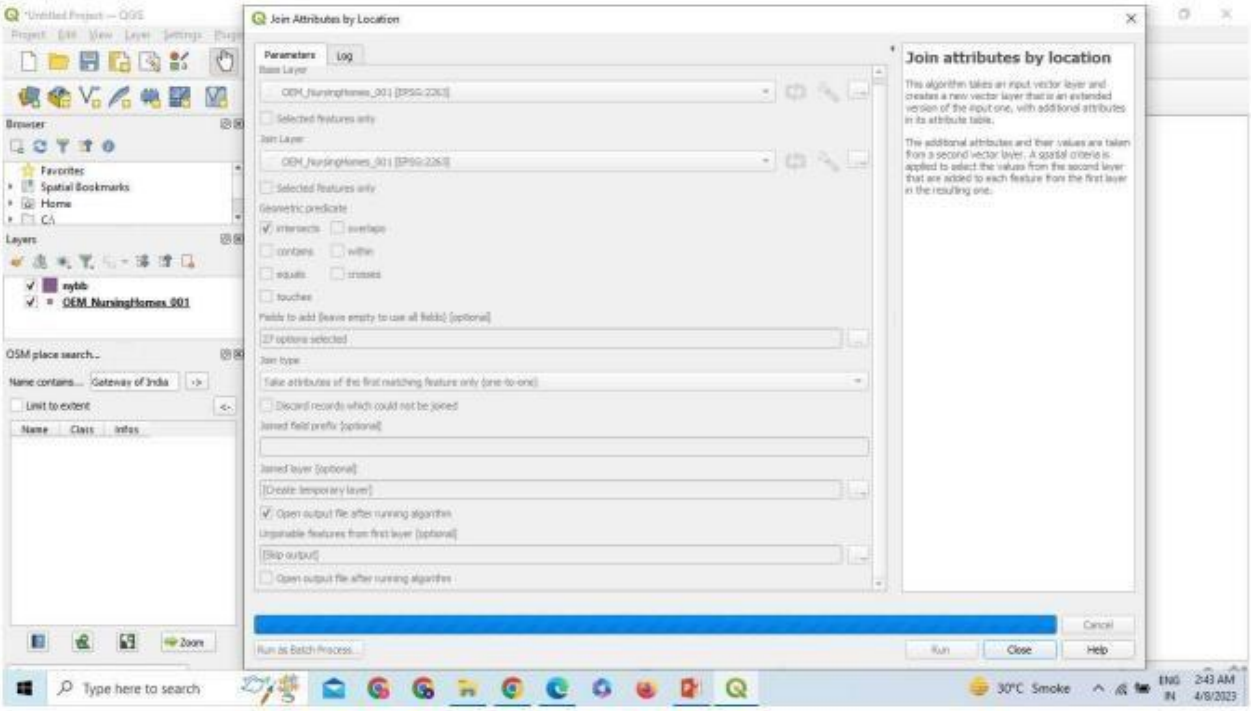
2) Join type > select take attributes of the first matching feature only(one to one)

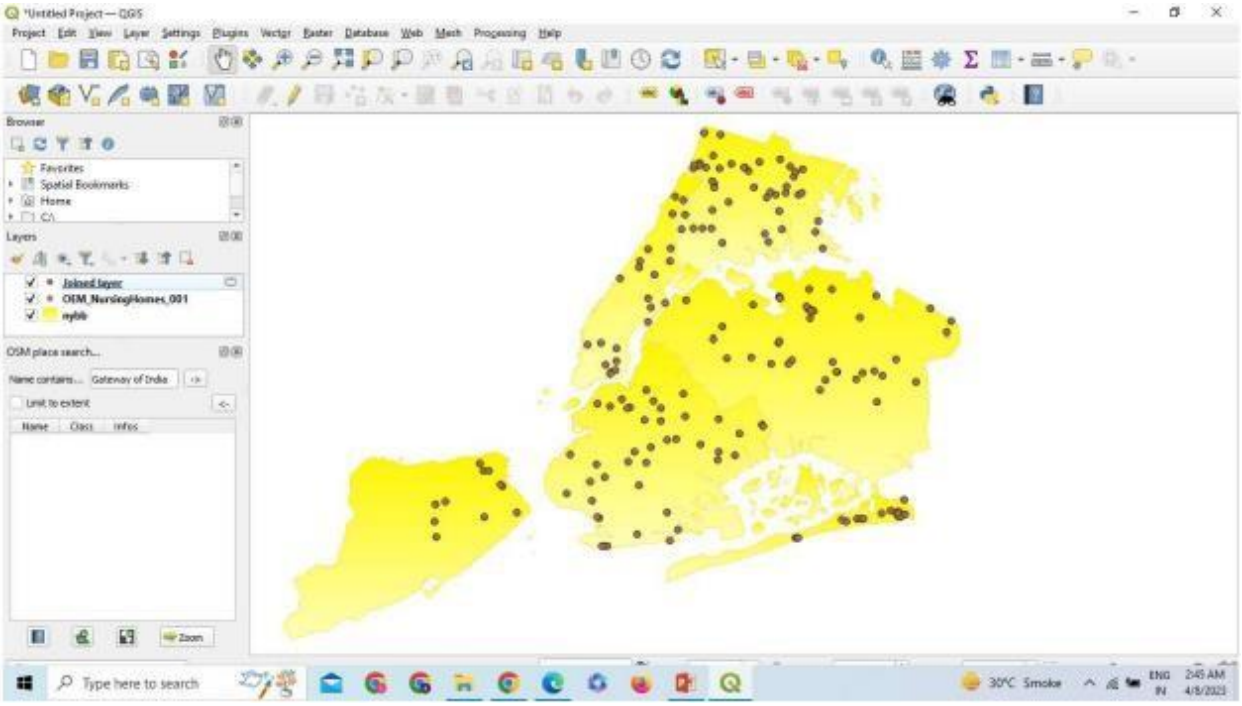


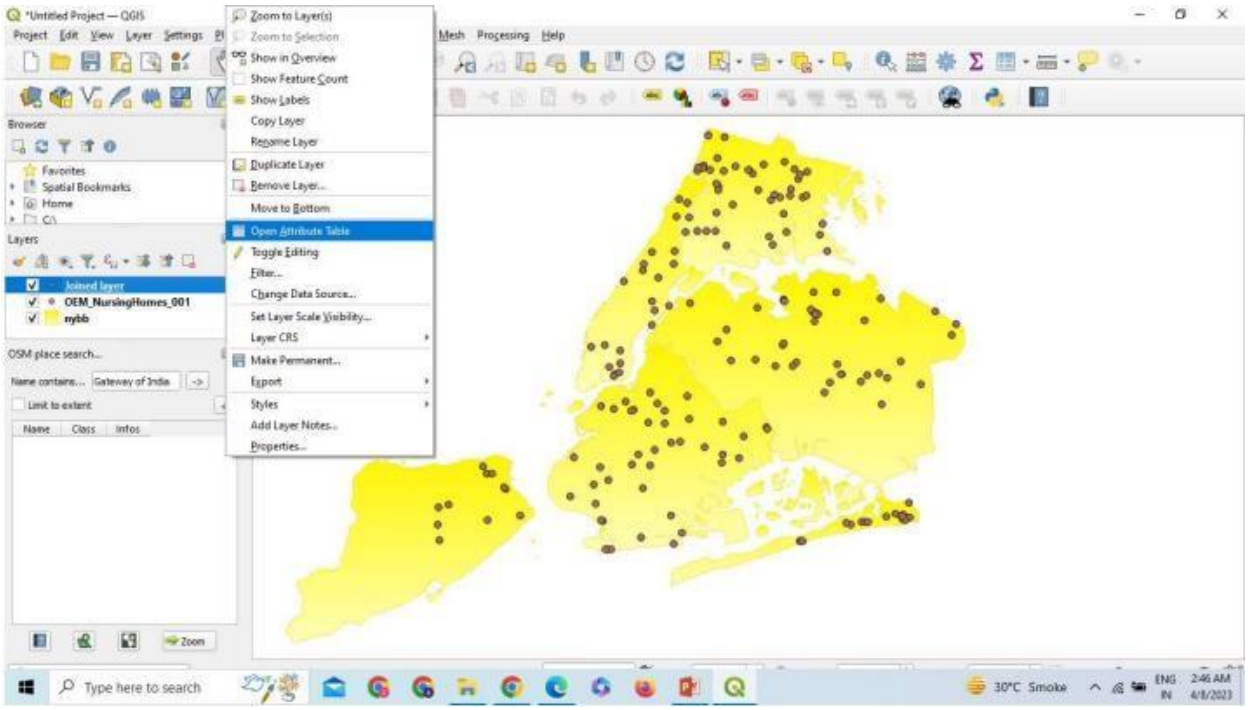

Join Attributes by Location
Parameters
Log
Join attributes by location
Select All
Clear Selection
Toggle Selection
OK
Cancel
Type here to search

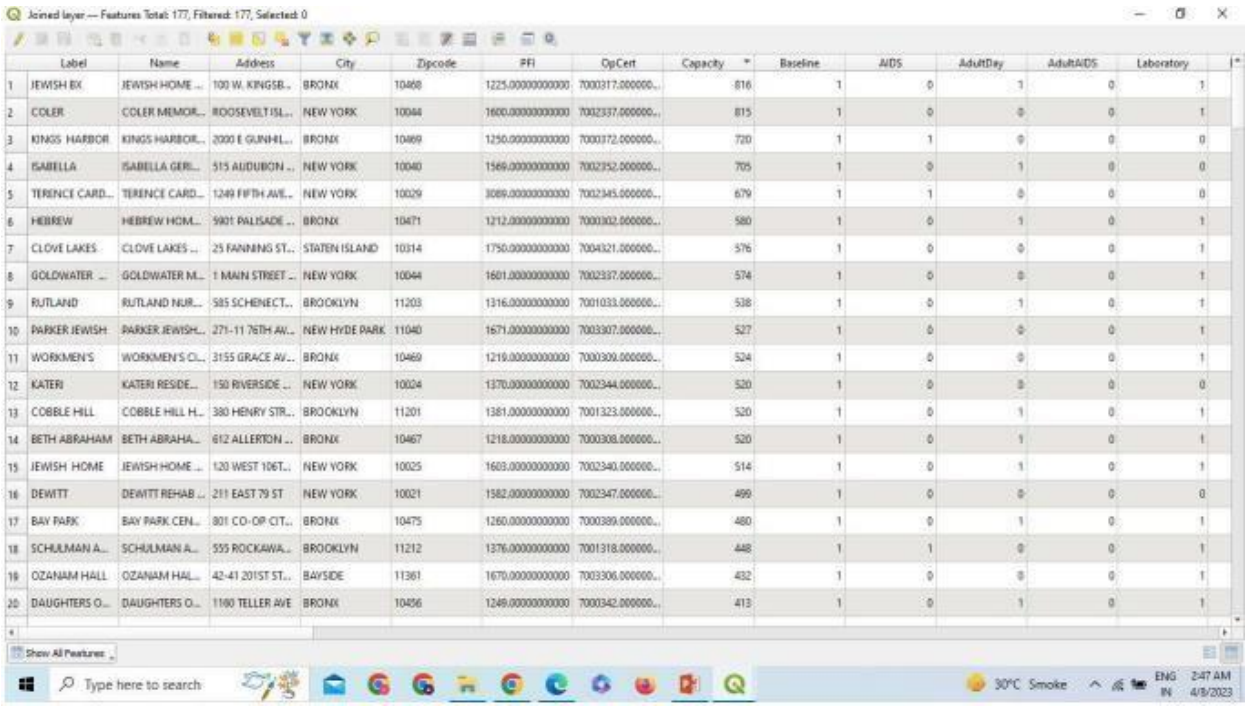

Join Attributes by Location
Parameters
Log
Join attributes by location
Base Layer
Join Layer
Geometric predicate
Join type
Create separate feature for each matching feature (one-to-many)
Take attributes of the first matching feature only (one-to-one)
Take attributes of the feature with largest overlap only (one-to-one)
Joined layer [optional]
Open output file after running algorithm
Unjoinable features from first layer [optional]
Cancel
Type here to search


Join Attributes by Location
Parameters
Log
Join attributes by location
Cancel
Run
Close
Help
Type here to search

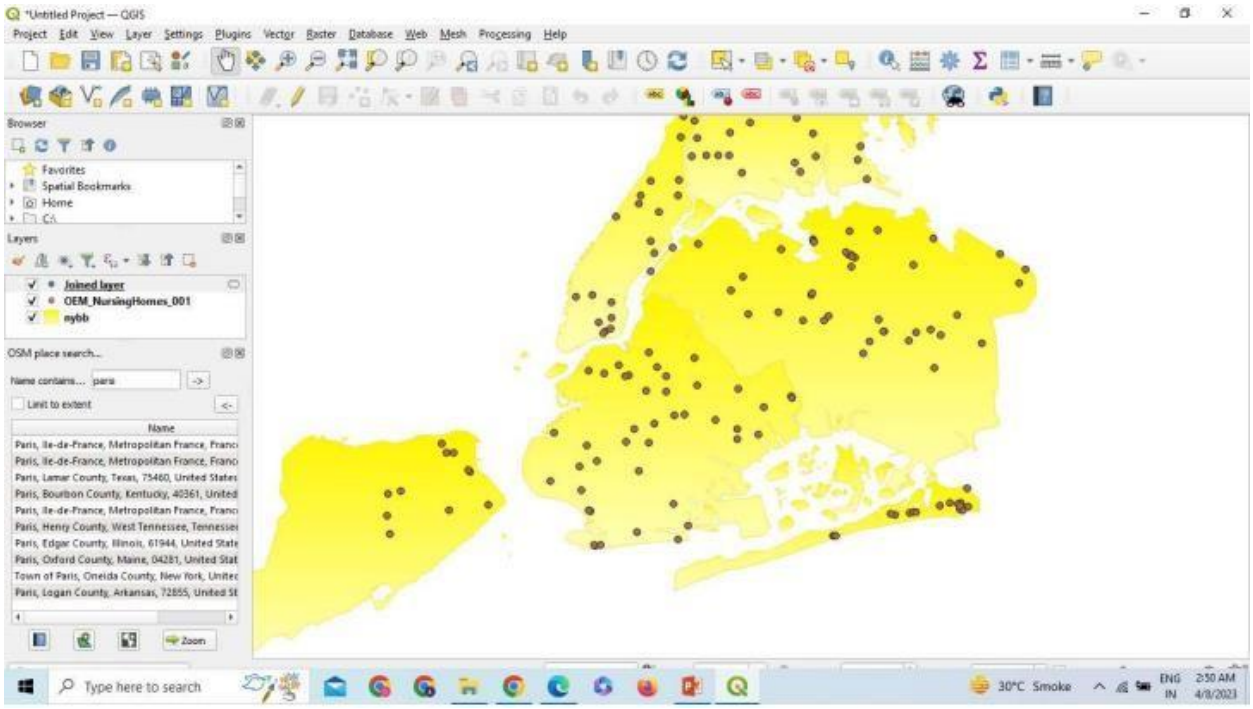

Type here to search

**Step 9**-open attribute table of Joined layer

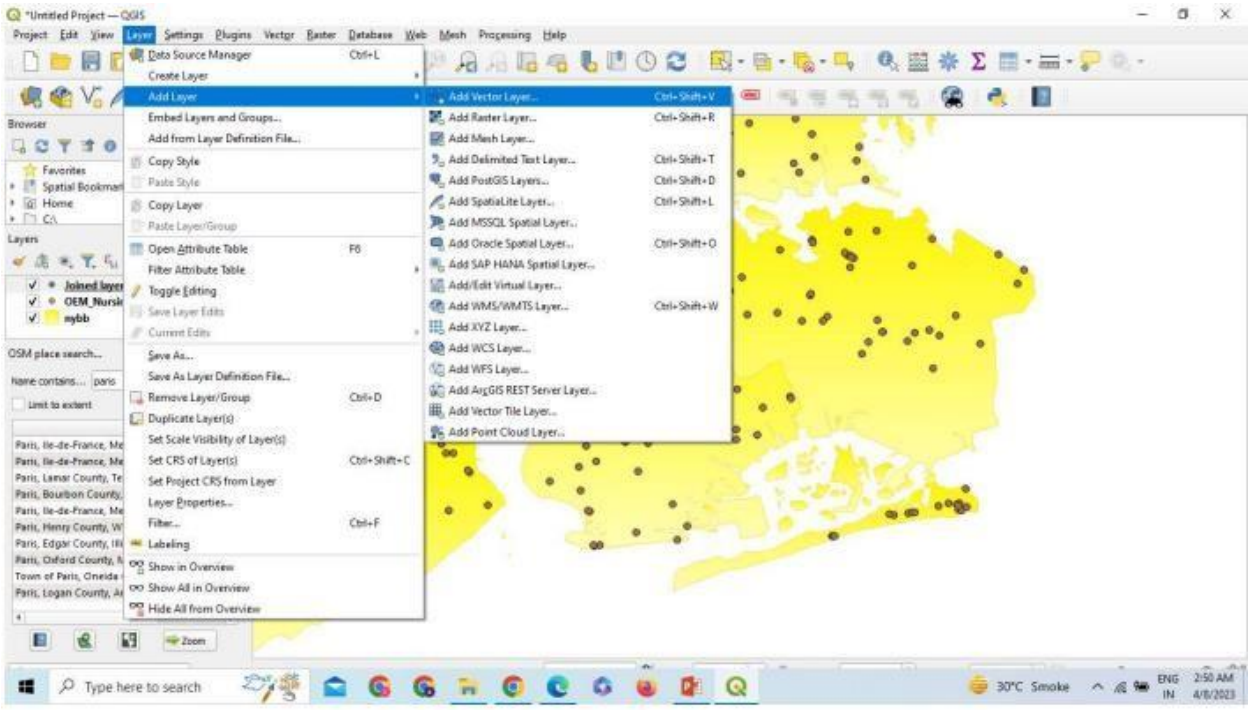



| | Label | Name | Address | City | Zipcode | PFI | OpCert | Capacity | Baseline | AIDS | AdultDay | AdultAIDS | Laboratory |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | JEWISH BX | JEWISH HOME ... | 100 W. KINGSB... | BRONX | 10468 | 1225.000000000000 | 7000317.000000... | 816 | 1 | 0 | 1 | 0 | 1 |
| 2 | COLER | COLER MEMOR... | ROOSEVELT ISL... | NEW YORK | 10044 | 1600.000000000000 | 7002337.000000... | 815 | 1 | 0 | 0 | 0 | 1 |
| 3 | KINGS HARBOR | KINGS HARBOR... | 2000 E GUNHIL... | BRONX | 10469 | 1250.000000000000 | 7000372.000000... | 720 | 1 | 1 | 0 | 0 | 0 |
| 4 | ISABELLA | ISABELLA GERI... | 515 AUDUBON ... | NEW YORK | 10040 | 1569.000000000000 | 7002352.000000... | 705 | 1 | 0 | 1 | 0 | 0 |
| 5 | TERENCE CARD... | TERENCE CARD... | 1249 FIFTH AVE... | NEW YORK | 10029 | 3089.000000000000 | 7002345.000000... | 679 | 1 | 1 | 0 | 0 | 0 |
| 6 | HEBREW | HEBREW HOM... | 5901 PALISADE ... | BRONX | 10471 | 1212.000000000000 | 7000302.000000... | 580 | 1 | 0 | 1 | 0 | 1 |
| 7 | CLOVE LAKES | CLOVE LAKES ... | 25 FANNING ST... | STATEN ISLAND | 10314 | 1750.000000000000 | 7004321.000000... | 576 | 1 | 0 | 0 | 0 | 1 |
| 8 | GOLDWATER ... | GOLDWATER M... | 1 MAIN STREET ... | NEW YORK | 10044 | 1601.000000000000 | 7002337.000000... | 574 | 1 | 0 | 0 | 0 | 1 |
| 9 | RUTLAND | RUTLAND NUR... | 585 SCHENECT... | BROOKLYN | 11203 | 1316.000000000000 | 7001033.000000... | 538 | 1 | 0 | 1 | 0 | 1 |
| 10 | PARKER JEWISH | PARKER JEWISH... | 271-11 76TH AV... | NEW HYDE PARK | 11040 | 1671.000000000000 | 7003307.000000... | 527 | 1 | 0 | 0 | 0 | 1 |
| 11 | WORKMEN'S | WORKMEN'S CI... | 3155 GRACE AV... | BRONX | 10469 | 1219.000000000000 | 7000309.000000... | 524 | 1 | 0 | 0 | 0 | 1 |
| 12 | KATERI | KATERI RESIDE... | 150 RIVERSIDE ... | NEW YORK | 10024 | 1370.000000000000 | 7002344.000000... | 520 | 1 | 0 | 0 | 0 | 0 |
| 13 | COBBLE HILL | COBBLE HILL H... | 380 HENRY STR... | BROOKLYN | 11201 | 1381.000000000000 | 7001323.000000... | 520 | 1 | 0 | 1 | 0 | 1 |
| 14 | BETH ABRAHAM | BETH ABRAHA... | 612 ALLERTON ... | BRONX | 10467 | 1218.000000000000 | 7000308.000000... | 520 | 1 | 0 | 1 | 0 | 1 |
| 15 | JEWISH HOME | JEWISH HOME ... | 120 WEST 106T... | NEW YORK | 10025 | 1603.000000000000 | 7002340.000000... | 514 | 1 | 0 | 1 | 0 | 1 |
| 16 | DEWITT | DEWITT REHAB ... | 211 EAST 79 ST | NEW YORK | 10021 | 1582.000000000000 | 7002347.000000... | 499 | 1 | 0 | 0 | 0 | 0 |
| 17 | BAY PARK | BAY PARK CEN... | 801 CO-OP CIT... | BRONX | 10475 | 1260.000000000000 | 7000389.000000... | 480 | 1 | 0 | 1 | 0 | 1 |
| 18 | SCHULMAN A... | SCHULMAN A... | 555 ROCKAWA... | BROOKLYN | 11212 | 1376.000000000000 | 7001318.000000... | 448 | 1 | 1 | 0 | 0 | 1 |
| 19 | OZANAM HALL | OZANAM HAL... | 42-41 201ST ST... | BAYSIDE | 11361 | 1670.000000000000 | 7003306.000000... | 432 | 1 | 0 | 0 | 0 | 1 |
| 20 | DAUGHTERS O... | DAUGHTERS O... | 1160 TELLER AVE | BRONX | 10456 | 1249.000000000000 | 7000342.000000... | 413 | 1 | 0 | 1 | 0 | 1 |

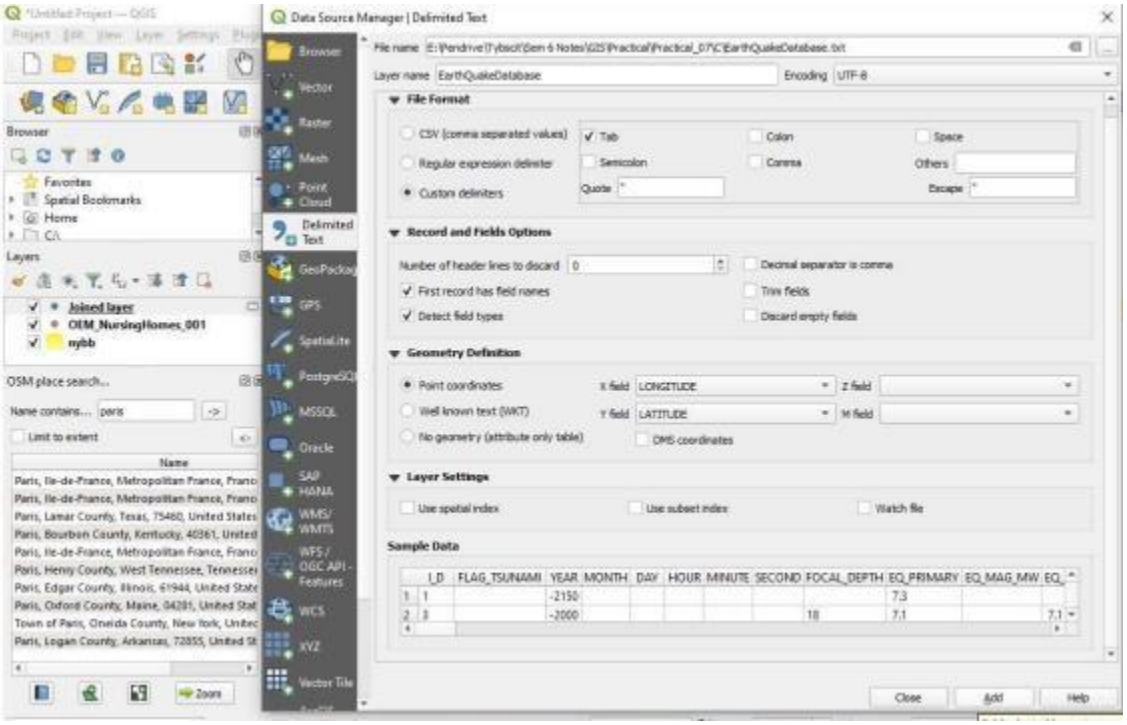


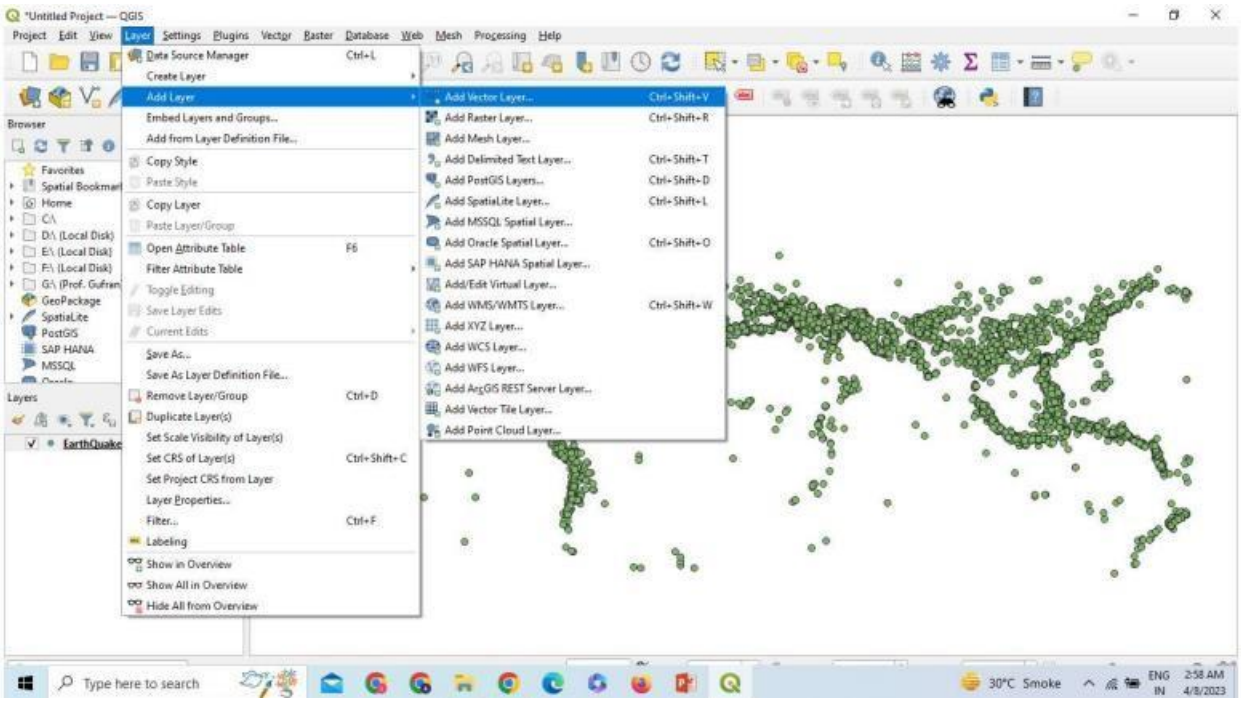
Step 10-Go to layer > Add layer > Add vector layer

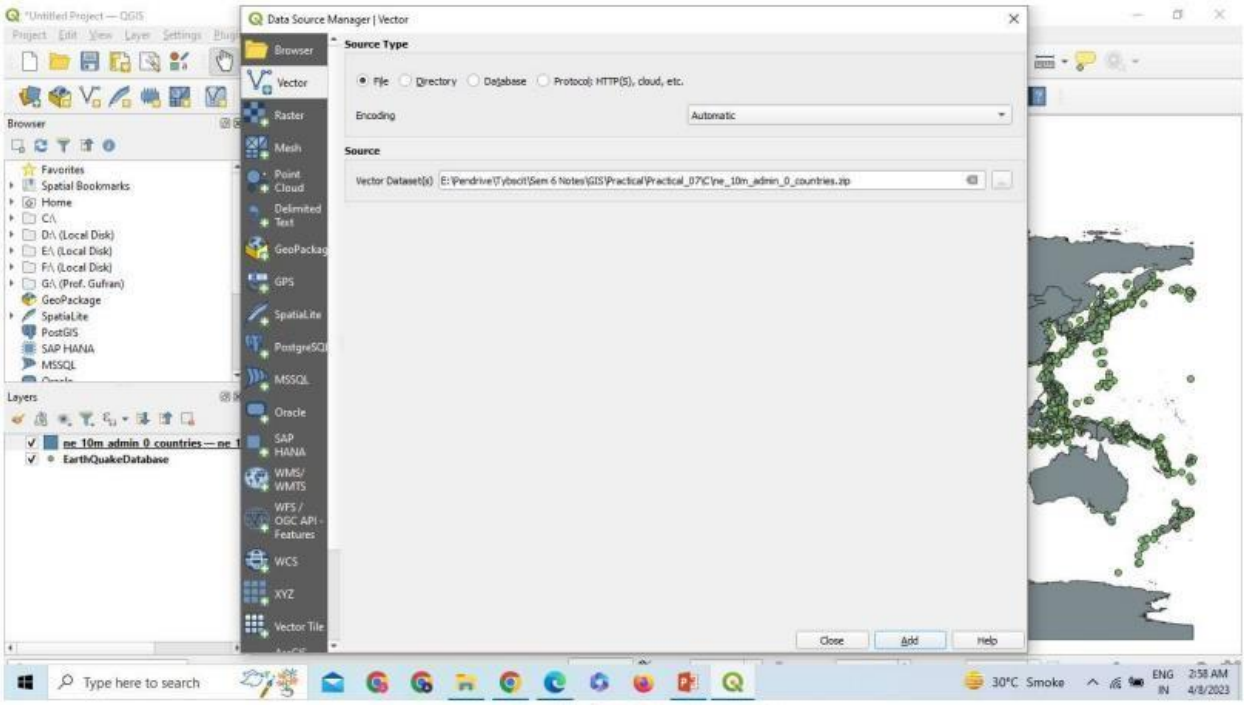


Step 11- open Layer properties > Delimited text

1) Layer name earthquake data base
2) Press Add
3) Go to layer> Add layer > Add vector Layer select ne_10_admin_0_countries.zip > Add



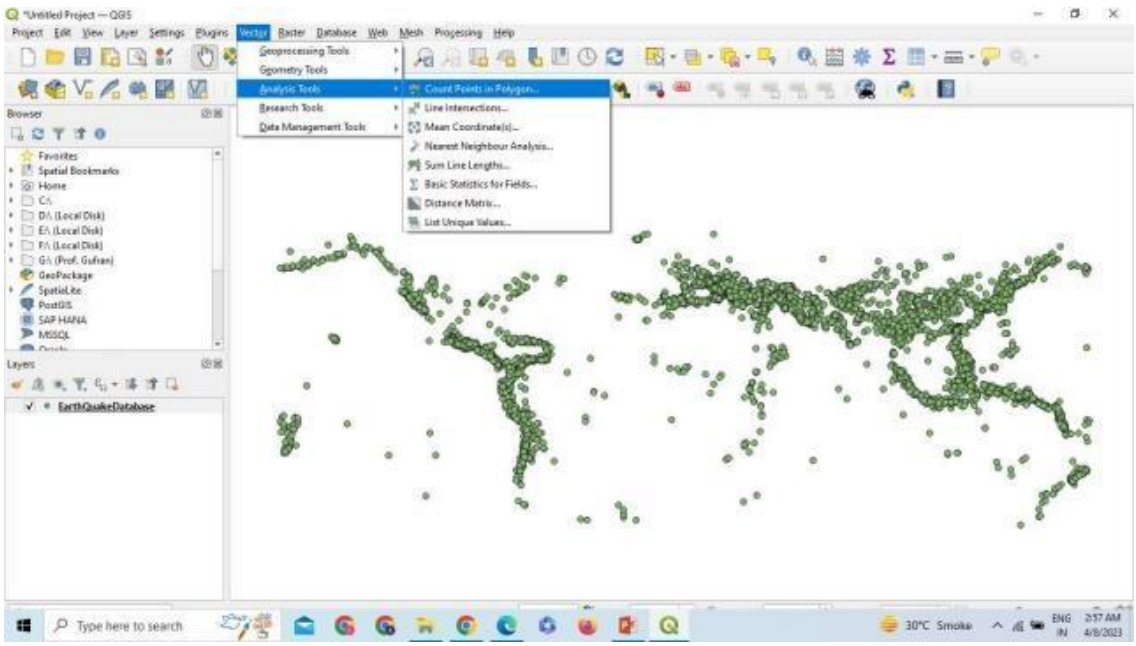


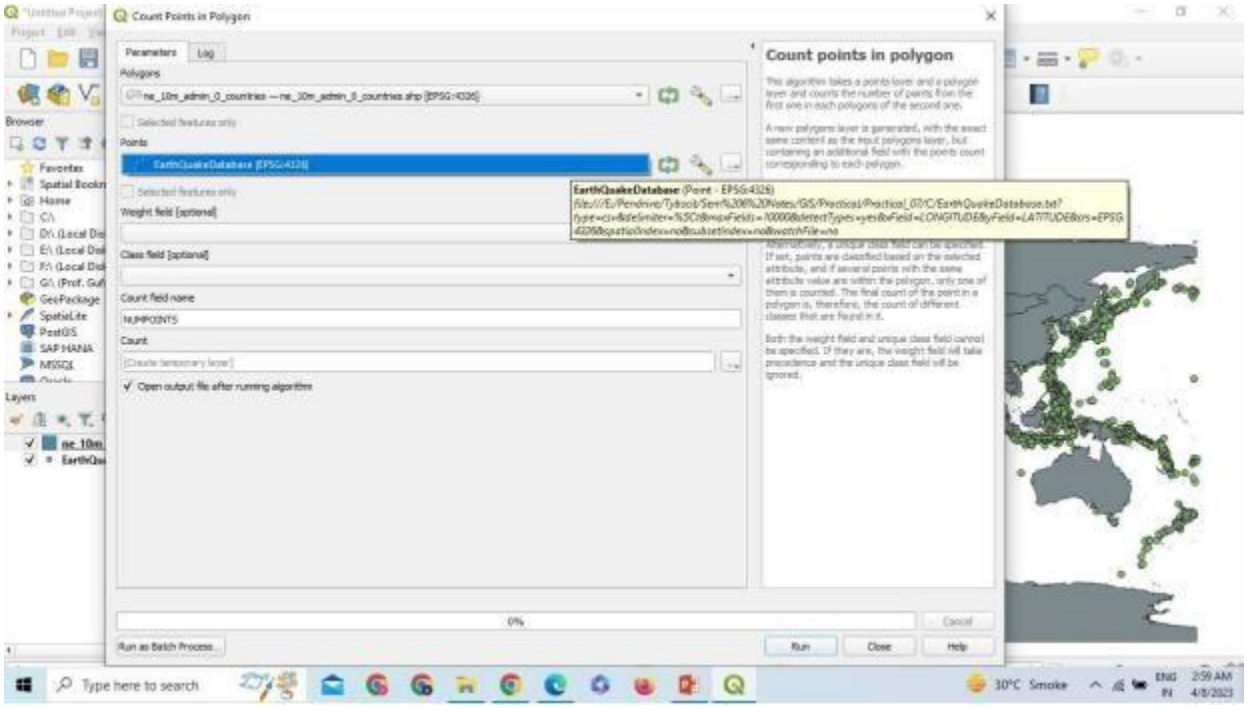

Step 12- 1) Go to Vector >Analysis Tools > Count point in polygon

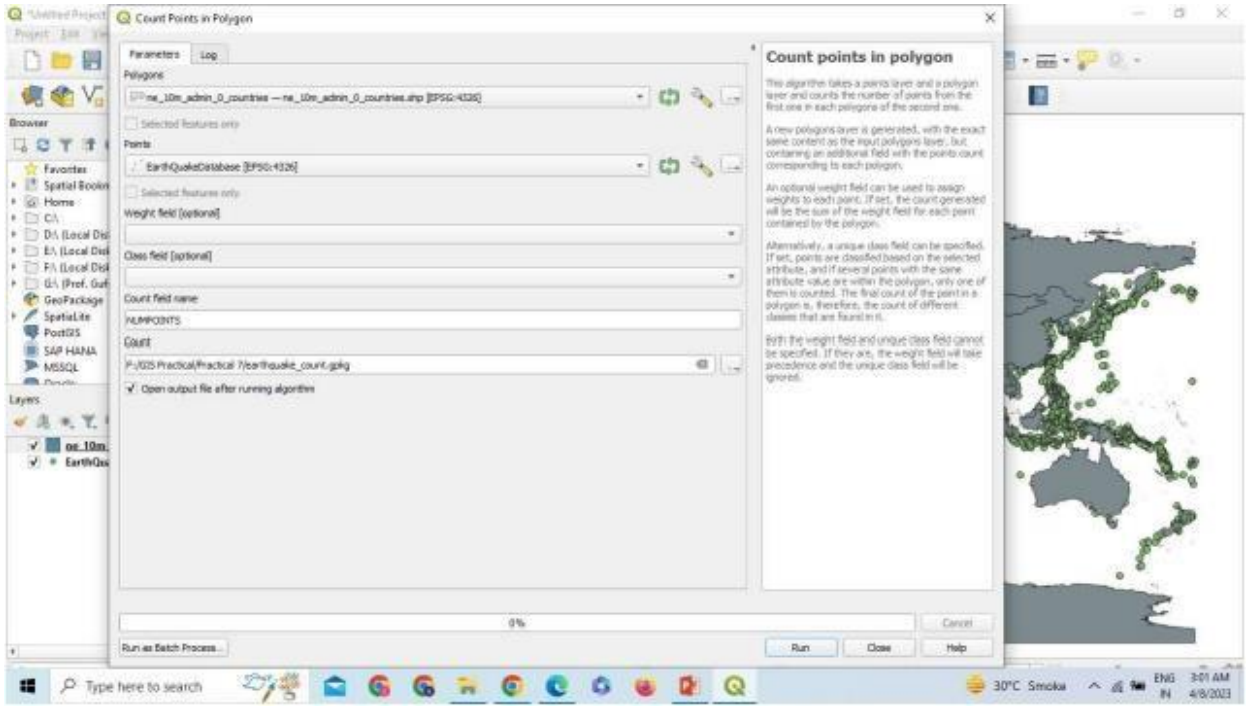
2) points > EarthquakeDataBase [EPS:4326]

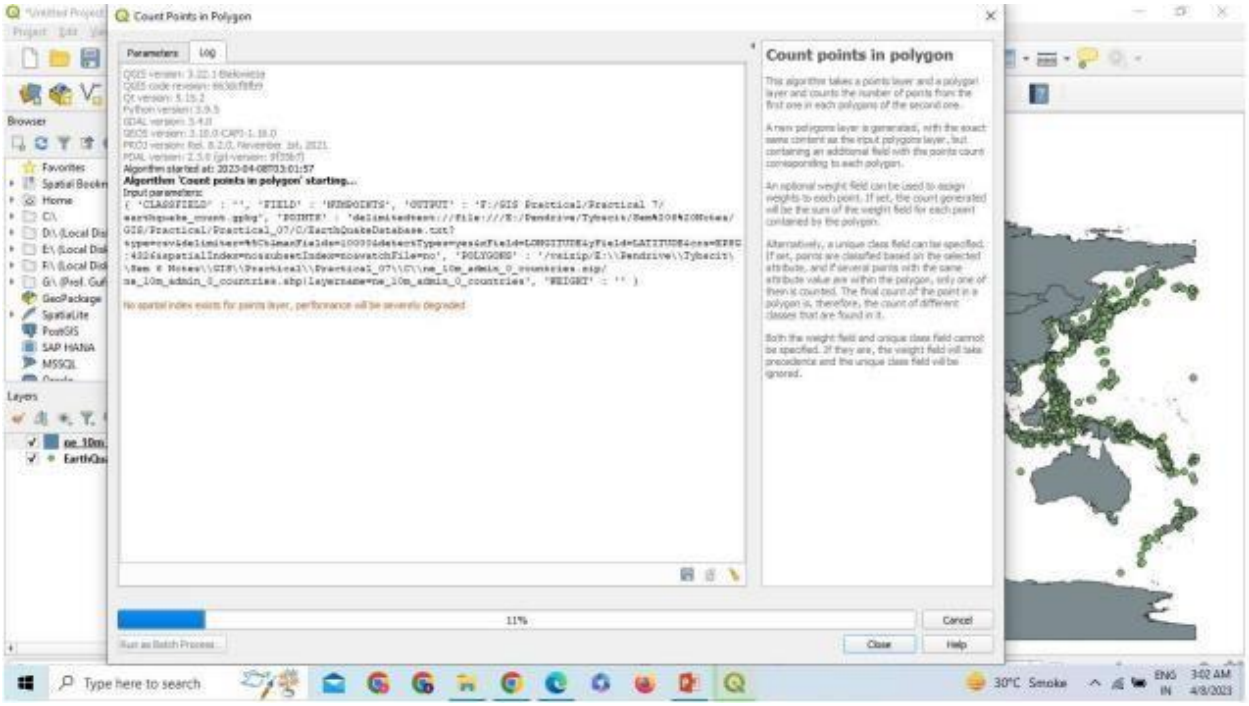
3) count > earthquake_count.gpkg

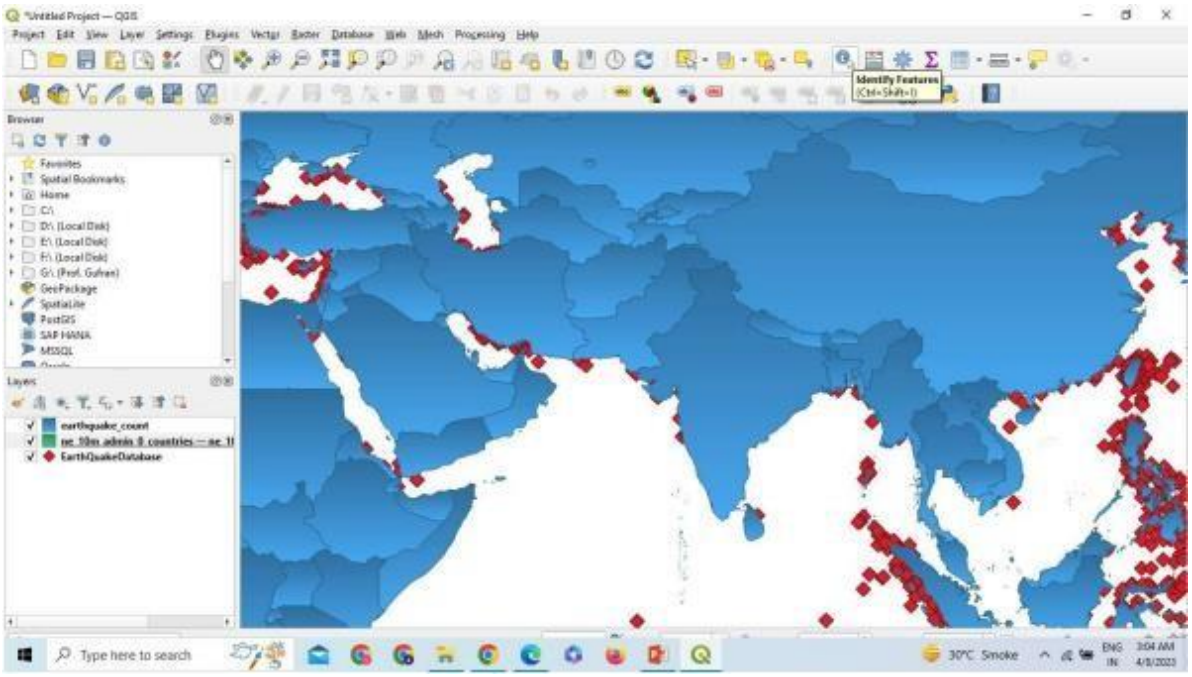
4) Run  5) click on identity result

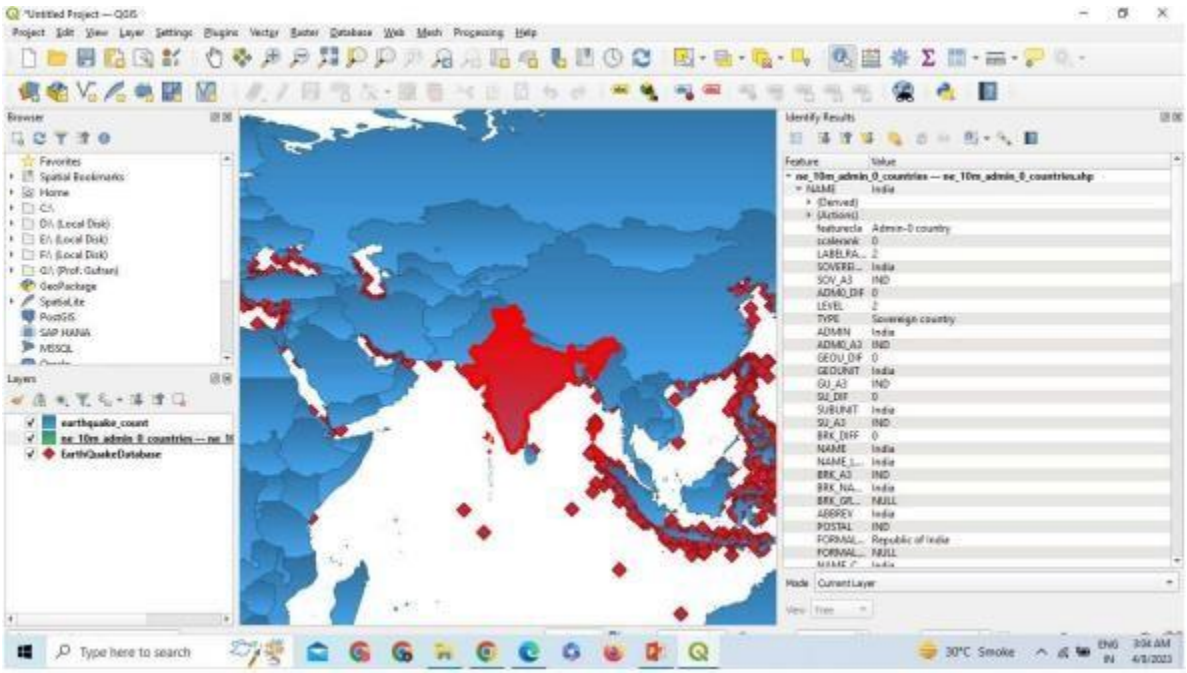



Count Points in Polygon
Parameters
Log
Polygons
Points
Weight field [optional]
Class field [optional]
Count field name
NUMPOINTS
Count
Open output file after running algorithm
Count points in polygon
0%
Cancel
Run as Batch Process...
Run
Close
Help
Type here to search
30°C Smoke
ENG
IN
2:59 AM
4/8/2023


Count Points in Polygon
Parameters
Log
Polygons
Points
Weight field [optional]
Class field [optional]
Count field name
NUMPOINTS
Count
Open output file after running algorithm
Count points in polygon
0%
Cancel
Run as Batch Process...
Run
Close
Help
Type here to search
30°C Smoke
ENG
IN
3:01 AM
4/8/2023


Count Points in Polygon
Parameters
Log
Count points in polygon
Algorithm started at: 2023-04-08T13:01:57
Algorithm 'Count points in polygon' starting...
11%
Cancel
Close
Help
Type here to search
30°C Smoke
ENG
IN
3:02 AM
4/8/2023

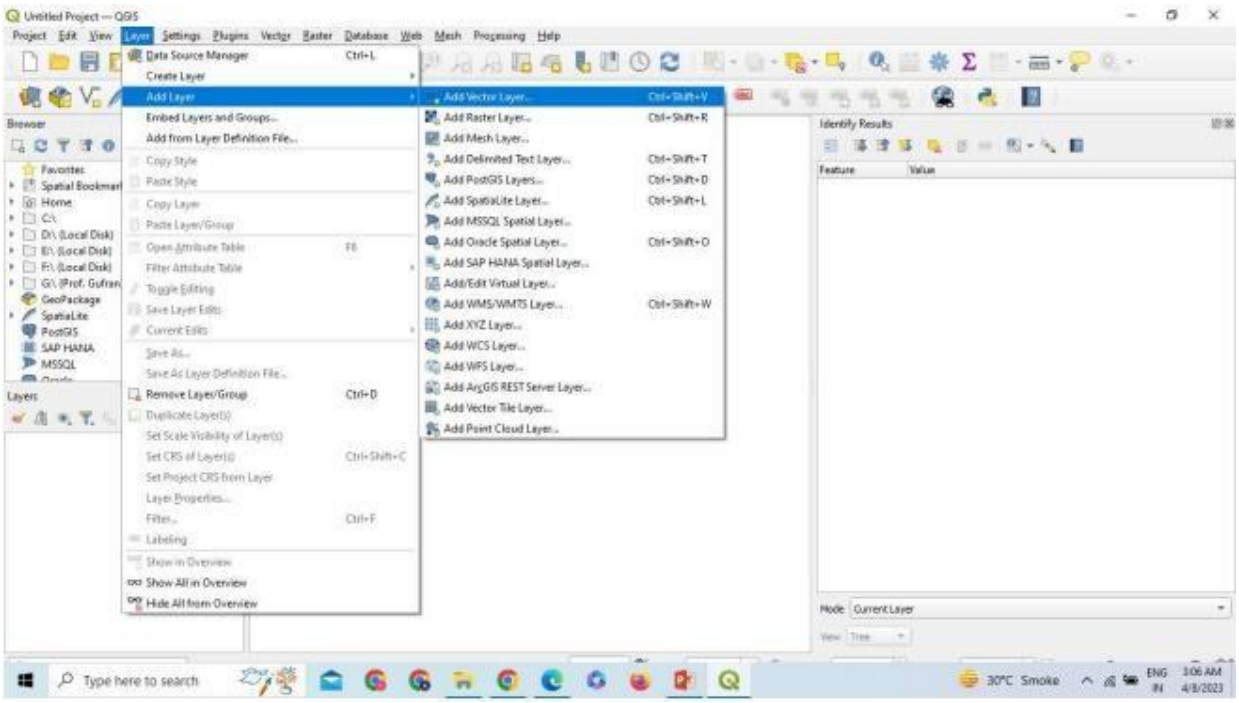

*Untitled Project — QGIS
Identify Features
Browser
Layers
earthquake_count
EarthQuakeDatabase
Type here to search
30°C Smoke
ENG
IN
3:04 AM
4/8/2023

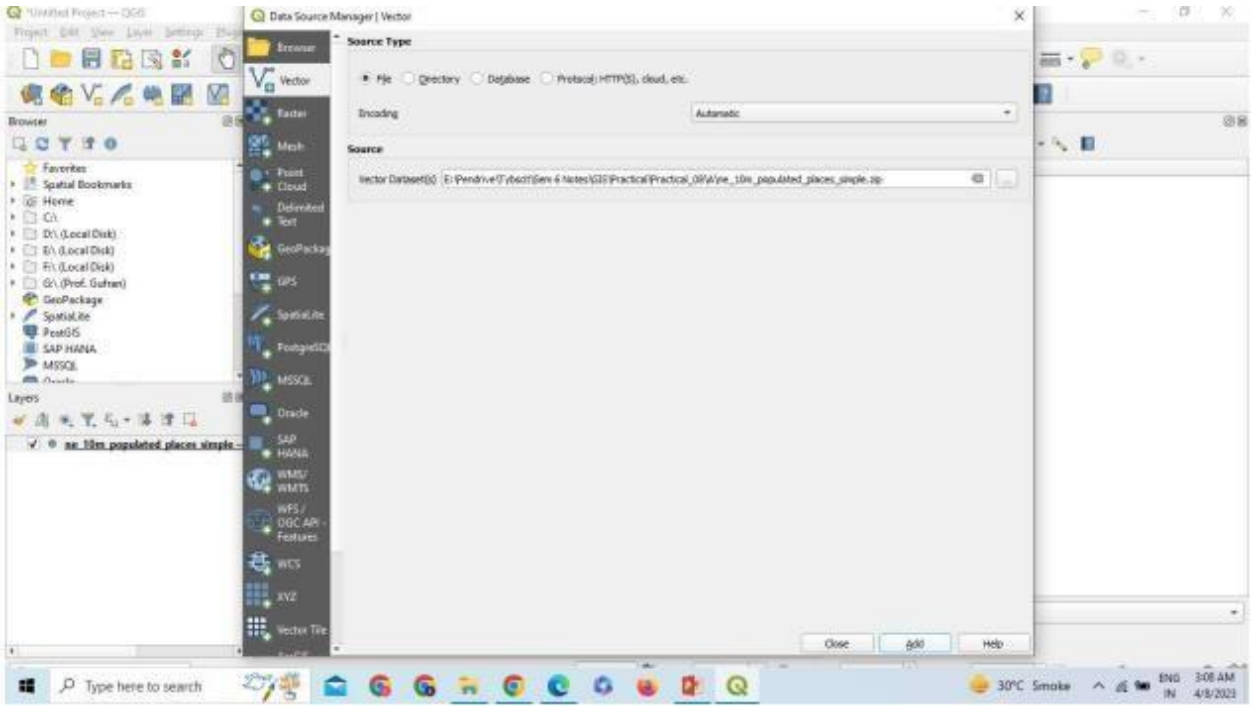


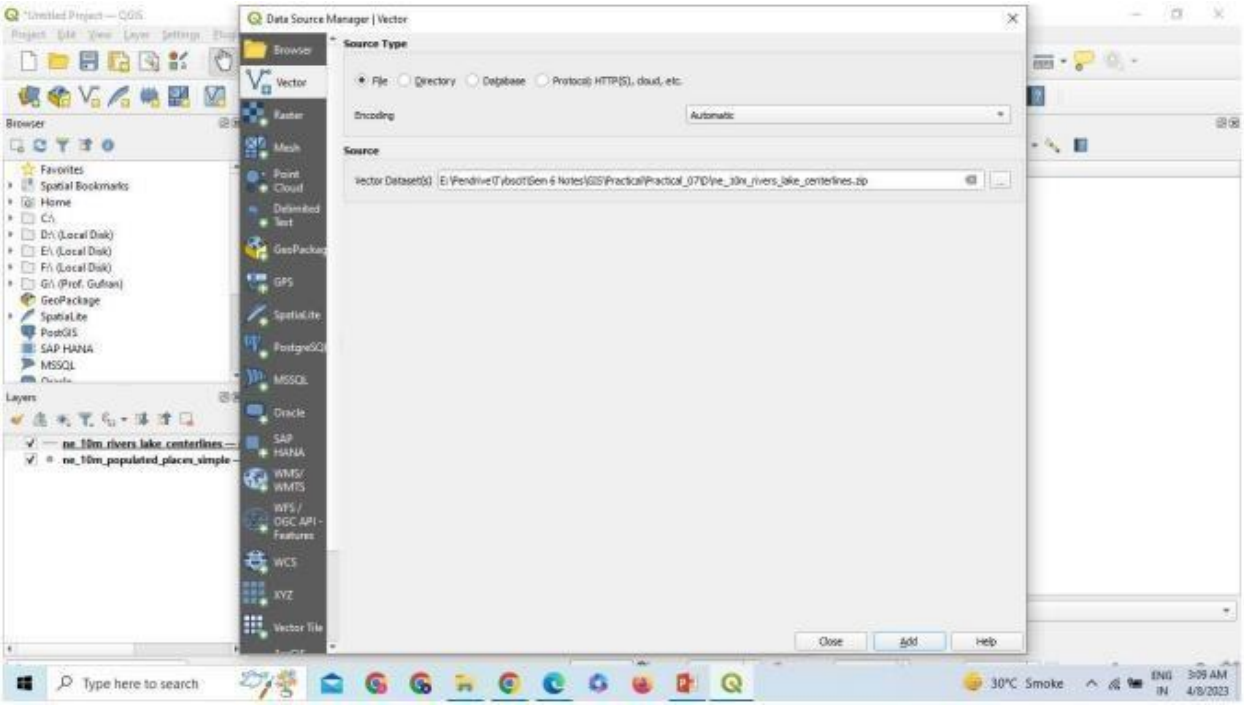
**Step 13**- 1)Go to layer > Add Layer > Add Vector Layer

2) Add file ne_100m_populated_places_simple.zip > Add

3) Add file ne_10m_rivers_lake_centerlines.zip

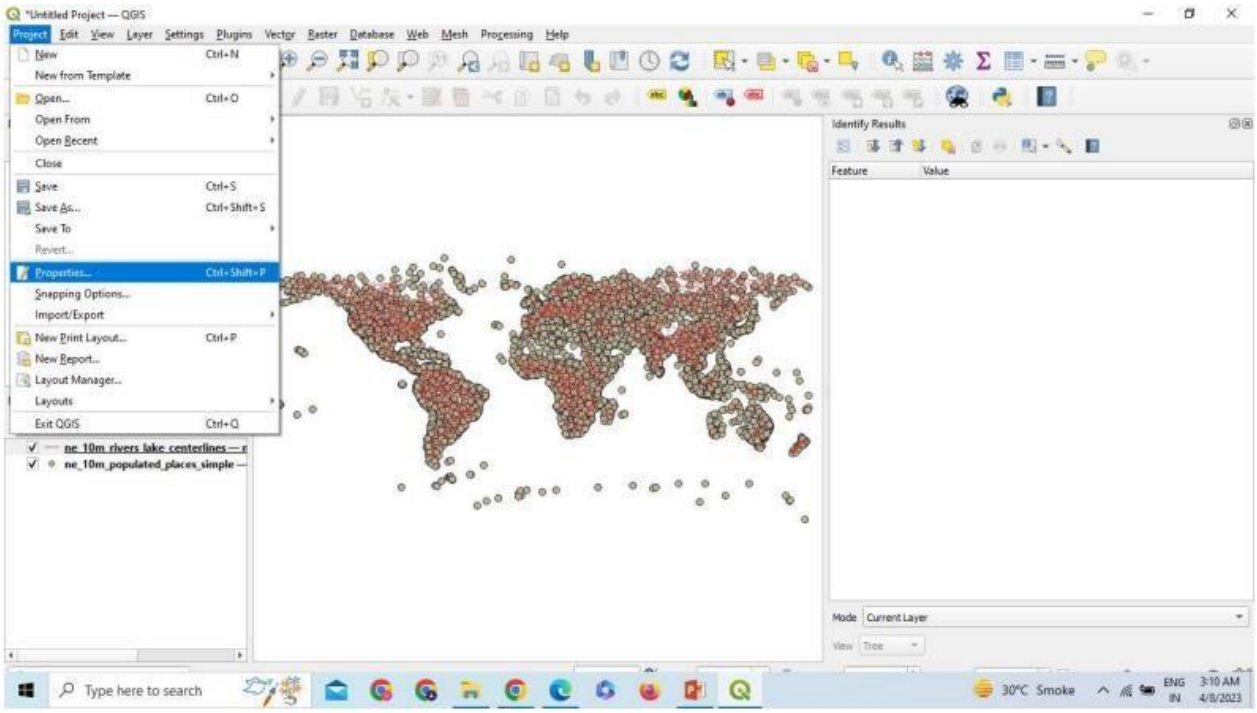


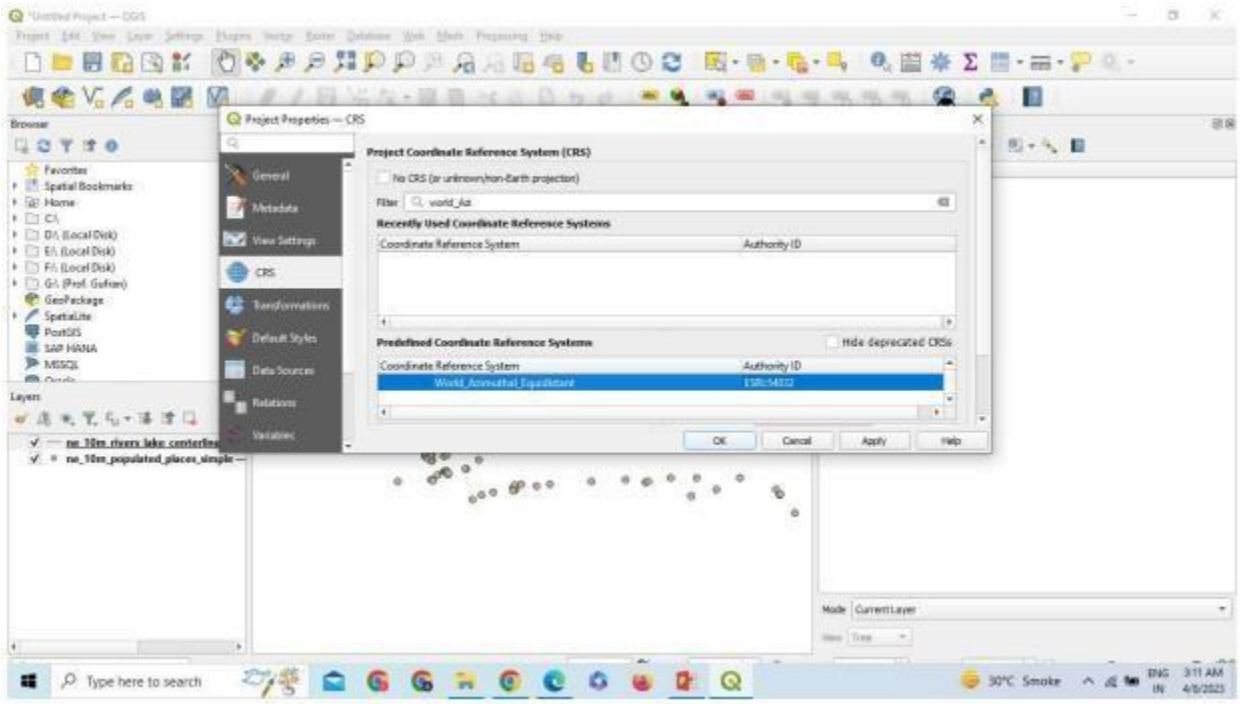

Data Source Manager | Vector
Source Type
File
Directory
Database
Protocol: HTTP(S), cloud, etc.
Encoding
Automatic
Source
Vector Dataset(s)
E:\Pendrive\Tybsc\IT\Sem 6 Notes\GIS\Practical\Practical_08\ne_10m_populated_places_simple.zip
Close
Add
Help
Type here to search
30°C Smoke
ENG
IN
3:08 AM
4/8/2023


Data Source Manager | Vector
Source Type
File
Directory
Database
Protocol: HTTP(S), cloud, etc.
Encoding
Automatic
Source
Vector Dataset(s)
E:\Pendrive\Tybsc\IT\Sem 6 Notes\GIS\Practical\Practical_07\D\ne_10m_rivers_lake_centerlines.zip
Close
Add
Help
Type here to search
30°C Smoke
ENG
IN
3:09 AM
4/8/2023

**Step 14 -** 1)project > properties

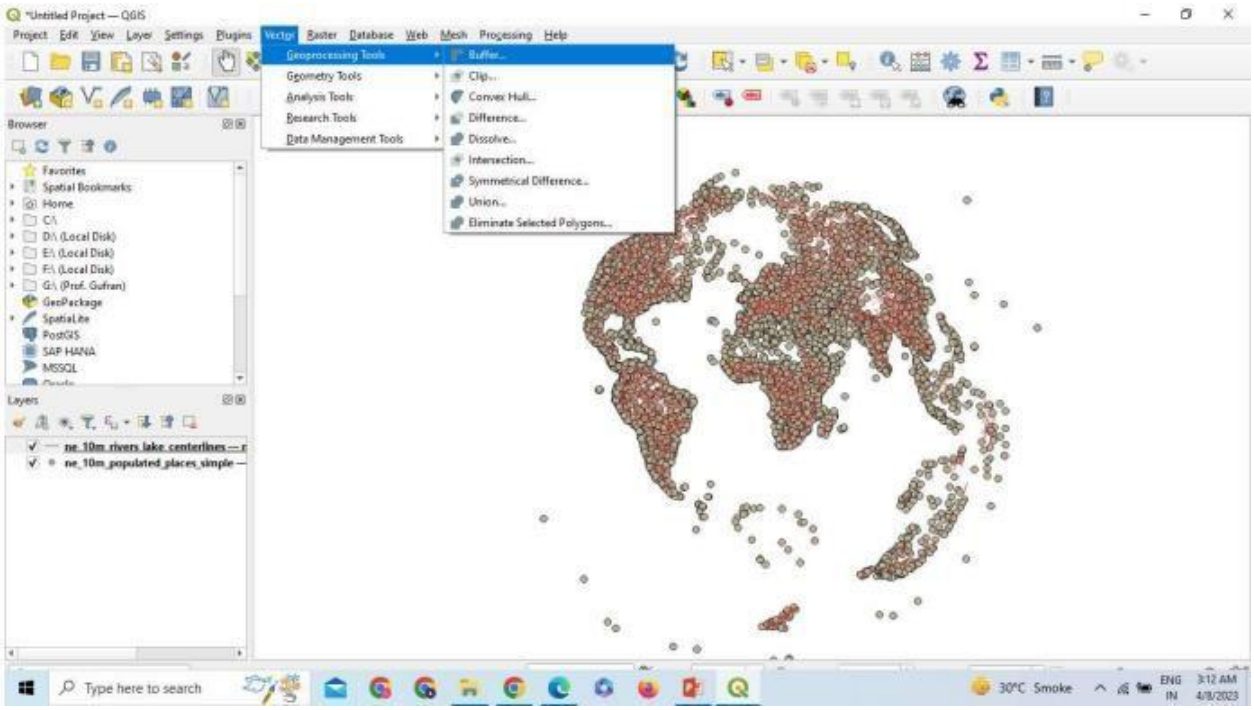
2) CRS > predefined coordinate reference System > coordinate reference System change to World_Azimuthal_Equidistanct >ok

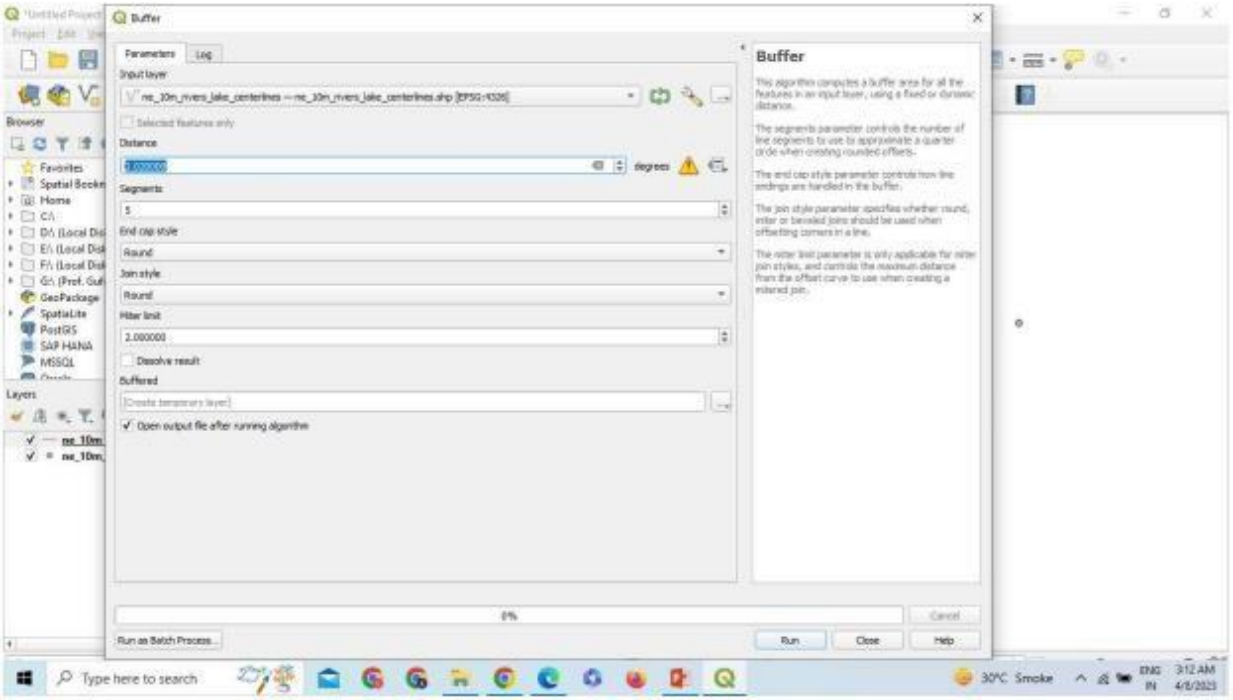


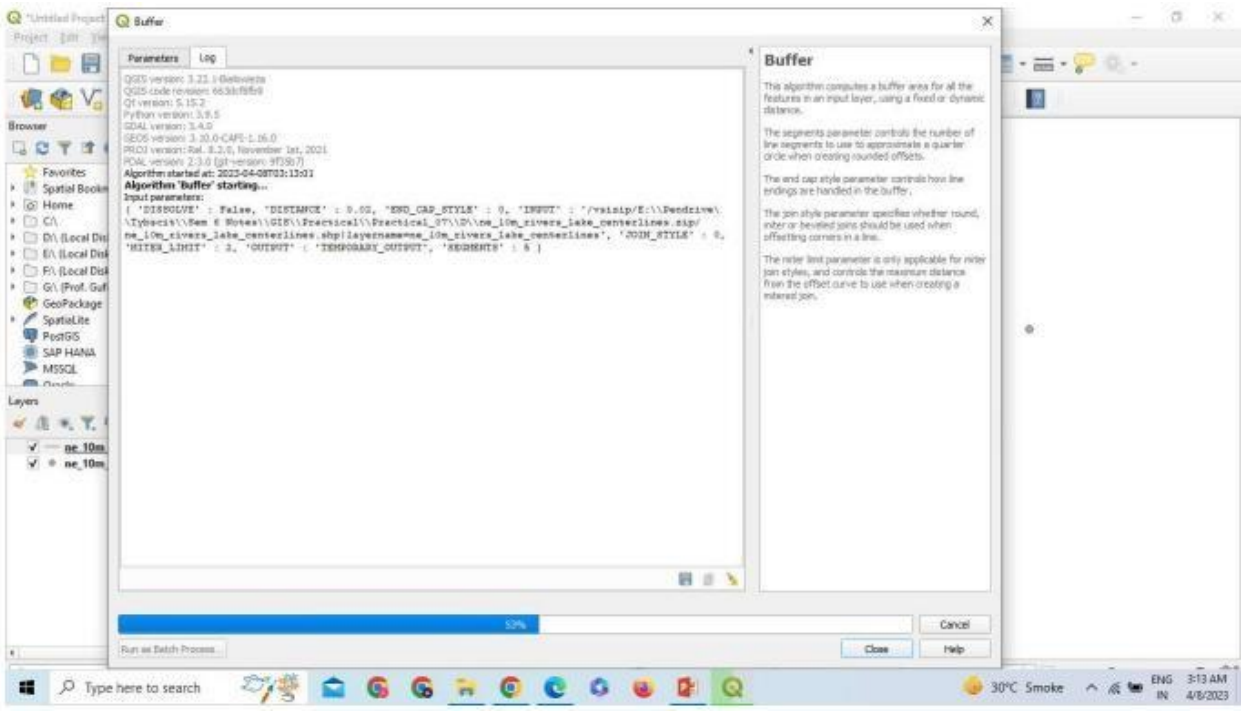



**Step 15-** 1) Go to vector >Geoprocessing Tools > Buffer

2) Distance is 0.020000 3) Run

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Parameters
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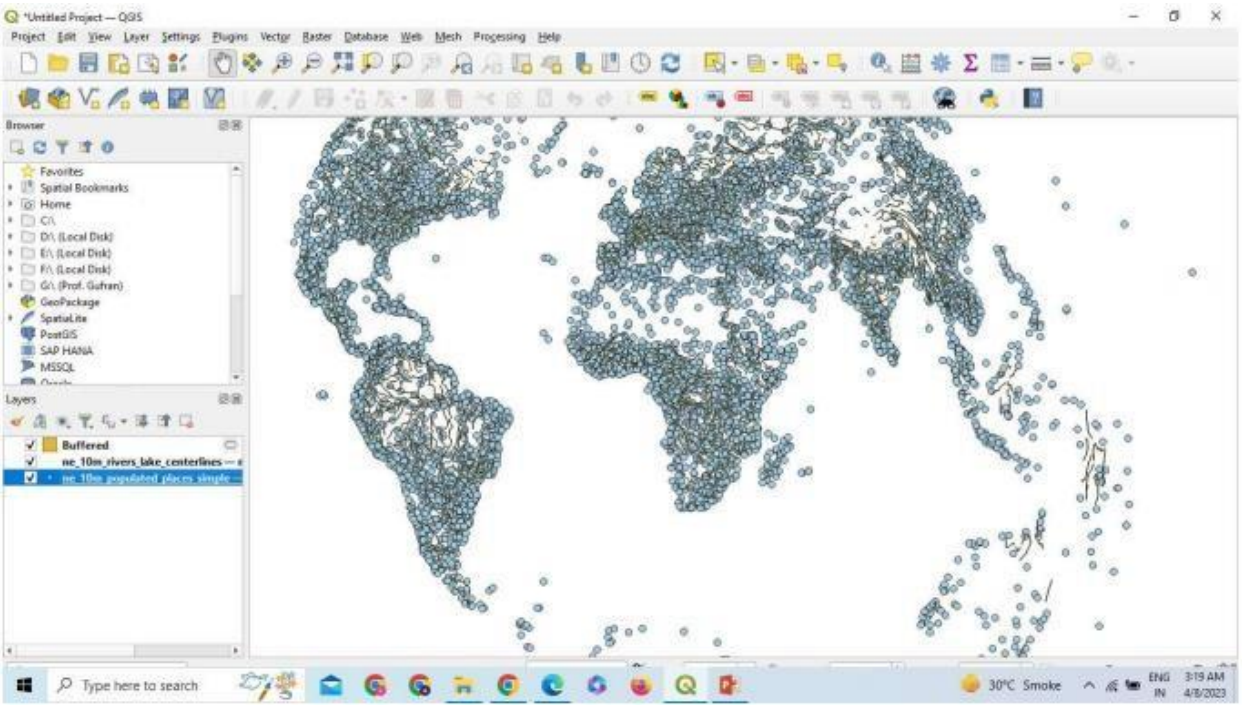
Cancel
Close
Help
Type here to search
30°C Smoke
ENG
IN
3:13 AM
4/8/2023


*Untitled Project — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Home
C:\
D:\ (Local Disk)
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F:\ (Local Disk)
G:\ (Prof. Gufran)
GeoPackage
SpatiaLite
PostGIS
SAP HANA
MSSQL
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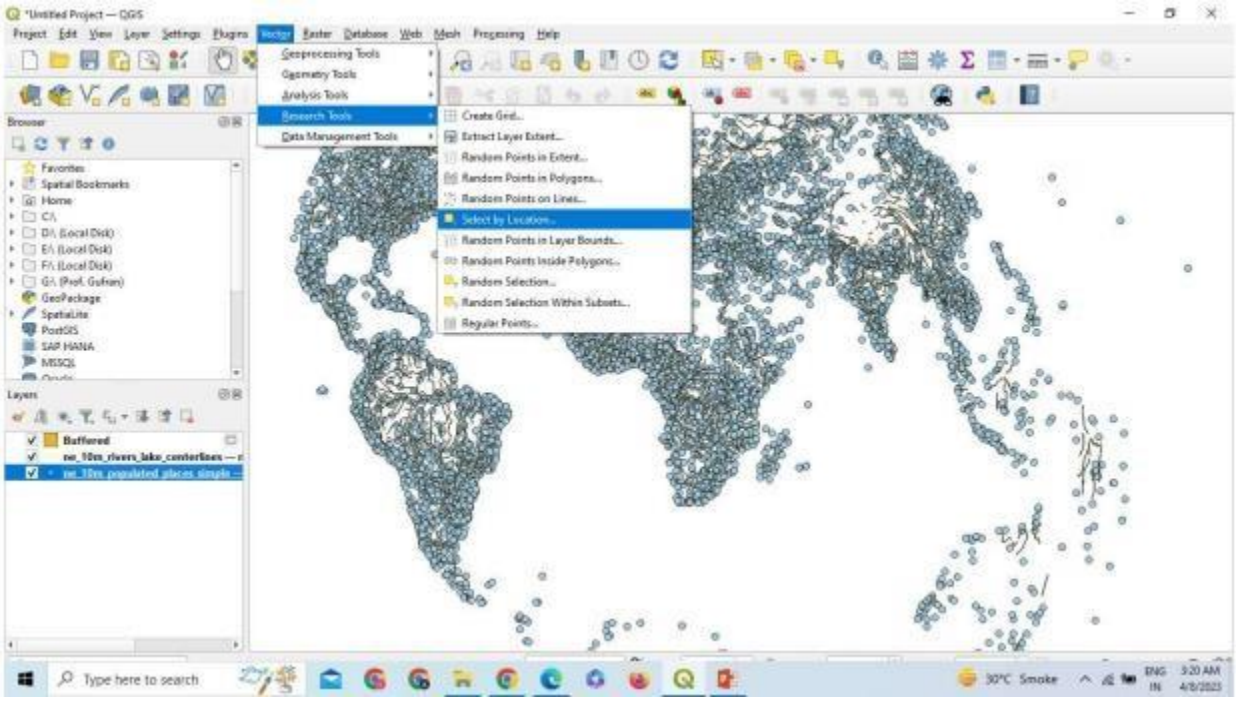
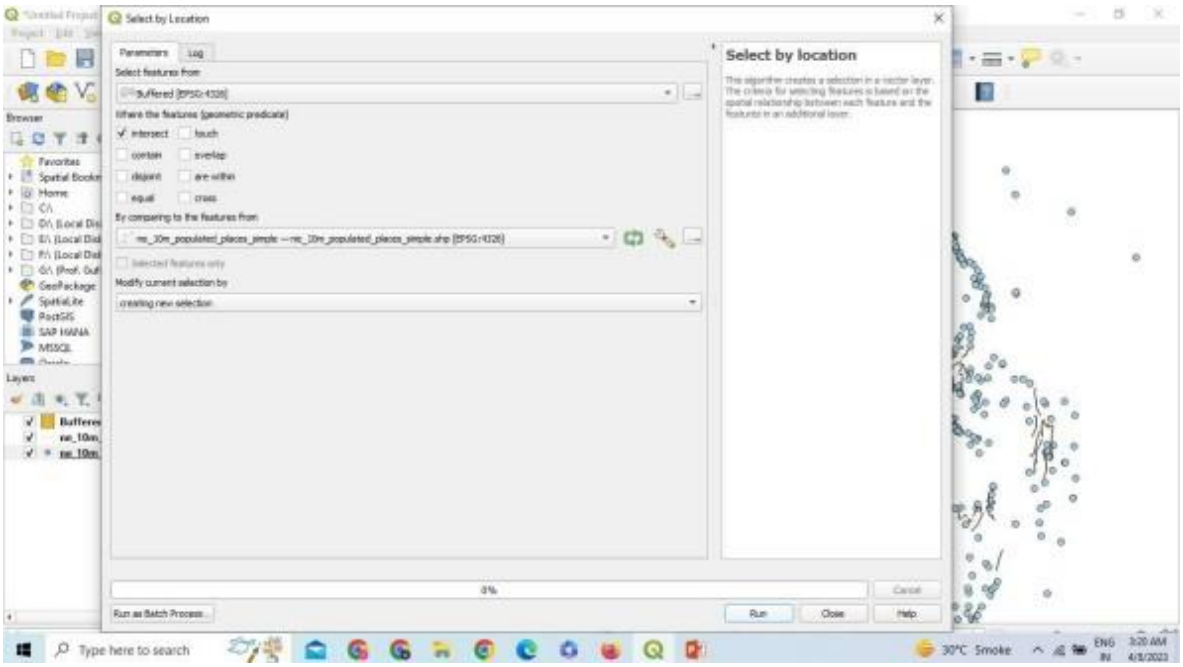
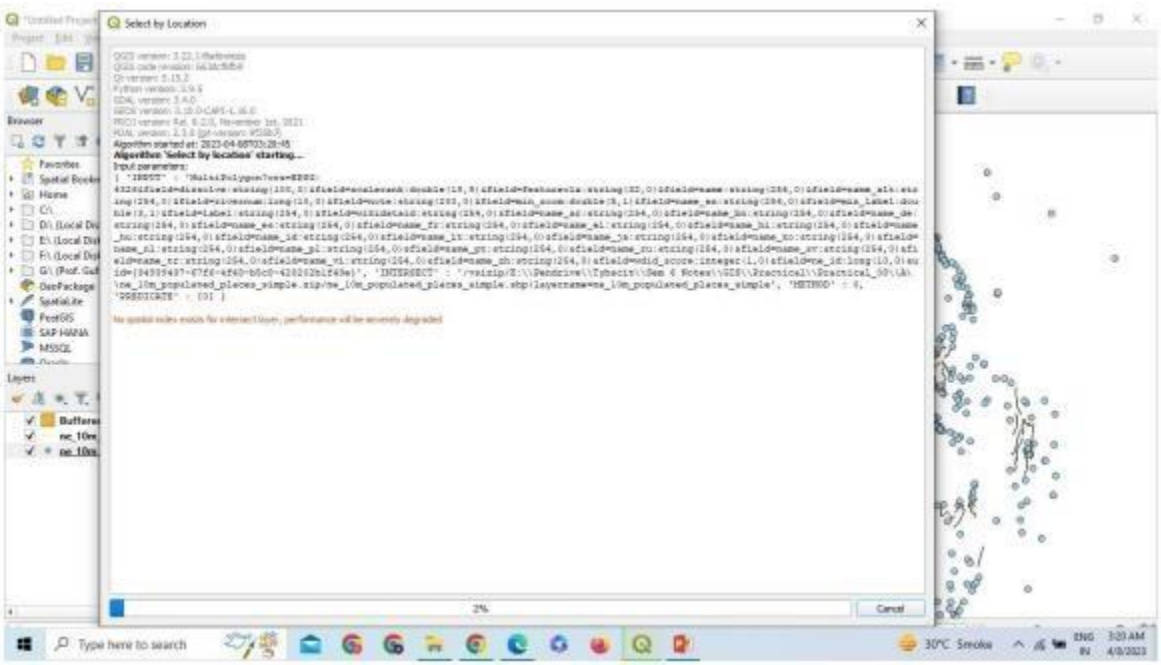
**Step 16**- Go to Vector > research tool >select by location > run






This will highlight only those rivers containing a populated place within 2 KM