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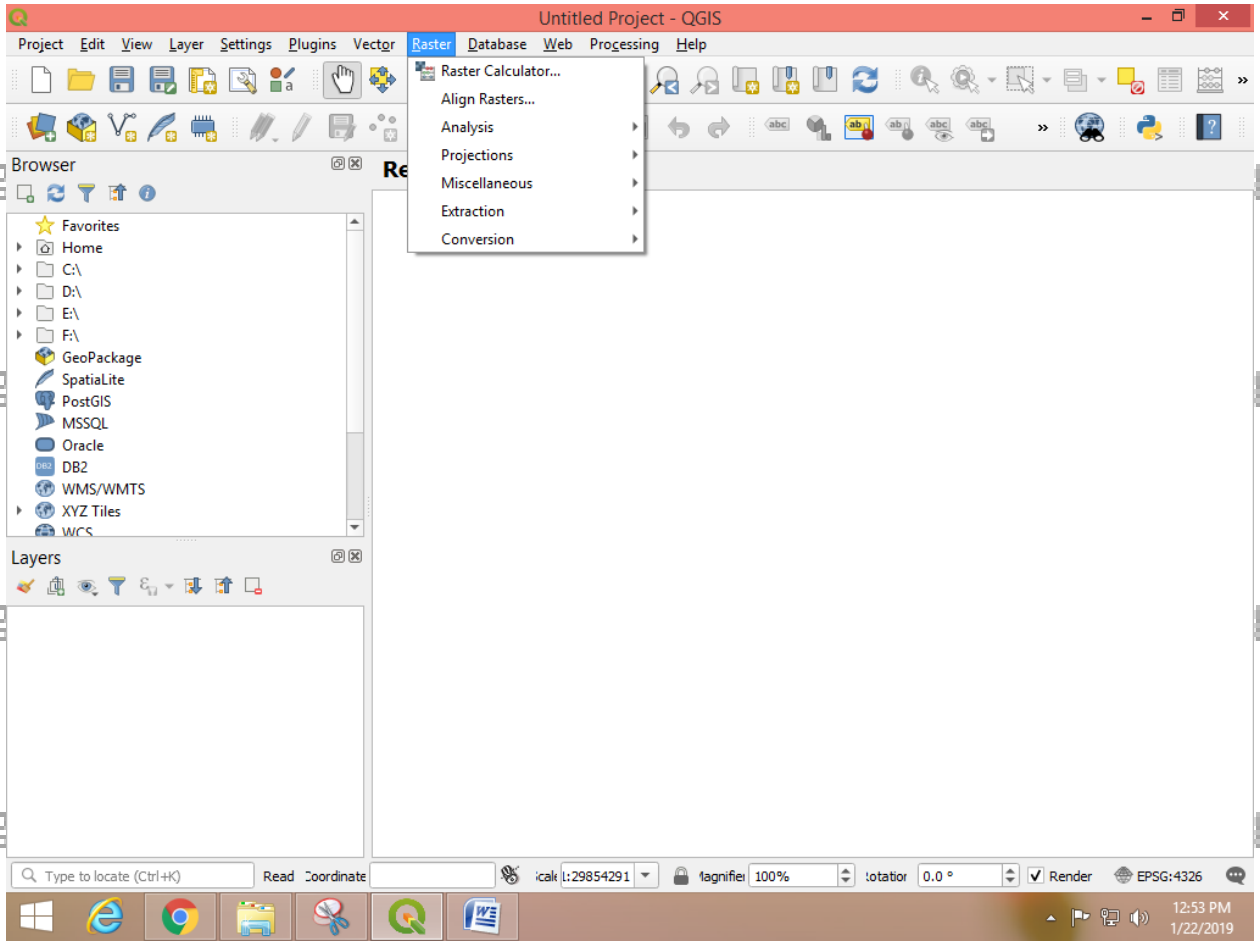
---------- Practical 6-a ----------

Georeferencing Topo Sheets and Scanned Maps

Please download the resources files from the link below.

https://drive.google.com/open?id=1fSn0Uv3AHlJsidAb_wuT5rJNr0S5vpHf

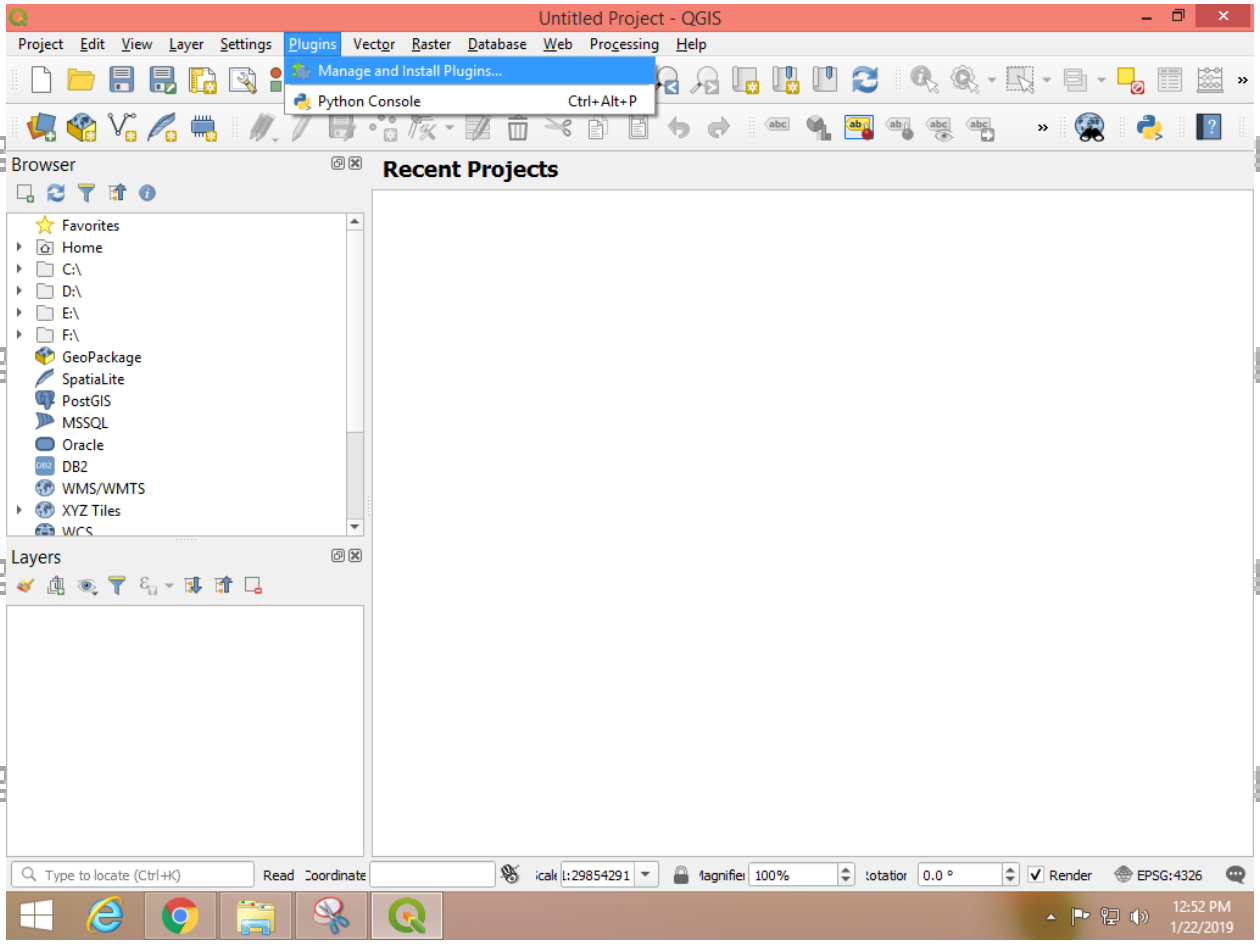
Georeferencing Topo Sheets and Scanned Maps



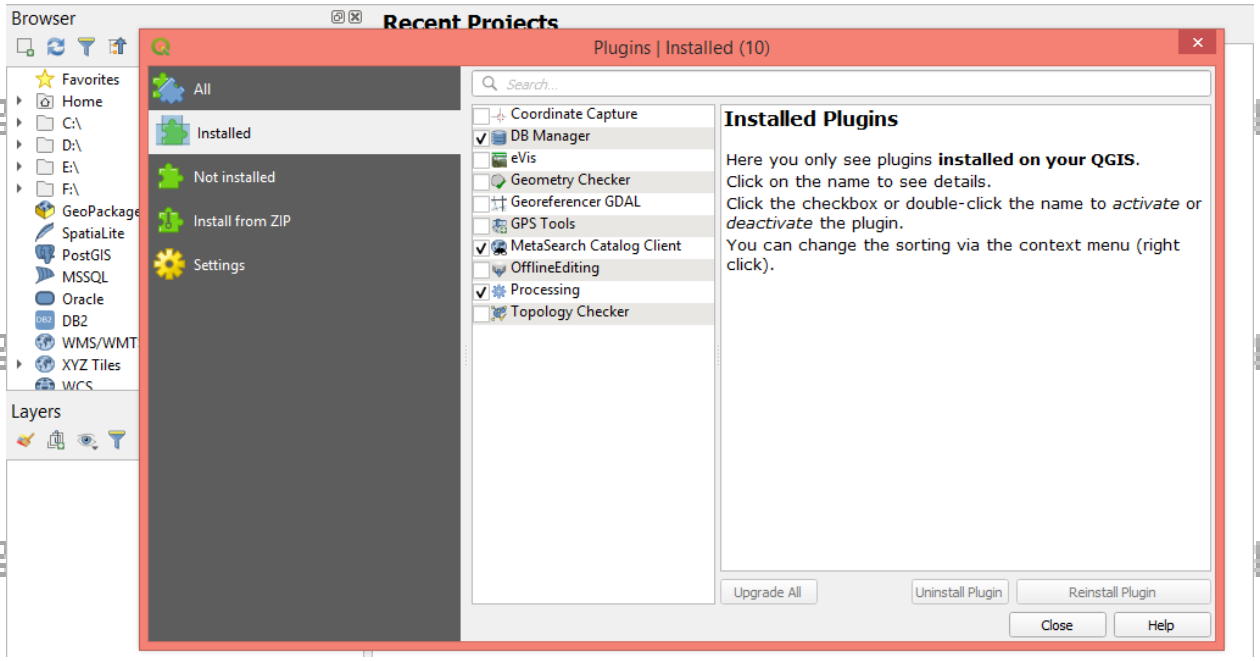
We are performing this practical in QGIS 3.4 version.

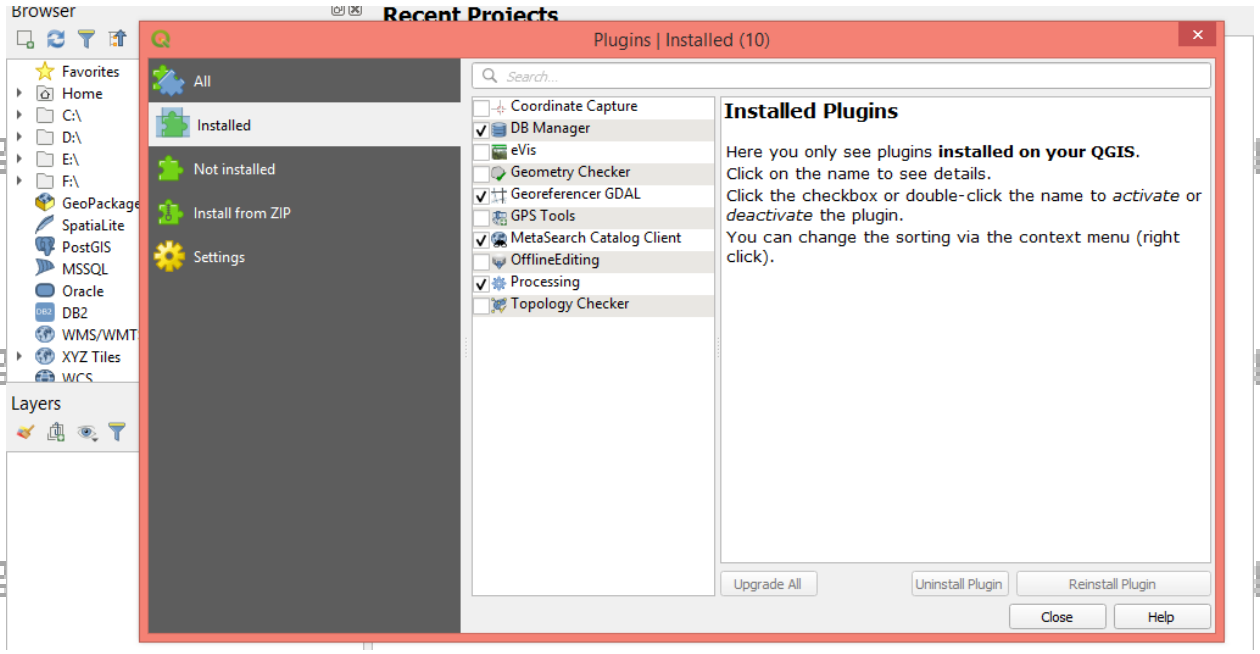
We have to open "Georeferencer…" for that we have to go in "Raster" tab but if we didn't find any option named "Georeferencer…" then we have to add it through plugins, for that go in

Plugins > Manage and Install Plugins…

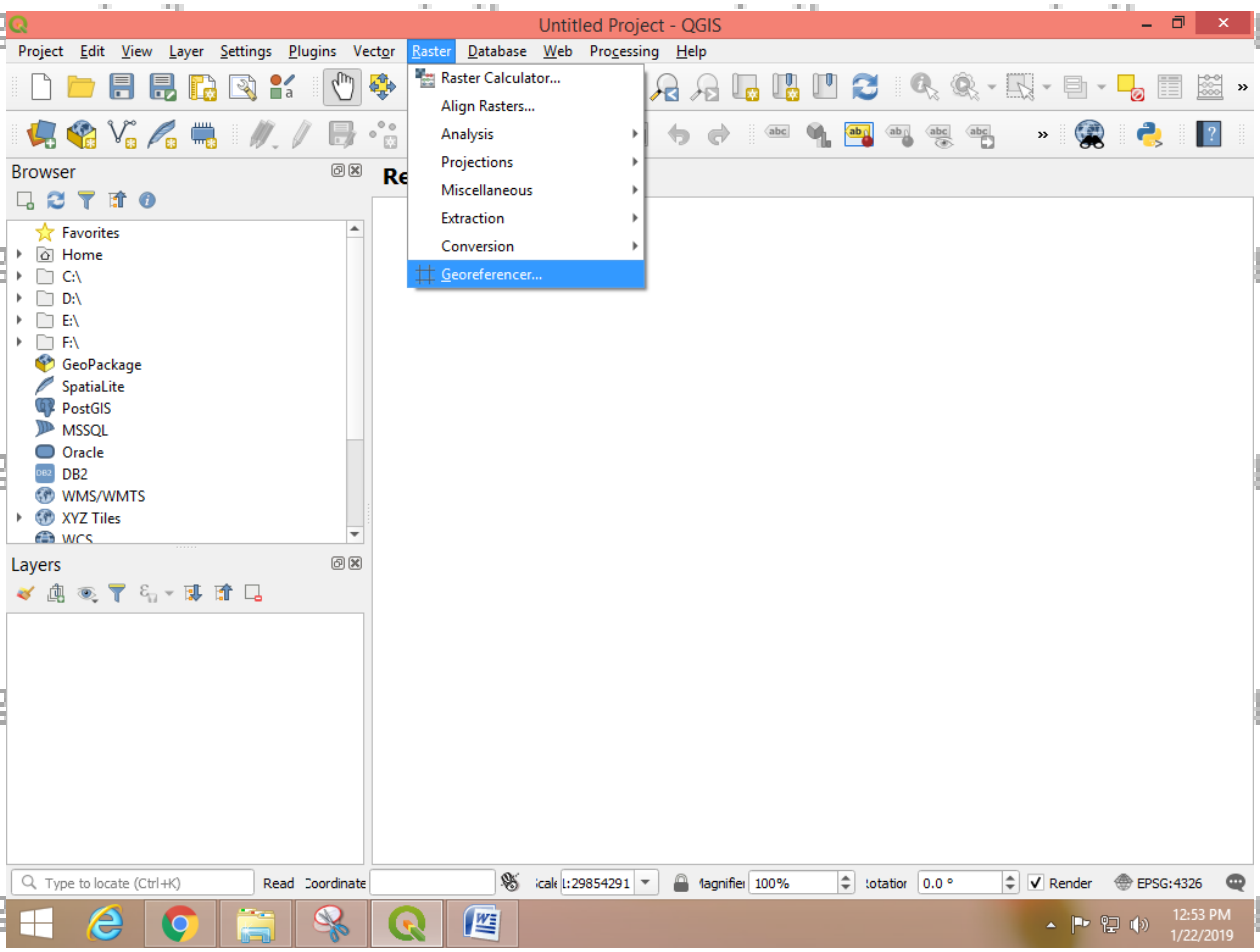


Select "Installed" tab we can see "Georeferencer GDAL" just select the checkbox before of it and close the window.

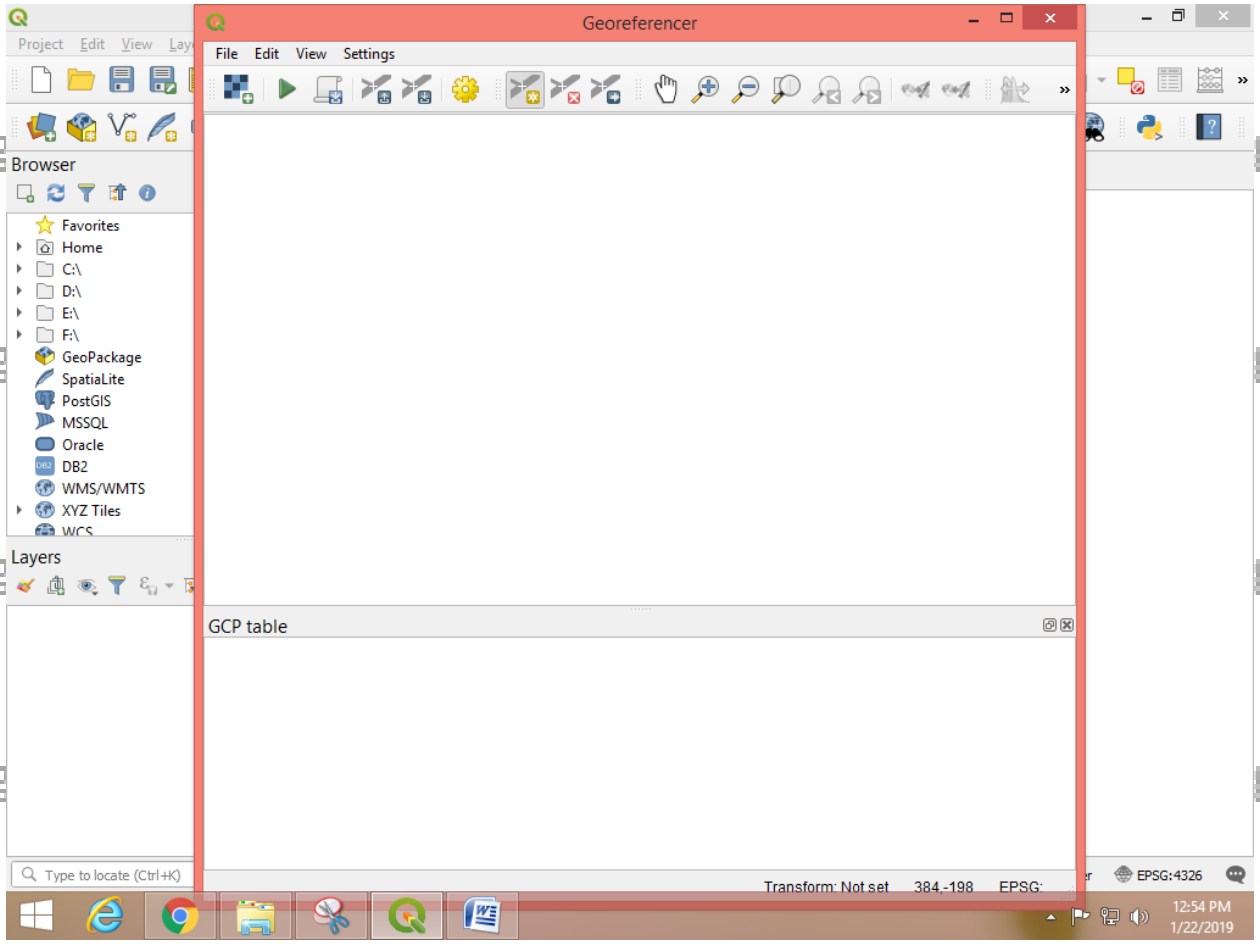




Now we can see the "Georeferencer…" in "Raster" tab click on it.

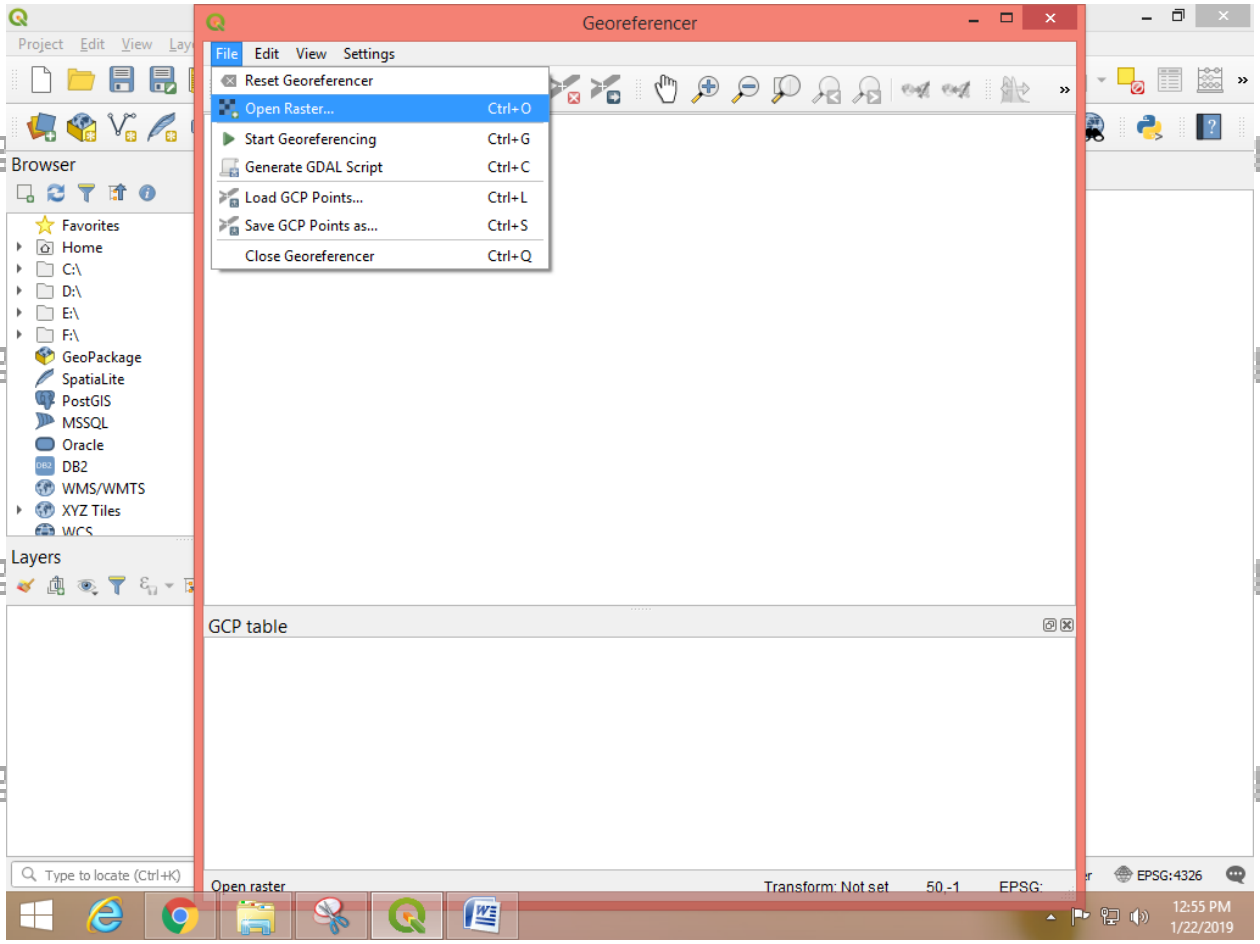


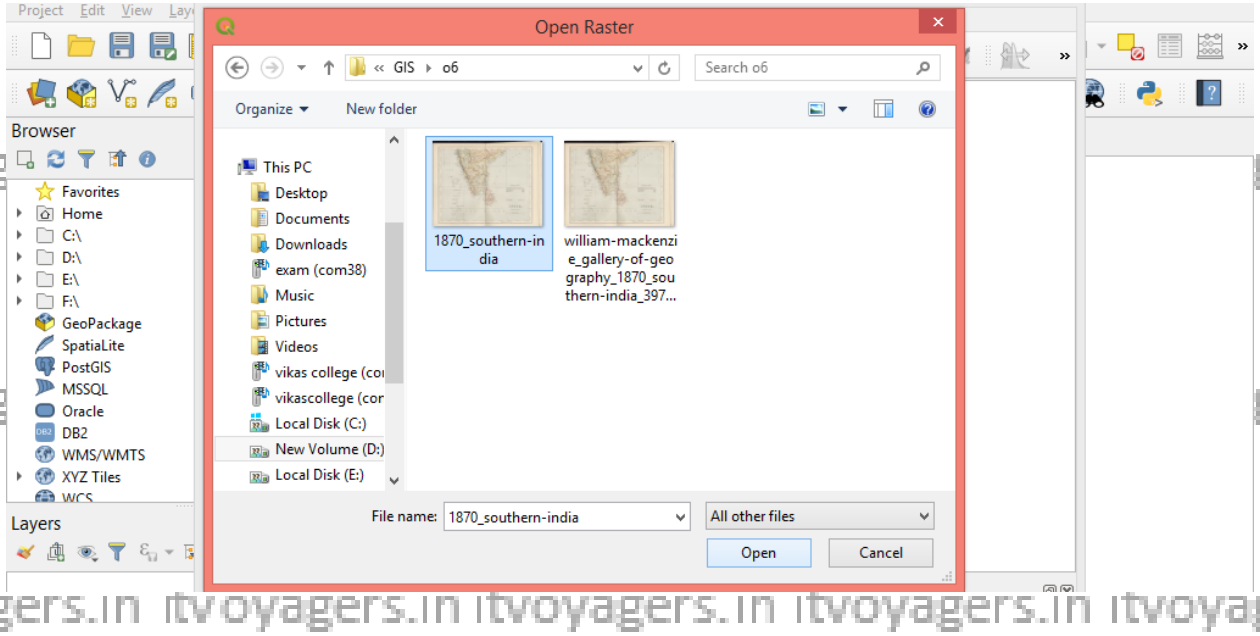
New window will open up.

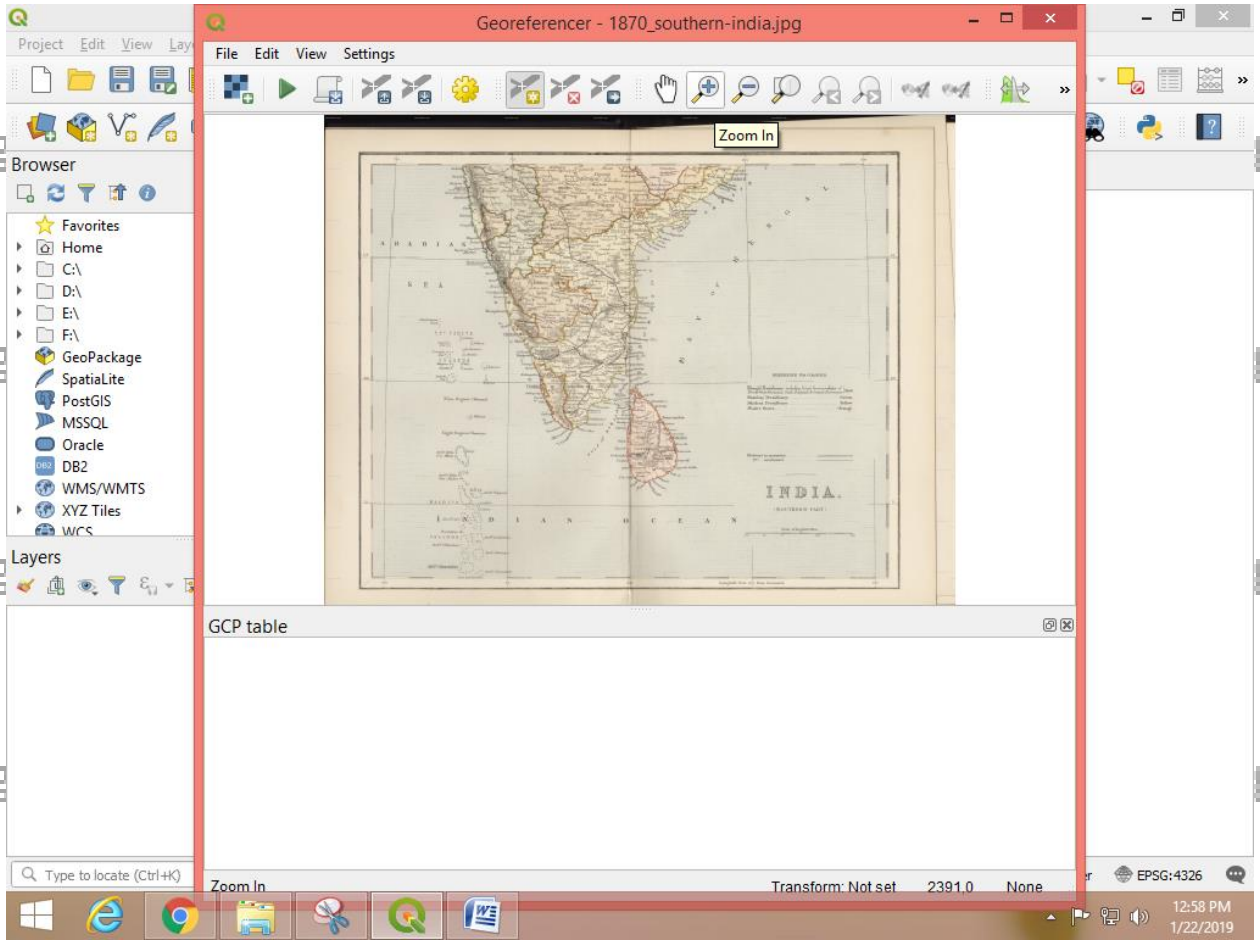


In Georeferencer window go to – File > Open Raster…

Select "1870_southern-india.jpg" and click "Open". If it ask for CRS then select EPSG: 4326



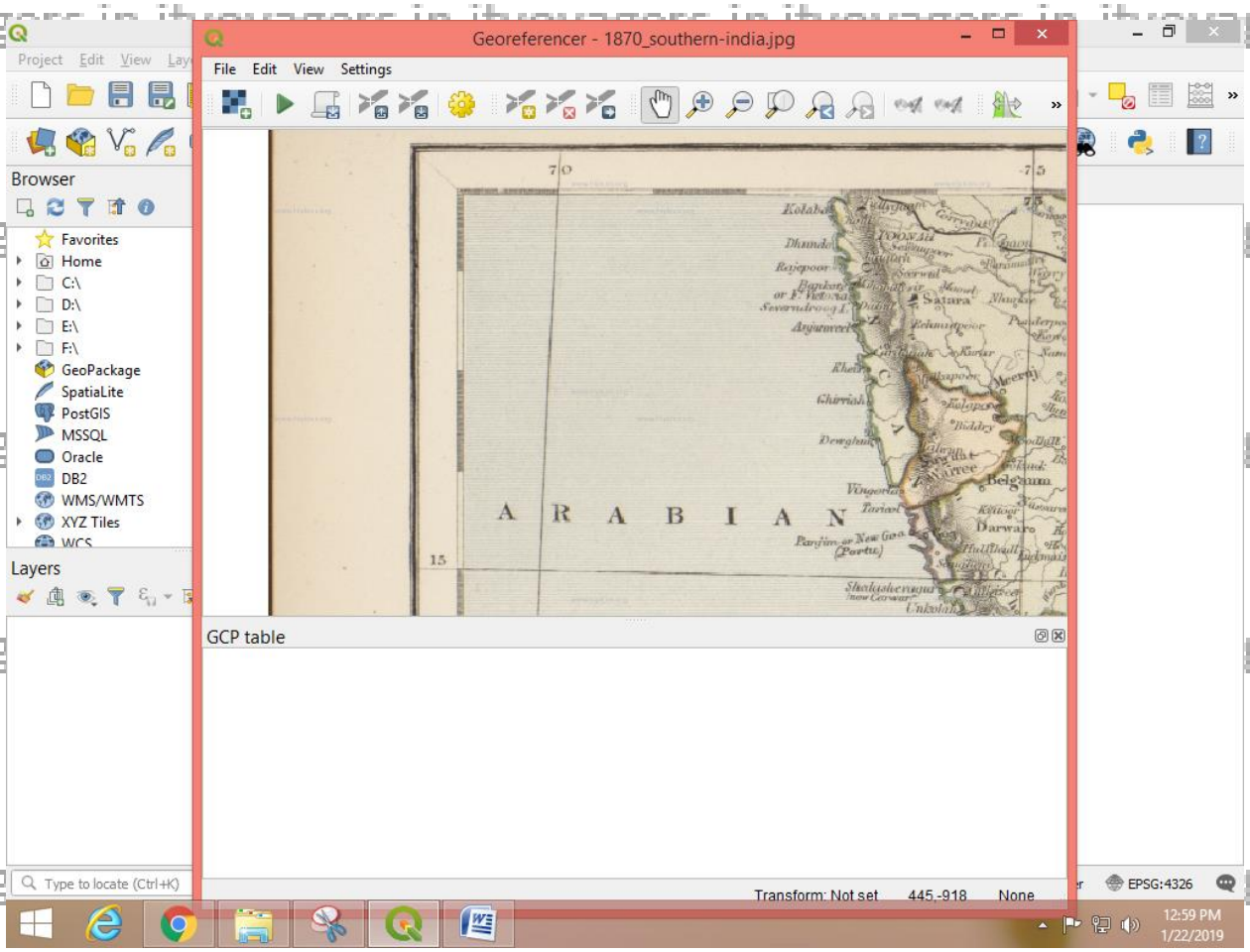




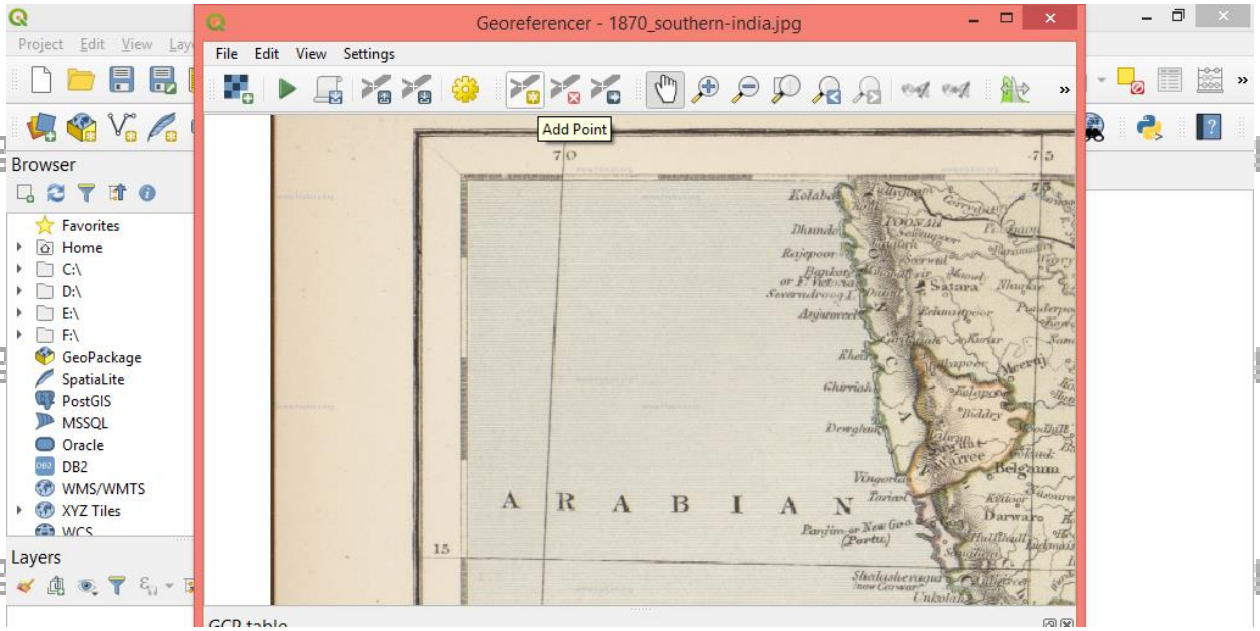
Now map will get load in upper window in the bottom window we can will see the coordinate's details which we are going to plot on the map. Our aim is to give map a perfect reference point which will help us overlap the map with the other maps like vector map. Now as we can see we selected ".jpg**" image we know that it doesn't contain coordinate's details like "**.tif**" does. Now we will add coordinate's details in this "**.jpg**" file and we will save it in "**.tif**" format. Do not having coordinate's details means that we cannot call that map/data in QGIS directly because it doesn't have georeferences attached to it.**

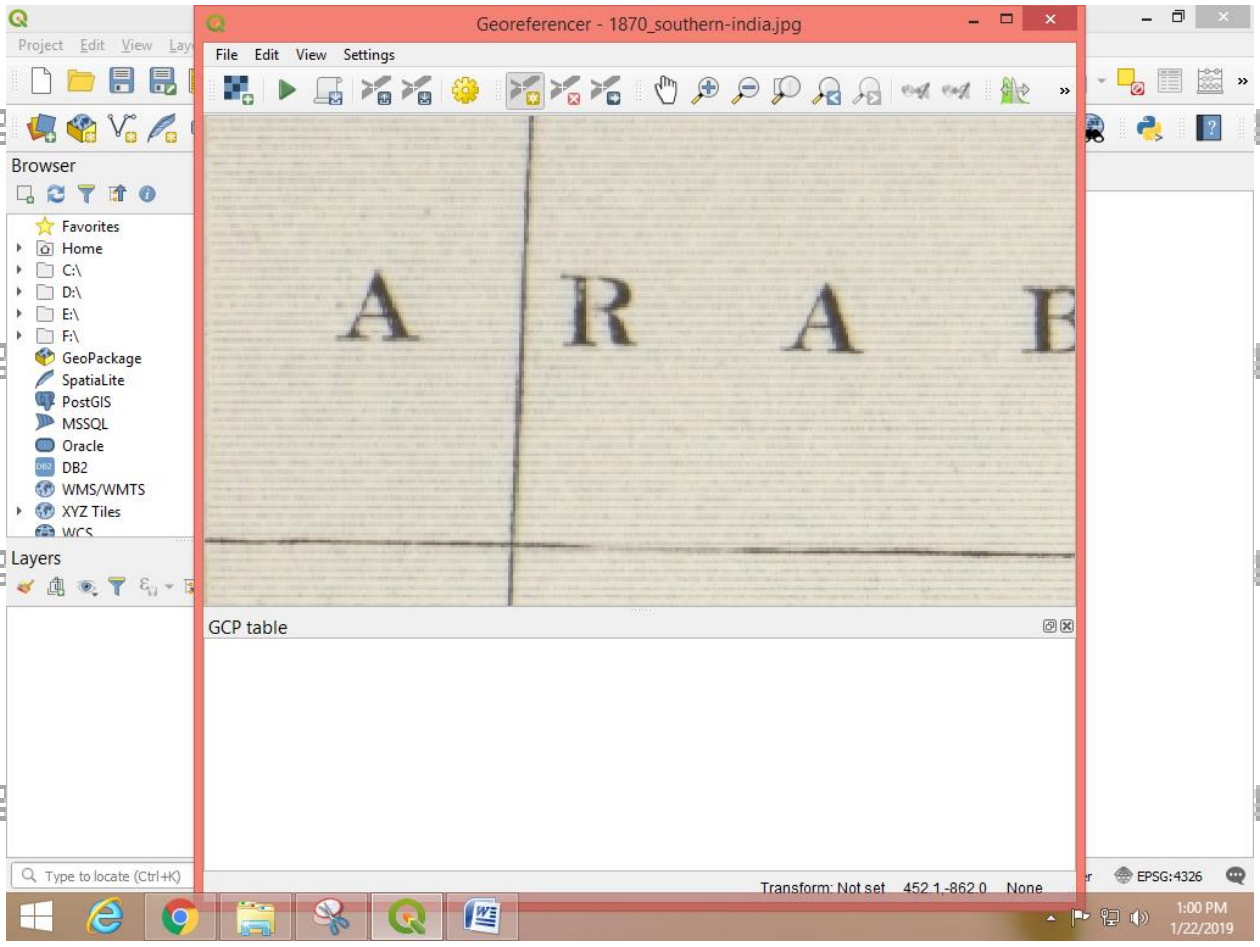
Now map is drawn by very clever cartographer, he/she did mention the Longitude (Vertical lines, X axis) and Latitude (Horizontal lines, Y axis) in map although it is been drawn on paper but it represent exact location in real world. We can see the Latitude (Horizontal lines, Y axis) values on left

and right side of the map and Longitude (Vertical lines, X axis) values on top and bottom of map.



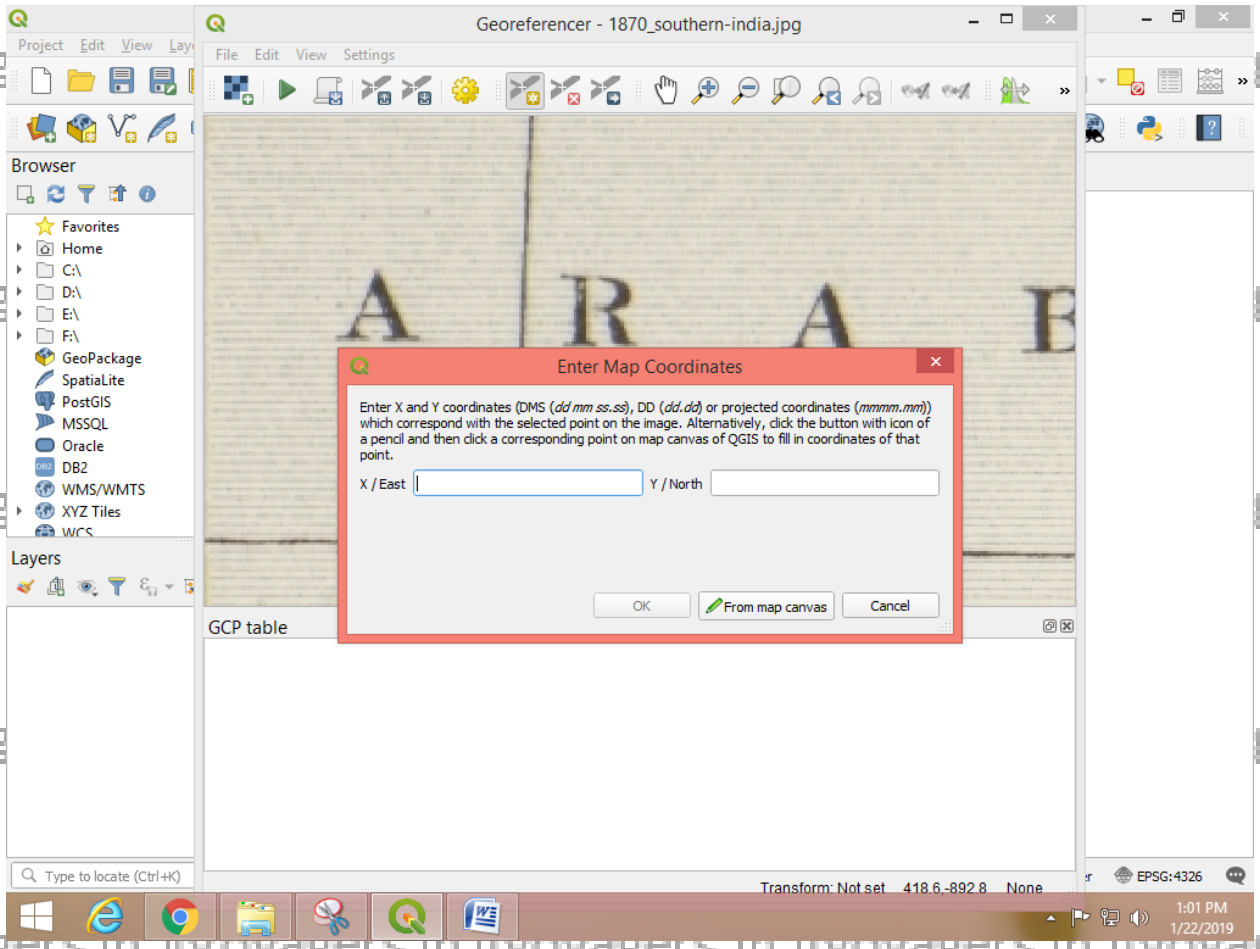
We will plot few points on map and give those coordinates details. For that click on  "Add Point" button.

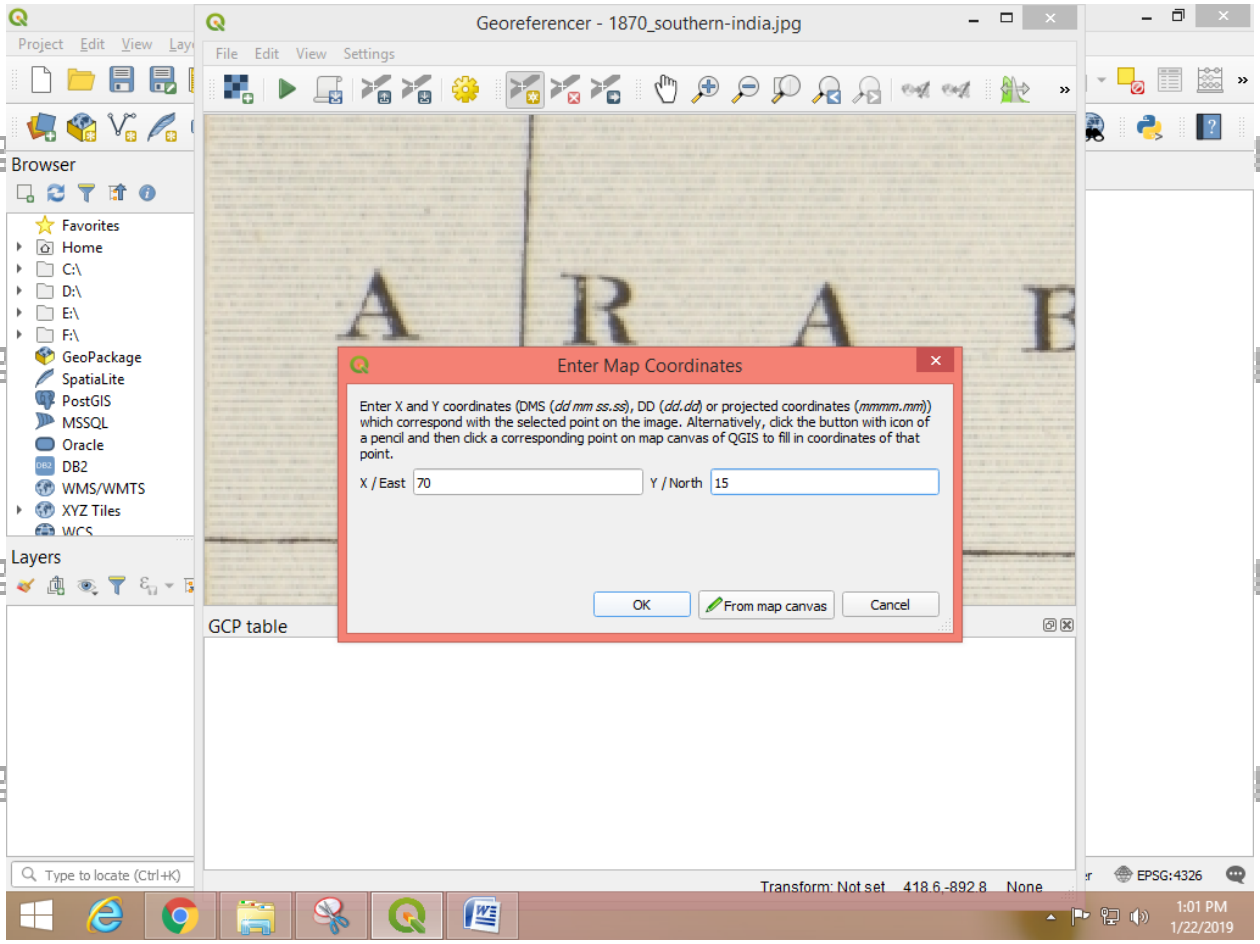




Zoom in to the point which is intersection of 70 Longitude (X axis value) and 15 Latitude (Y axis value) and click on the intersection point.

You will get a window which will ask you for the X and Y values enter the values 70 and 15 respectively.





We can see that we will get record for that point in GCP table window.

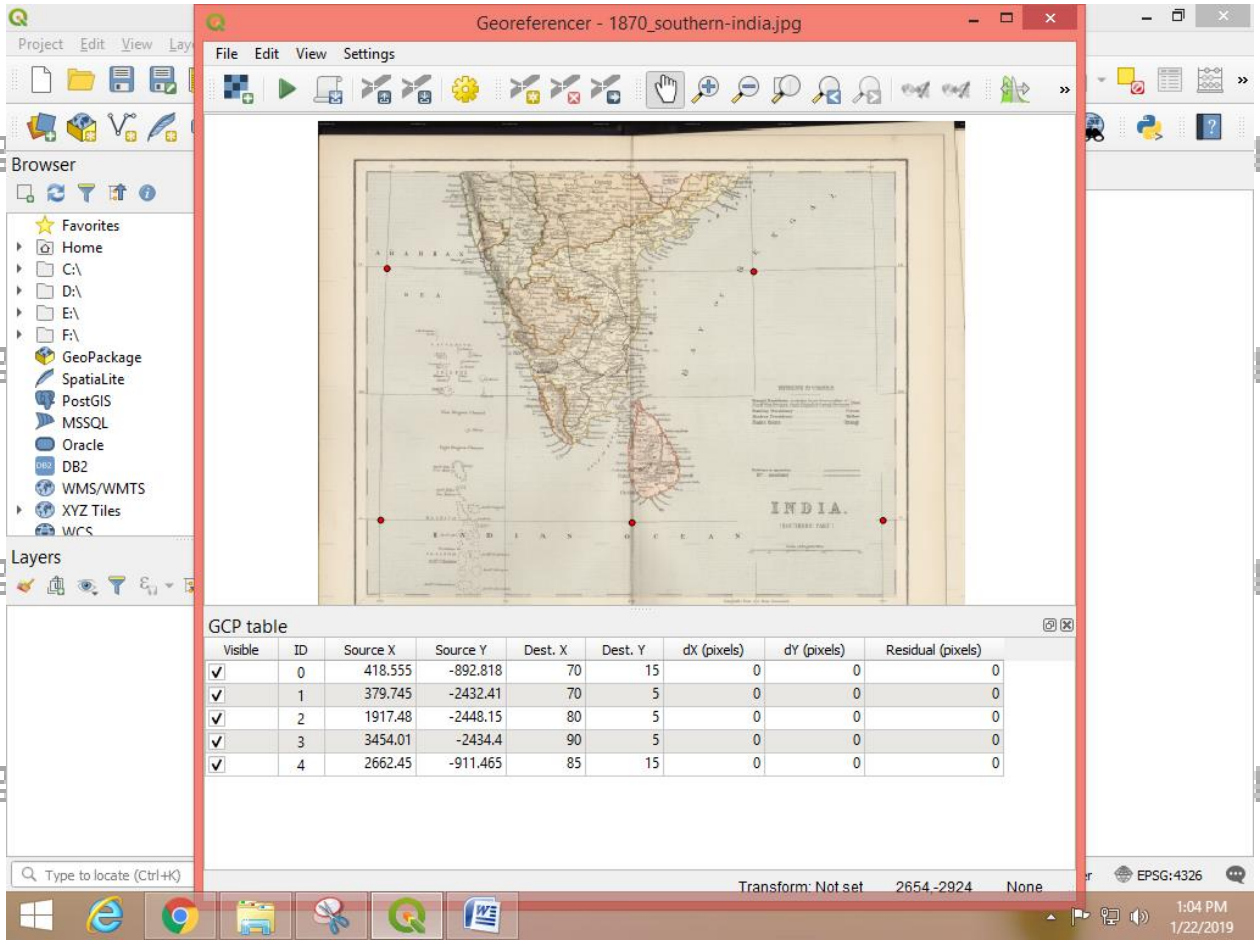
Visible	ID	Source X	Source Y	Dest. X	Dest. Y	dX (pixels)	dY (pixels)	Residual (pixels)
✓	0	418.555	-892.818	70	15	0	0	0

Now by using same steps we will plot points on 70:5, 80:5, 90:5 and 85:15

GCP table

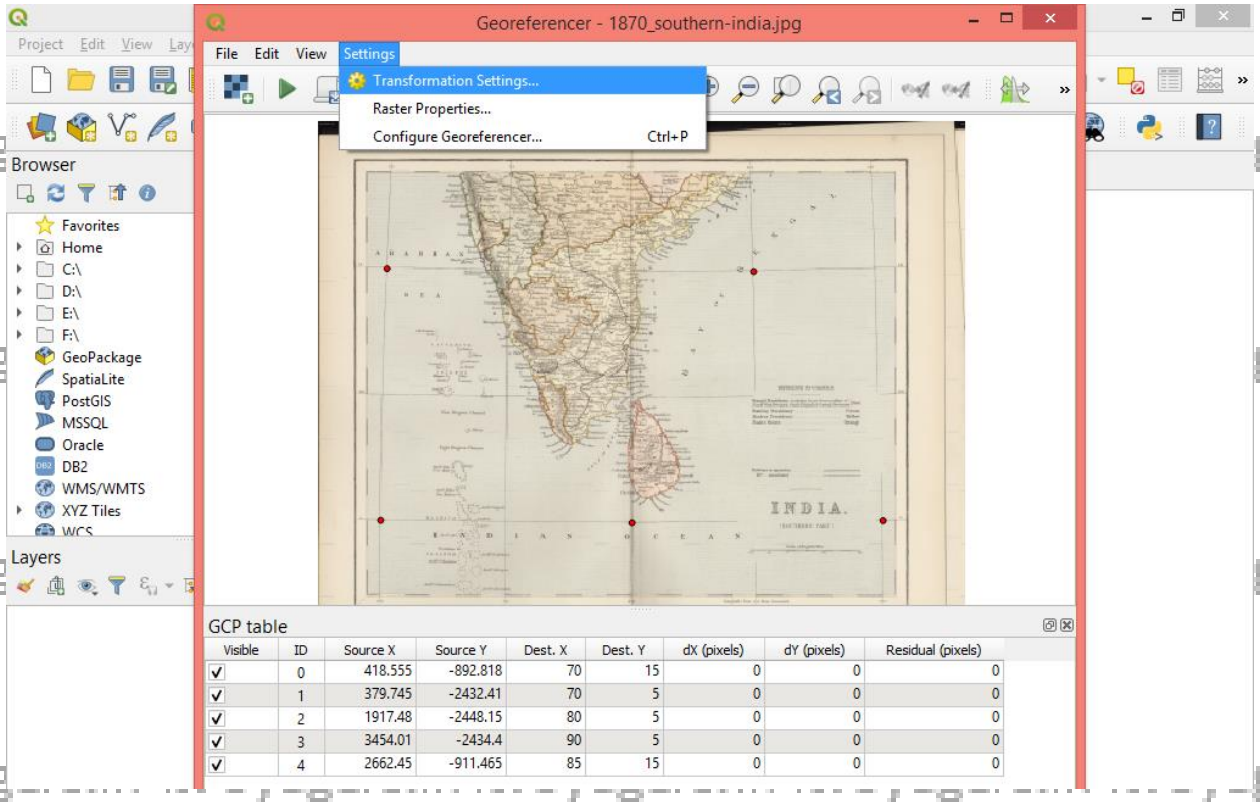
Visible	ID	Source X	Source Y	Dest. X	Dest. Y	dX (pixels)	dY (pixels)	Residual (pixels)
✓	0	418.555	-892.818	70	15	0	0	0
✓	1	379.745	-2432.41	70	5	0	0	0
✓	2	1917.48	-2448.15	80	5	0	0	0
✓	3	3454.01	-2434.4	90	5	0	0	0
✓	4	2662.45	-911.465	85	15	0	0	0

After plotting all the points it will look like below screenshot.

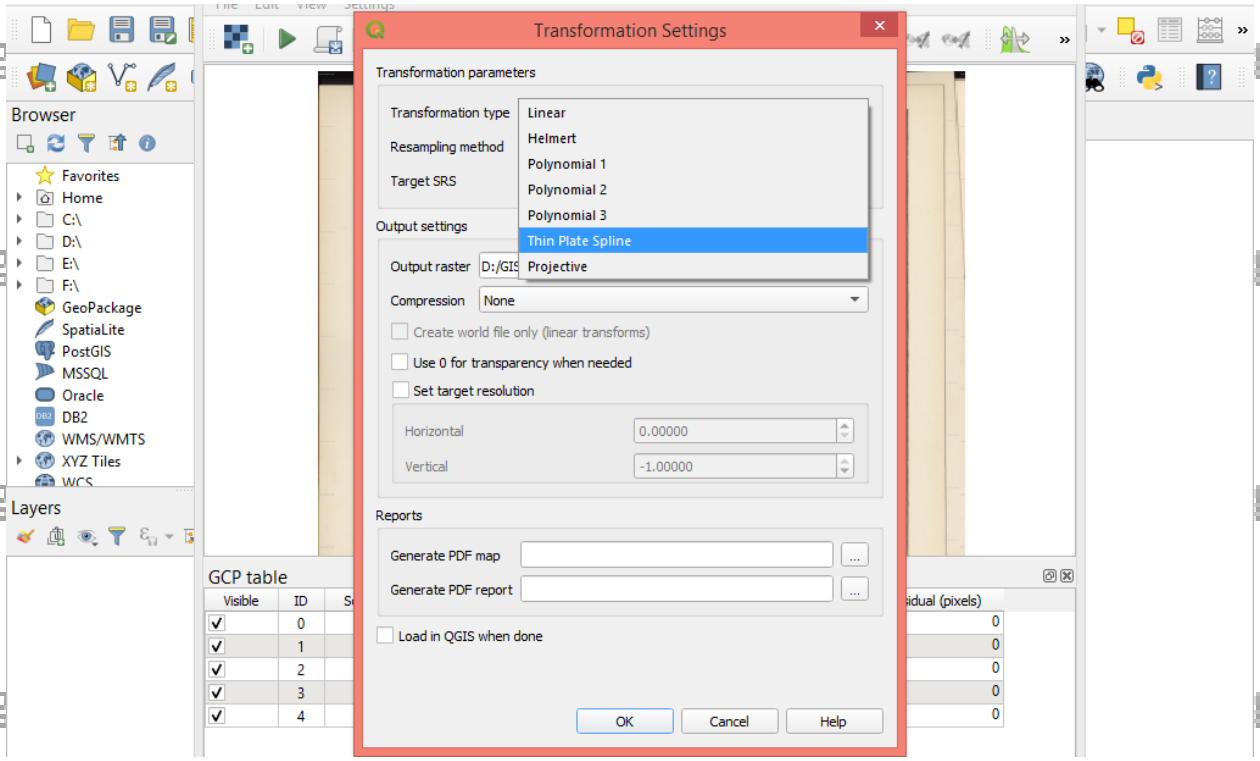


Now we have to save it, for that go to

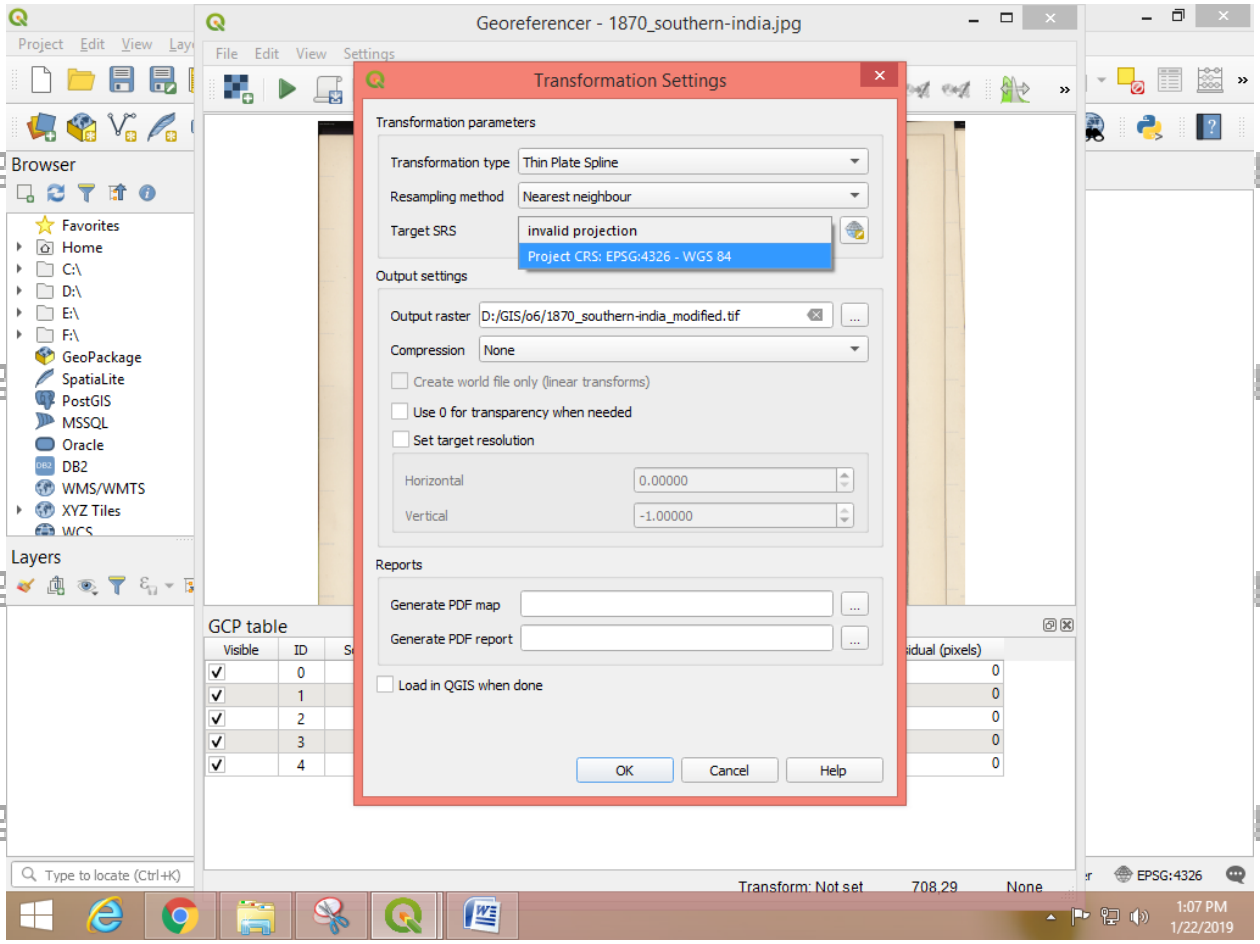
Settings > Transformations Settings…



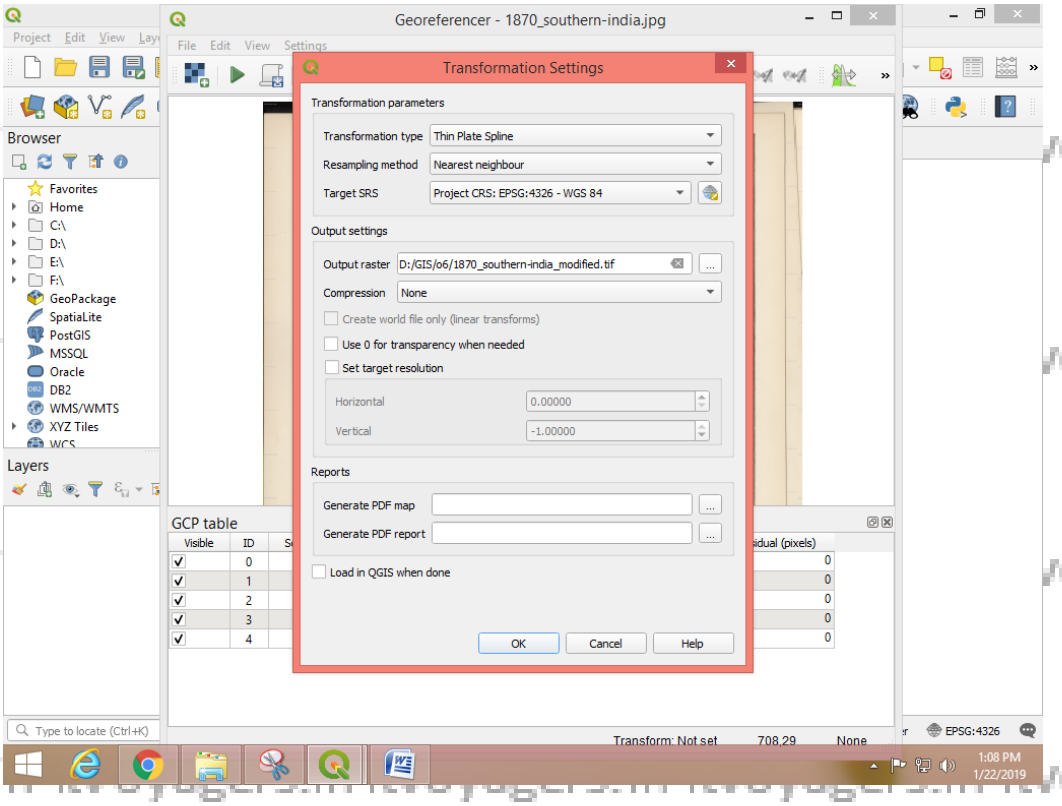
Transformation Sttings window will pop-up in that, in "Transformation Type" select "Thin Plate Spline".

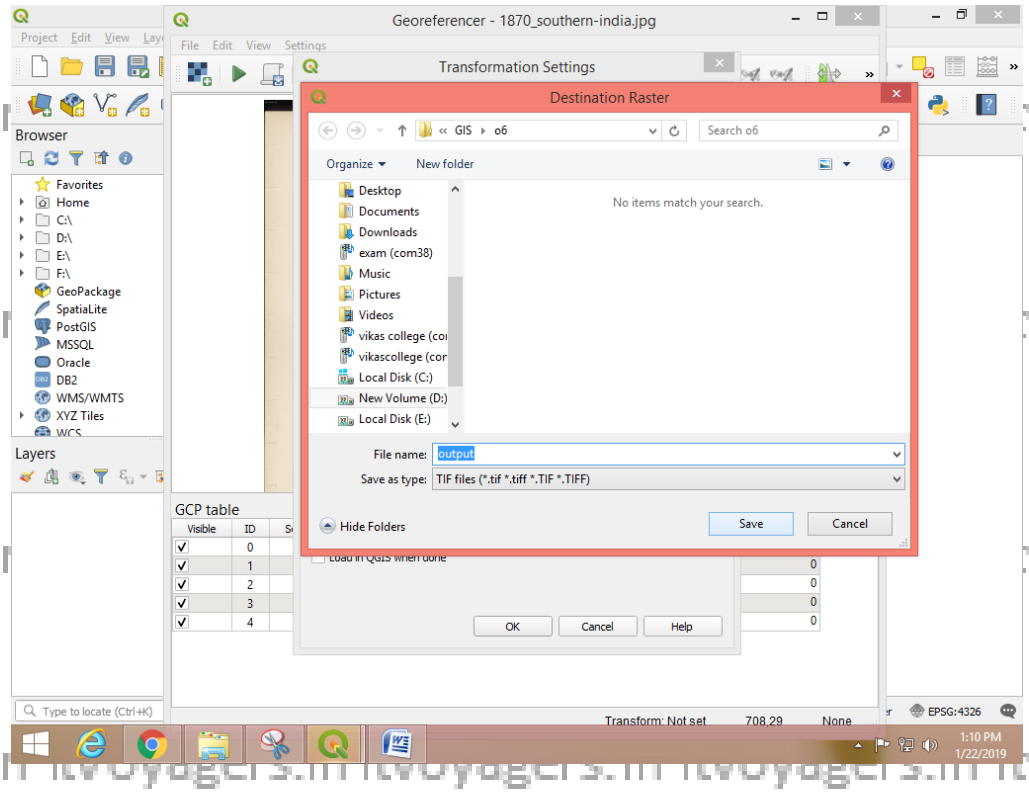


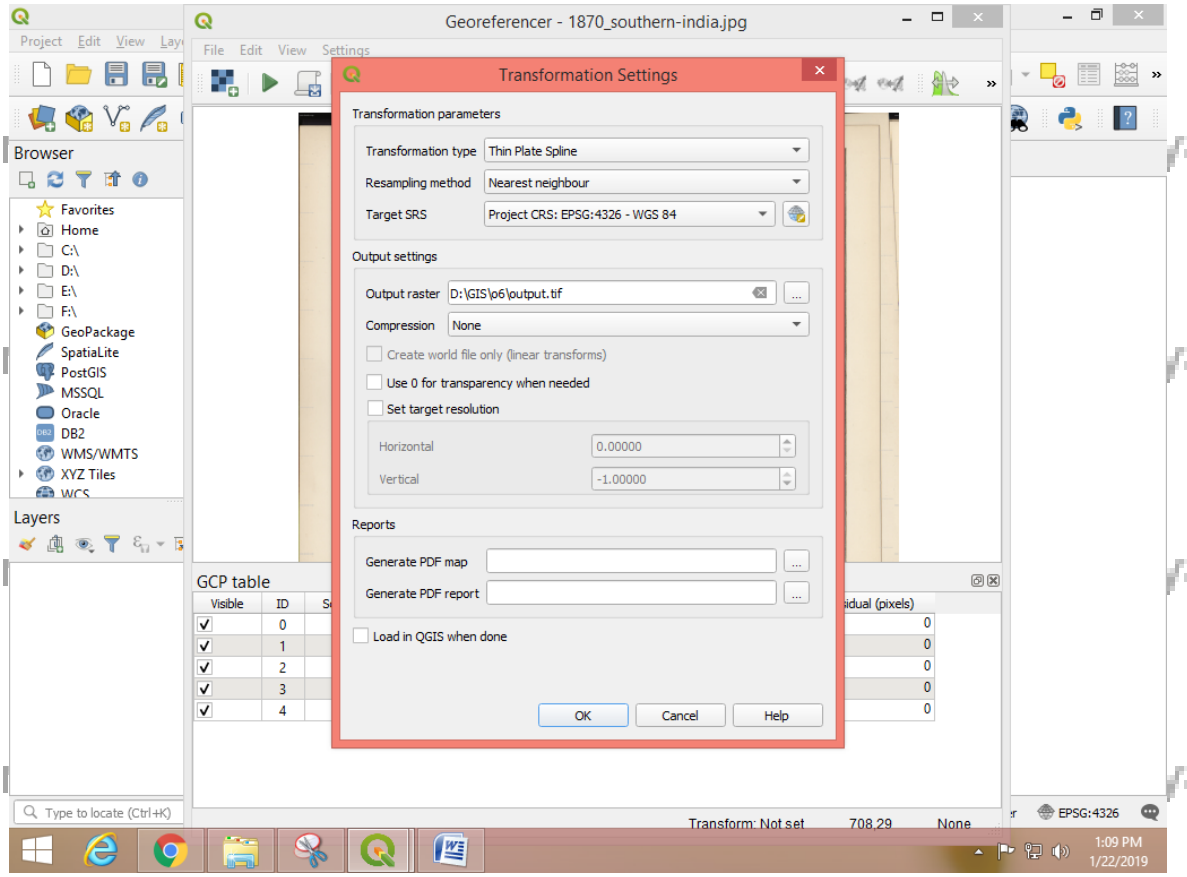
In "Resampling method" select "Nearest neighbour" and in "Target SRS" select "Project CRS: EPSG: 4326 – WGS 84" if you didn't find it just browse it by clicking on button.



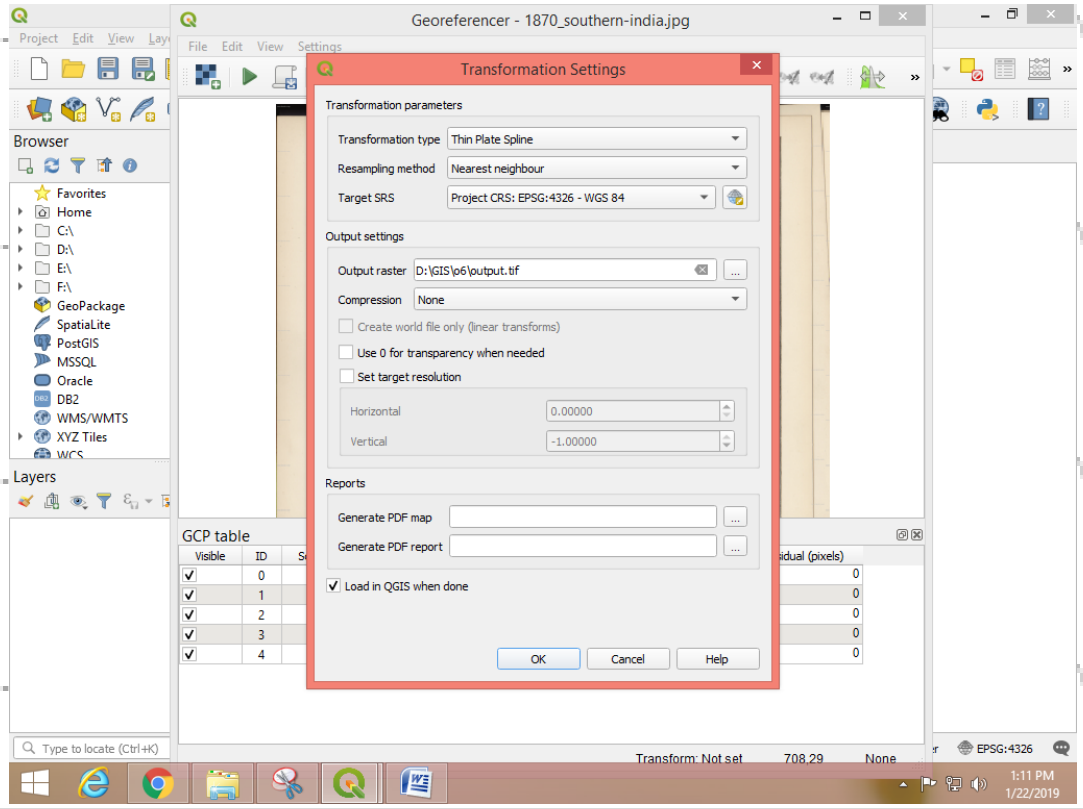
Set path and name for the output file in "Output raster" text box by clicking on ... button. Enter the name and set path for the output file and click on "Save".

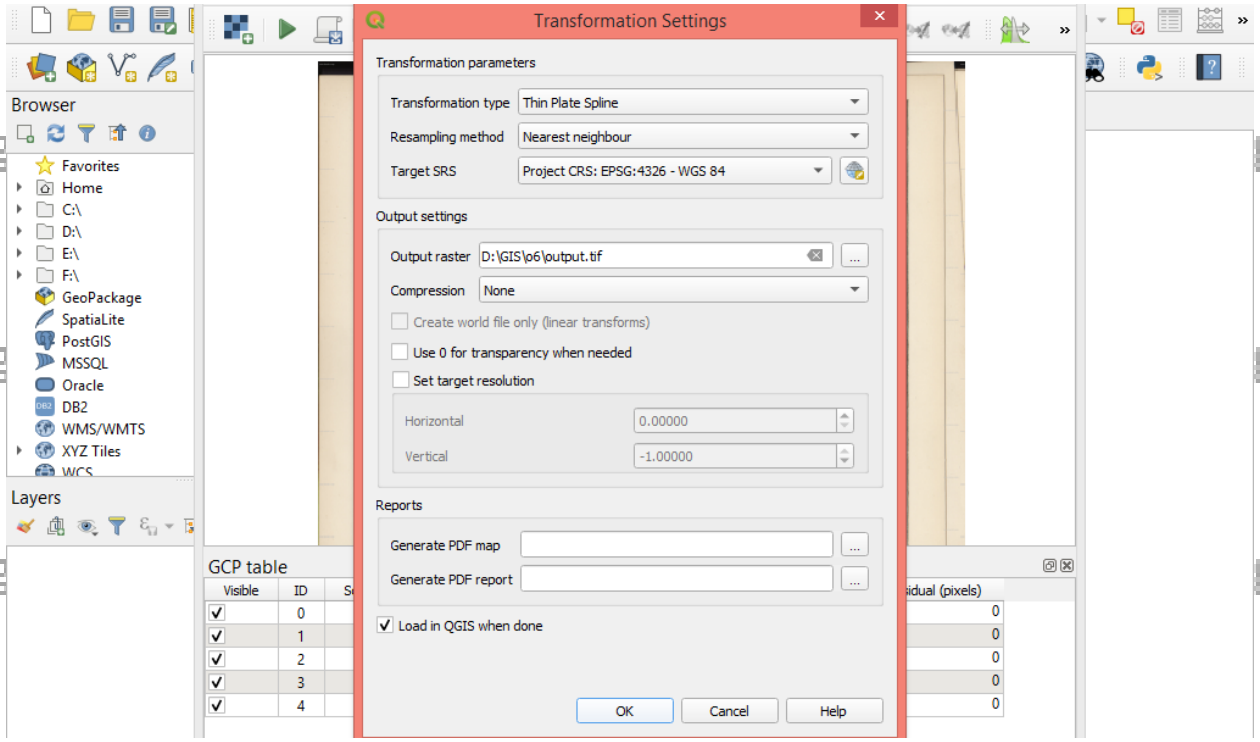




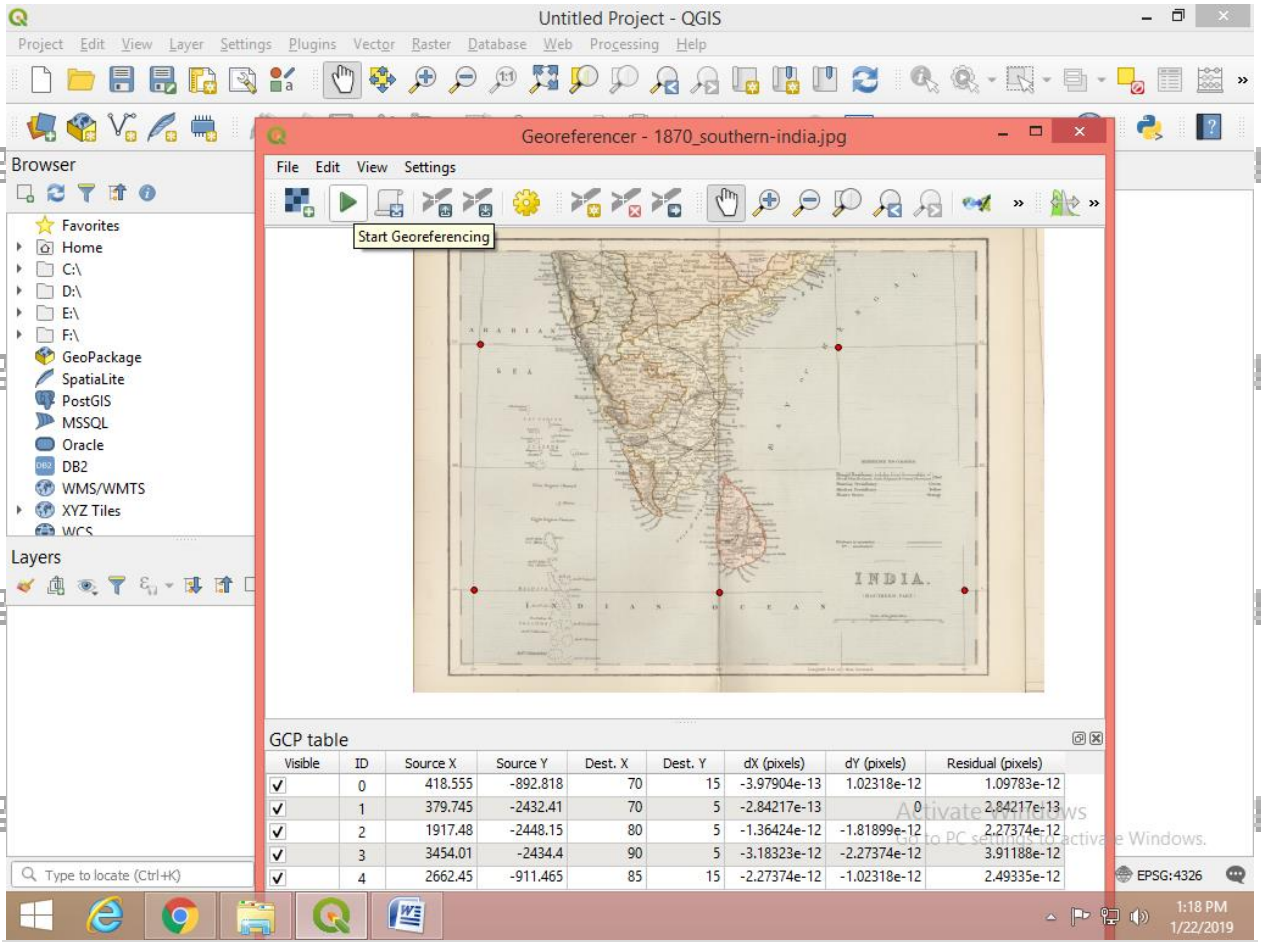


Check the "Load in QGIS when done" checkbox. And click on "OK"





Now click on "Start Georeferencing" button.



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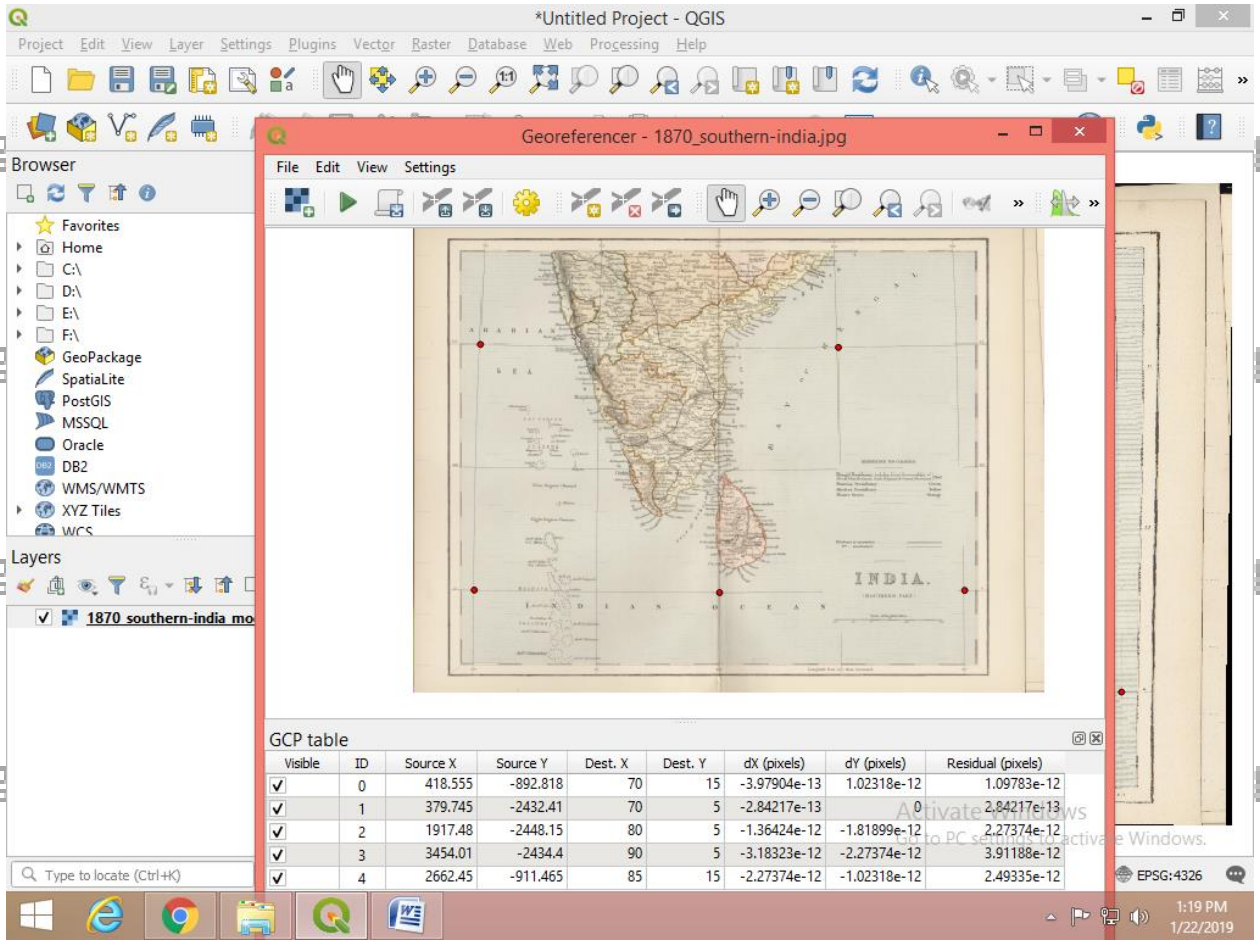
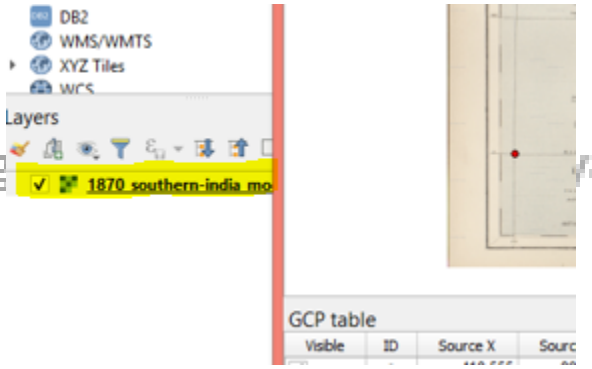
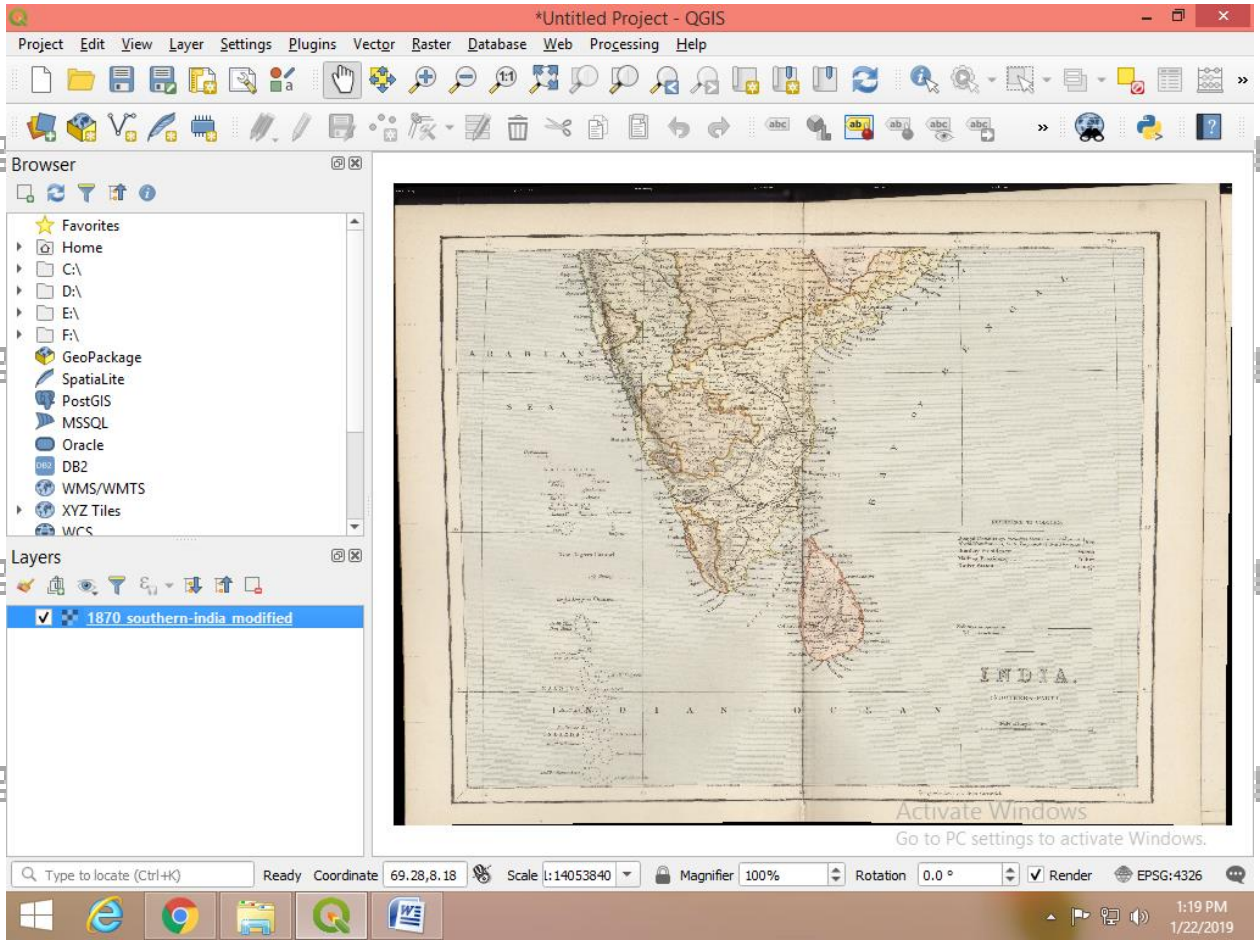


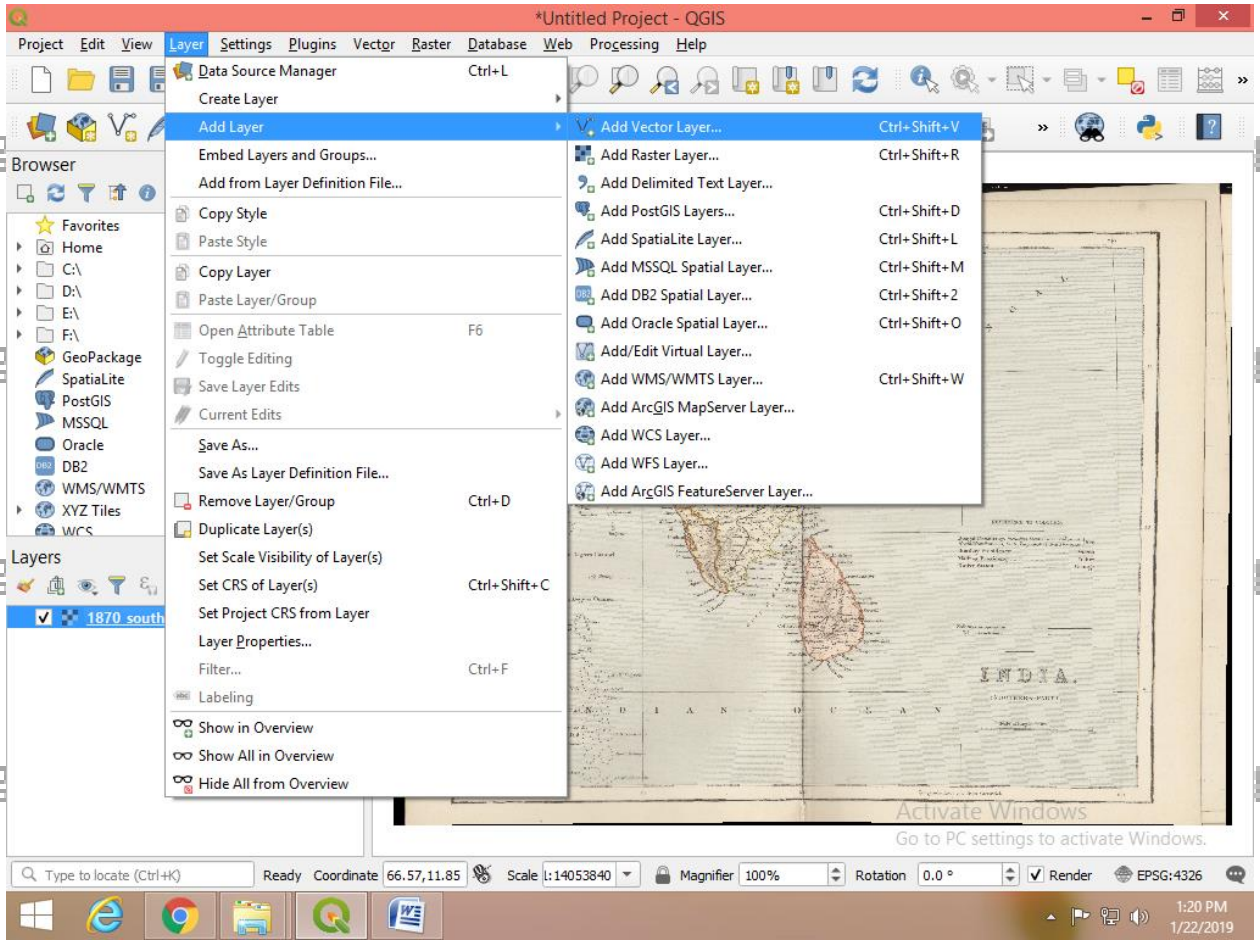
We can see that new has been added in our layer panel.



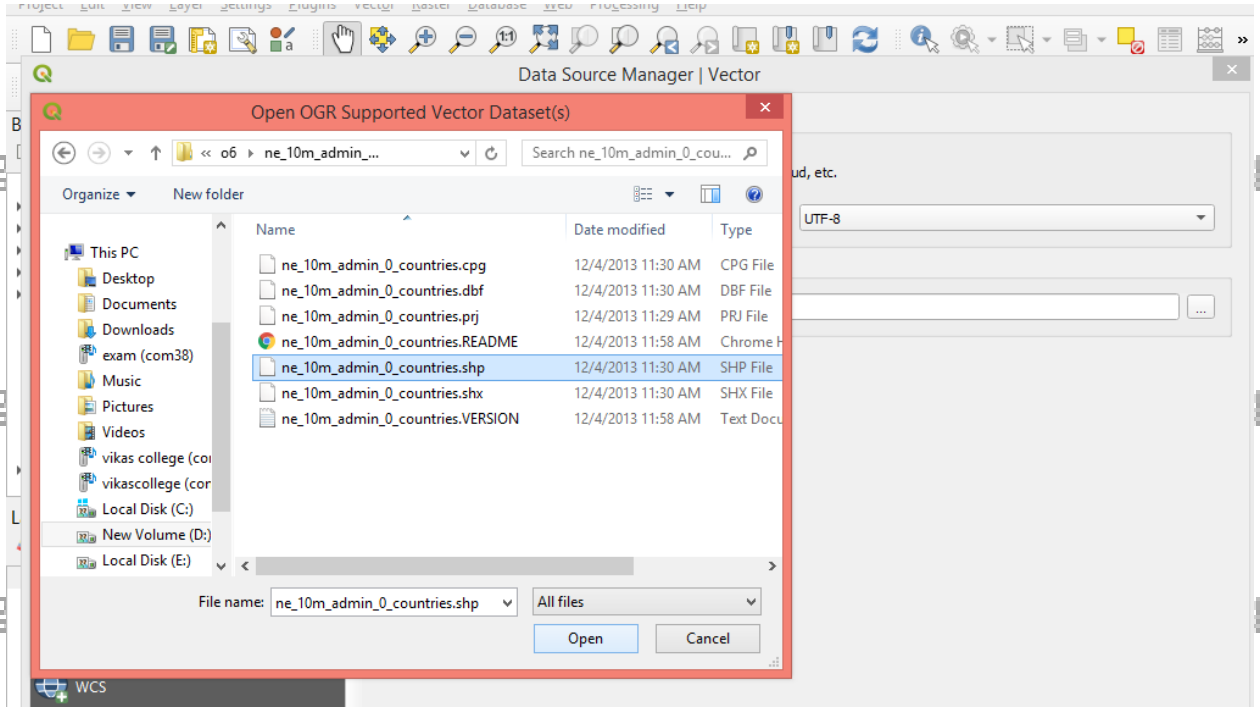
Close the Georeferencer window. Now we have to load "ne_10m_admin_0_countries.shp" file in project. Go to

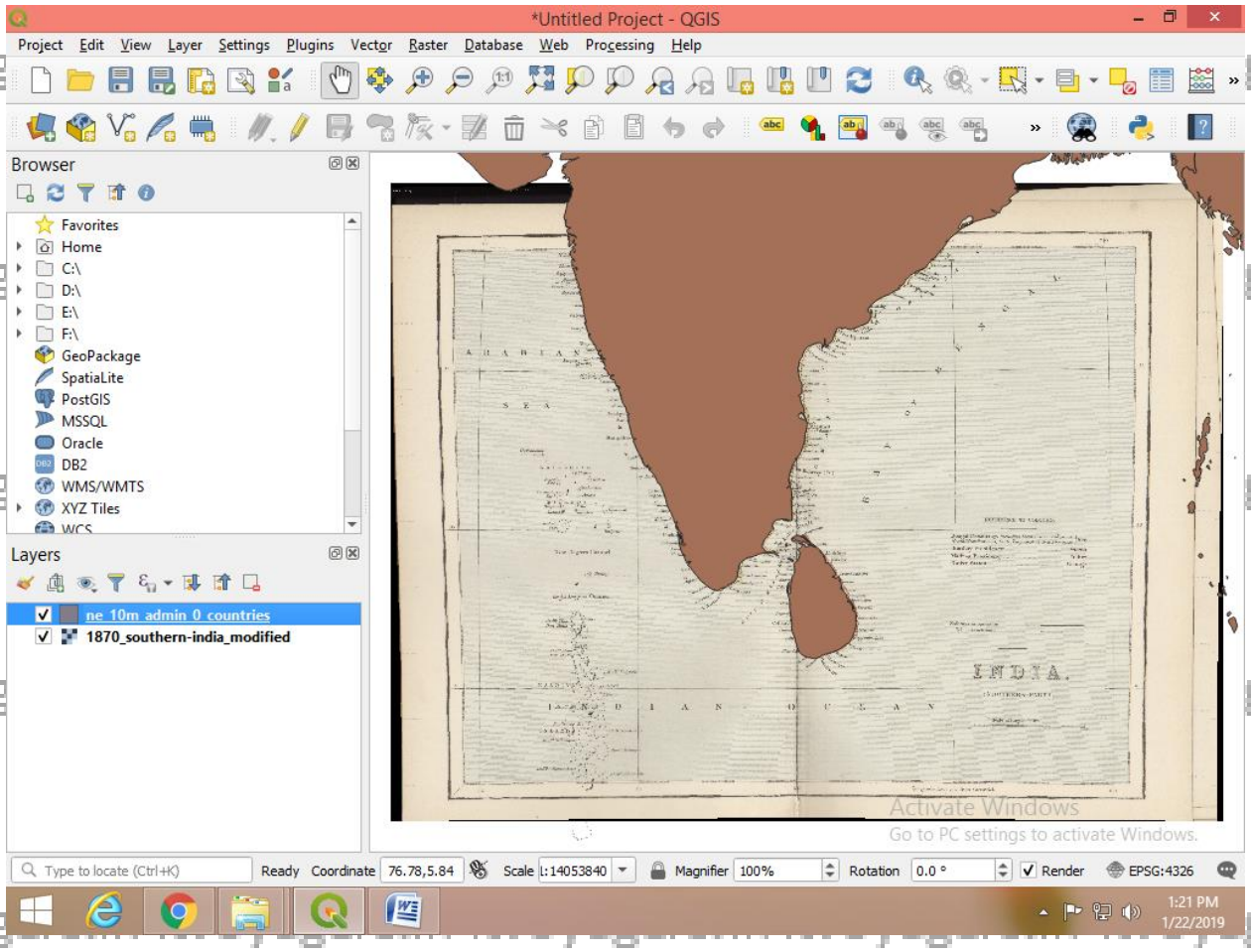
Layer > Add Layer > Add Vector Layer…





Select "ne_10m_admin_0_countries.shp" file and click on "open".





We can see that our paper map in following coordinate system which helps it to get located at exact points where it is supposed to be.

Now reduce the transparency of "ne_10m_admin_0_countries" layer. Right click on it and select properties…

Go to Symbology tab and reduce "Opacity" value and click on "OK" and we will get our output.