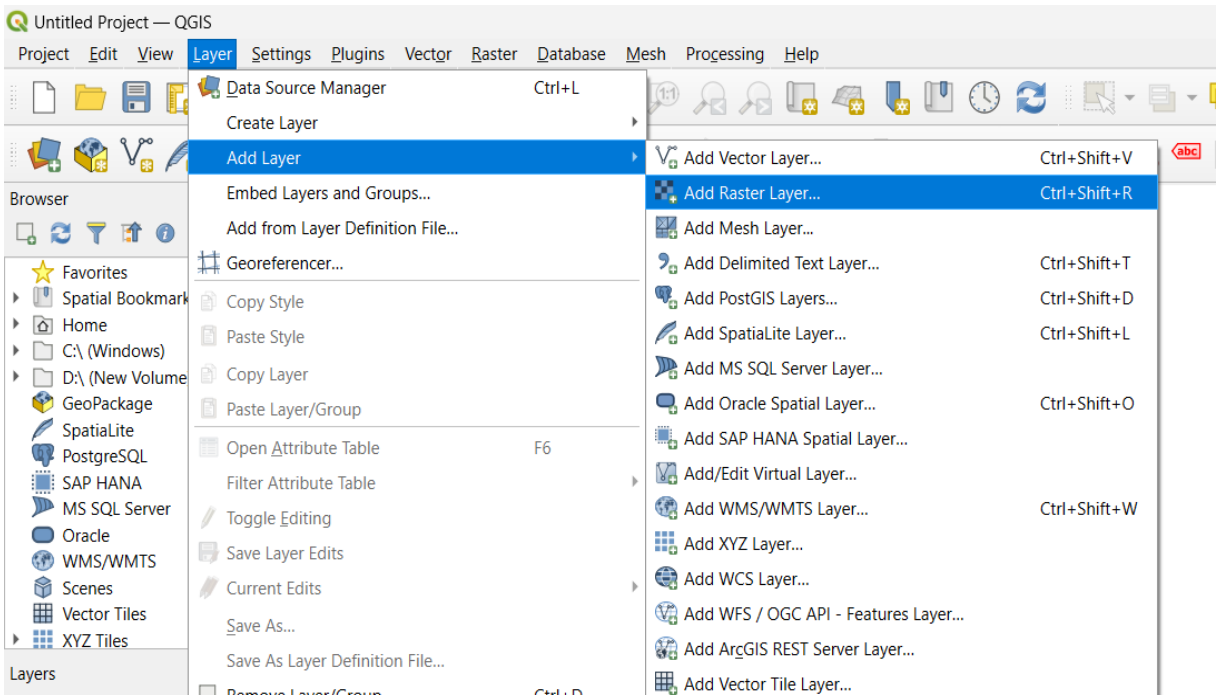
PRACTICAL 2

a) Adding raster layers

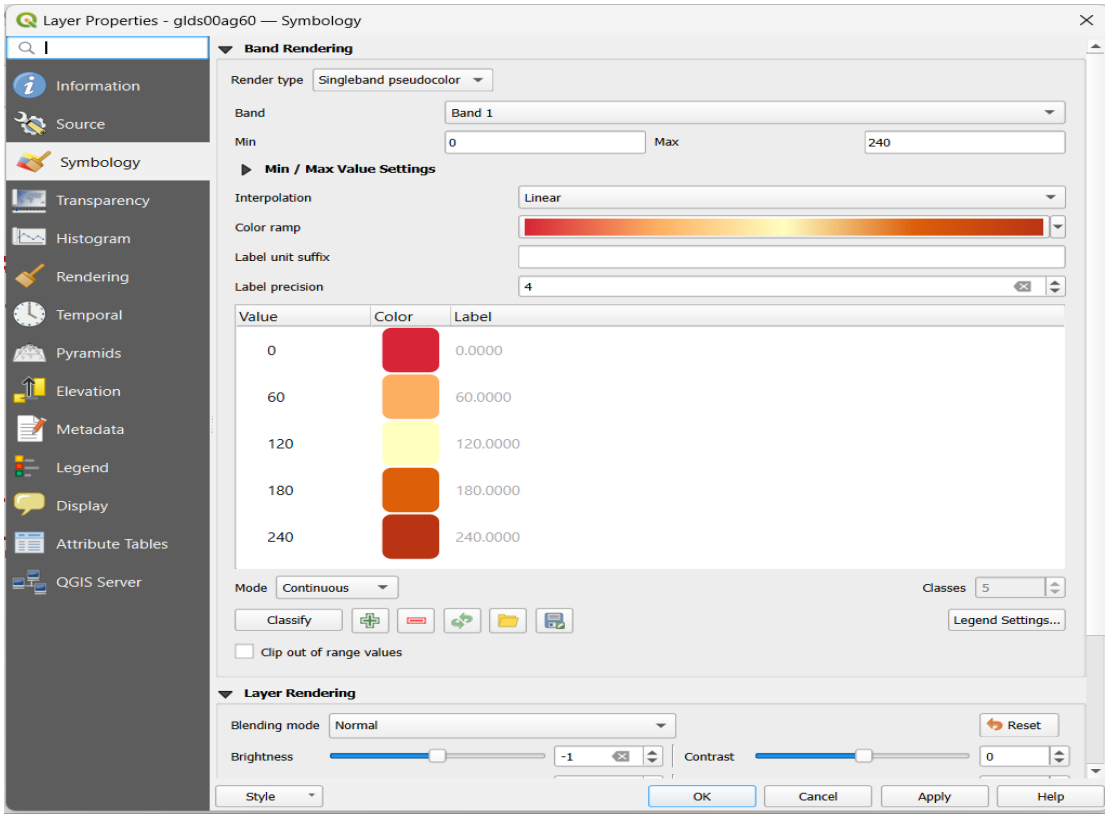
Exploring and Managing Raster data:

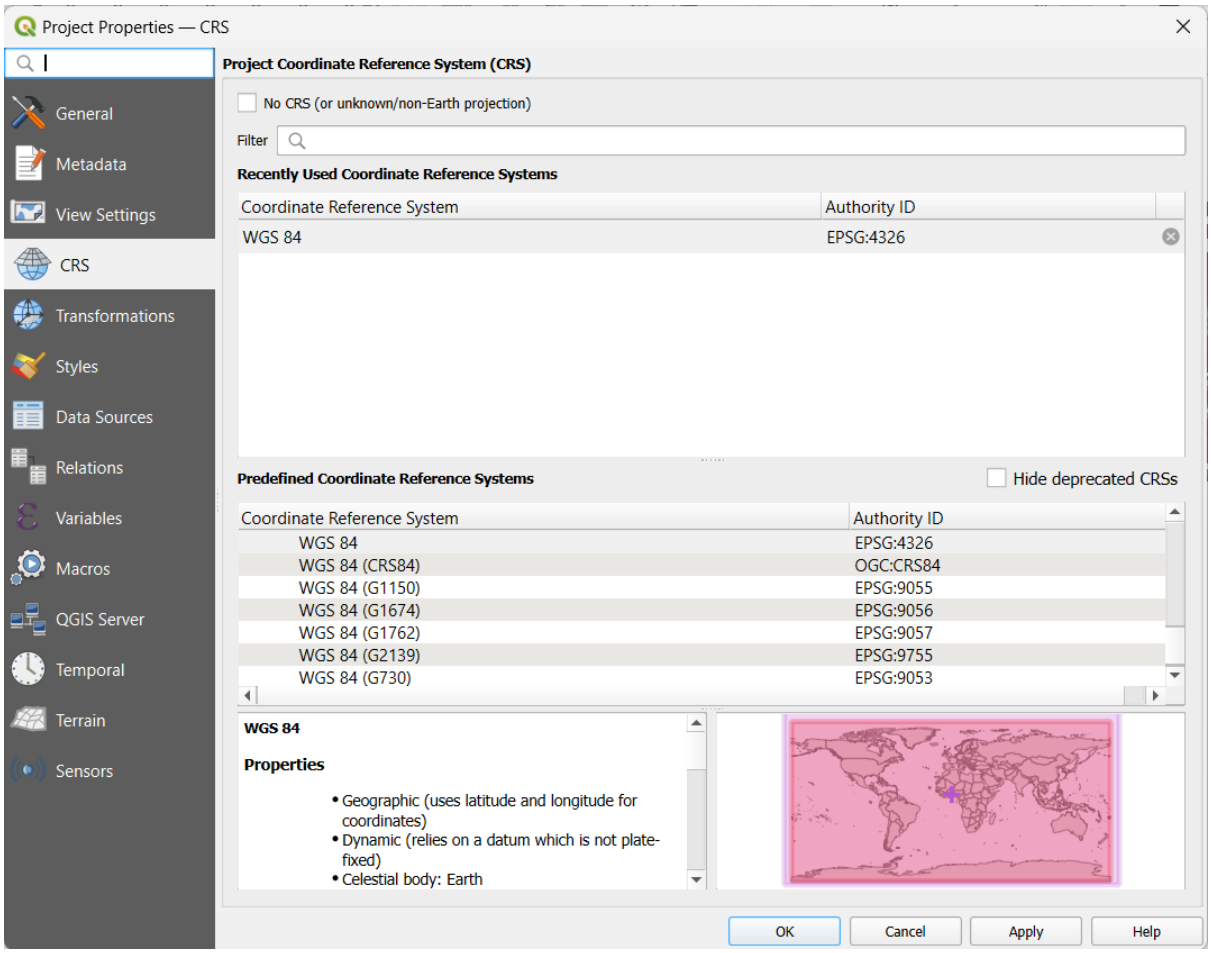
- From menu bar select Layer -→ Add Layer -→Add Raster Layer



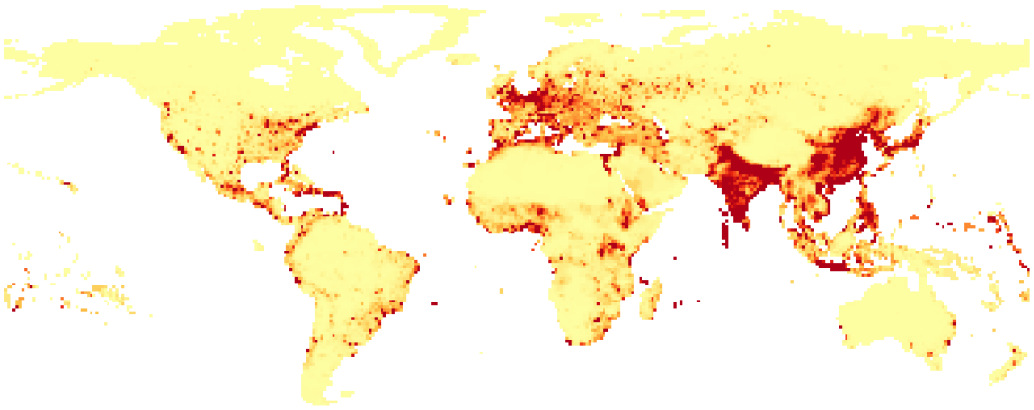
- **Select Gridded Population of the World (GPW) v3 dataset from Columbia University, Population Density Grid for the entire globe in ASCII format and for the year 1990 and 2000.**

"\GIS_Workshop\Practicals\Practical_02\A\Data\gl_gpwv3_pdens_90_ascii_one\glds90ag60.asc"
"\GIS_Workshop\Practicals\Practical_02\A\Data\gl_gpwv3_pdens_90_ascii_one\glds00ag60.asc


Layer Properties - glds00ag60 — Symbology
Information
Source
Symbology
Transparency
Histogram
Rendering
Temporal
Pyramids
Elevation
Metadata
Legend
Display
Attribute Tables
QGIS Server
Band Rendering
Render type
Singleband pseudocolor
Band
Band 1
Min
0
Max
240
Min / Max Value Settings
Interpolation
Linear
Color ramp
Label unit suffix
Label precision
4
Value
Color
Label
0
0.0000
60
60.0000
120
120.0000
180
180.0000
240
240.0000
Mode
Continuous
Classes
5
Classify
Legend Settings...
Clip out of range values
Layer Rendering
Blending mode
Normal
Reset
Brightness
-1
Contrast
0
Style
OK
Cancel
Apply
Help


Project Properties — CRS
General
Metadata
View Settings
CRS
Transformations
Styles
Data Sources
Relations
Variables
Macros
QGIS Server
Temporal
Terrain
Sensors
Project Coordinate Reference System (CRS)
No CRS (or unknown/non-Earth projection)
Filter
Recently Used Coordinate Reference Systems
Coordinate Reference System
Authority ID
WGS 84
EPSG:4326
Predefined Coordinate Reference Systems
Hide deprecated CRSs
Coordinate Reference System
Authority ID
WGS 84
EPSG:4326
WGS 84 (CRS84)
OGC:CRS84
WGS 84 (G1150)
EPSG:9055
WGS 84 (G1674)
EPSG:9056
WGS 84 (G1762)
EPSG:9057
WGS 84 (G2139)
EPSG:9755
WGS 84 (G730)
EPSG:9053
WGS 84
Properties
• Geographic (uses latitude and longitude for coordinates)
• Dynamic (relies on a datum which is not plate-fixed)
• Celestial body: Earth
OK
Cancel
Apply
Help

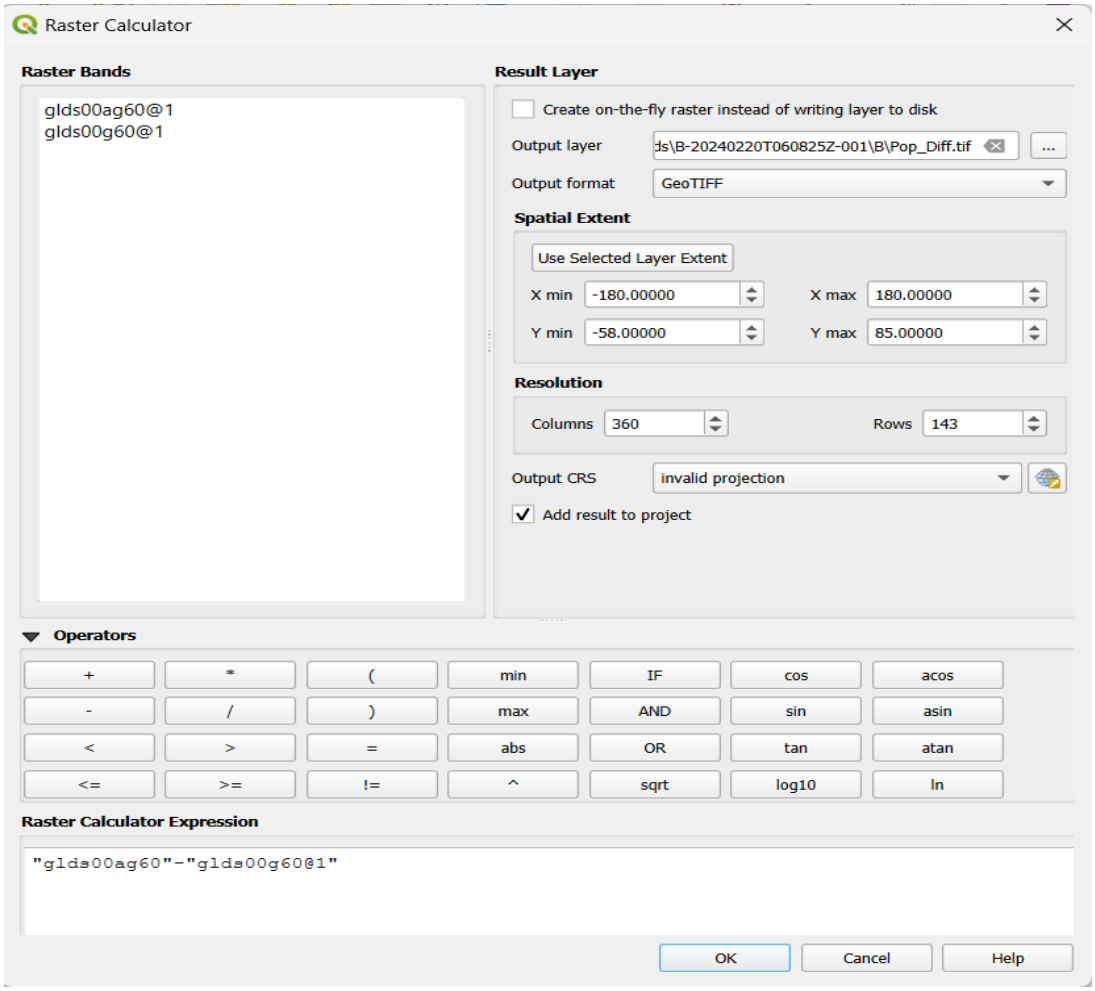
- **Repeat the same for "glds00ag60.asc" Layer**



- **Layer output after applying style.**

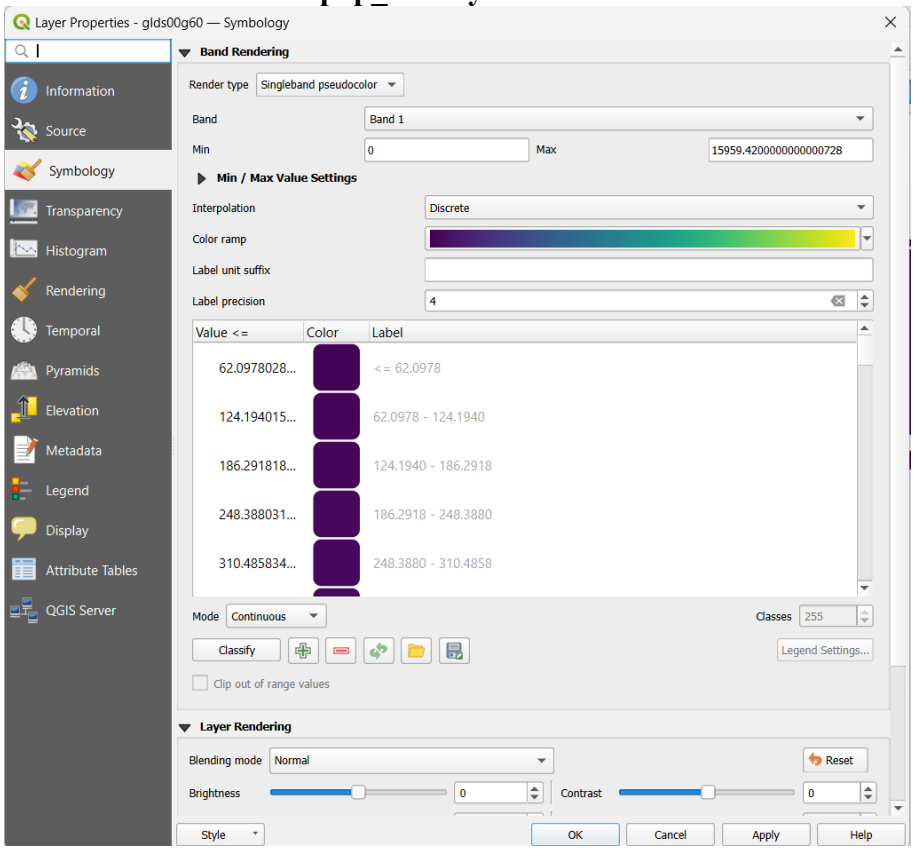
O The objective this experiment is to analyze raster data, as an example we will find areas with largest population change between 1990 and 2000, by calculating the difference between each pixel values.

O Go to Raster ❼ Raster Calculator



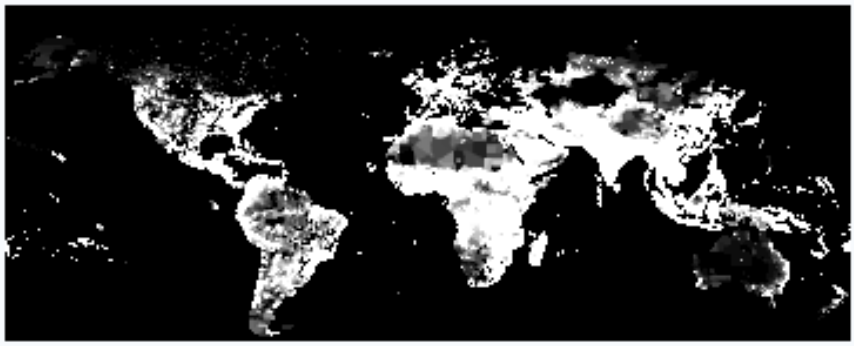
- **Remove the other two layers i.e. glds00ag60.asc and glds90ag60.asc**

- **Double click on pop_diff layer.**



Set Render Type to "Single band Pseudo color", Interpolation as Discrete, and remove all classification and add as shown in figure above using button. After all settings press "OK".

- **Layer will appear like**

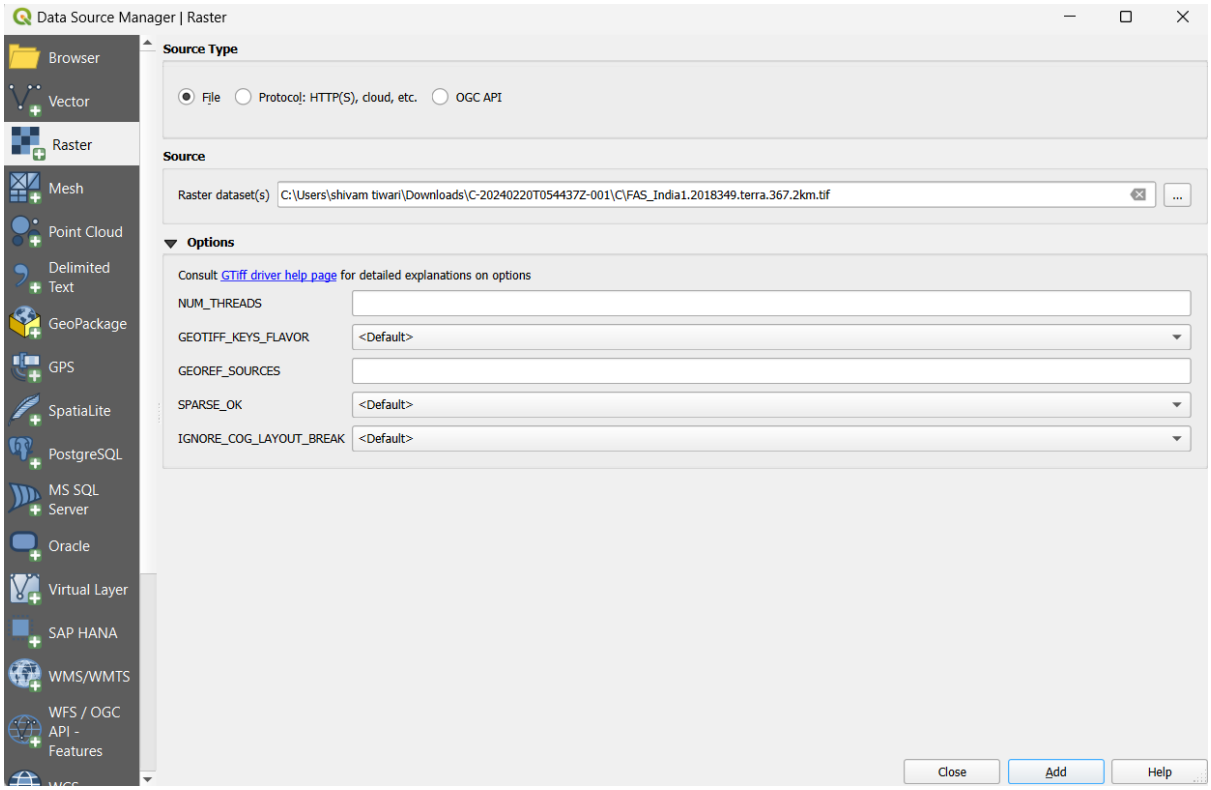


- **Explore an area of your choice and check the raster band value using**  **to verify the classification rule.**
- **The red pixel shows negative changes and blue shows positive changes**

c) Raster Mosaicking and Clipping

A **mosaic** is a combination or merge of two or more images.
In GIS, a single raster dataset can be created from multiple raster datasets by mosaicking them together.

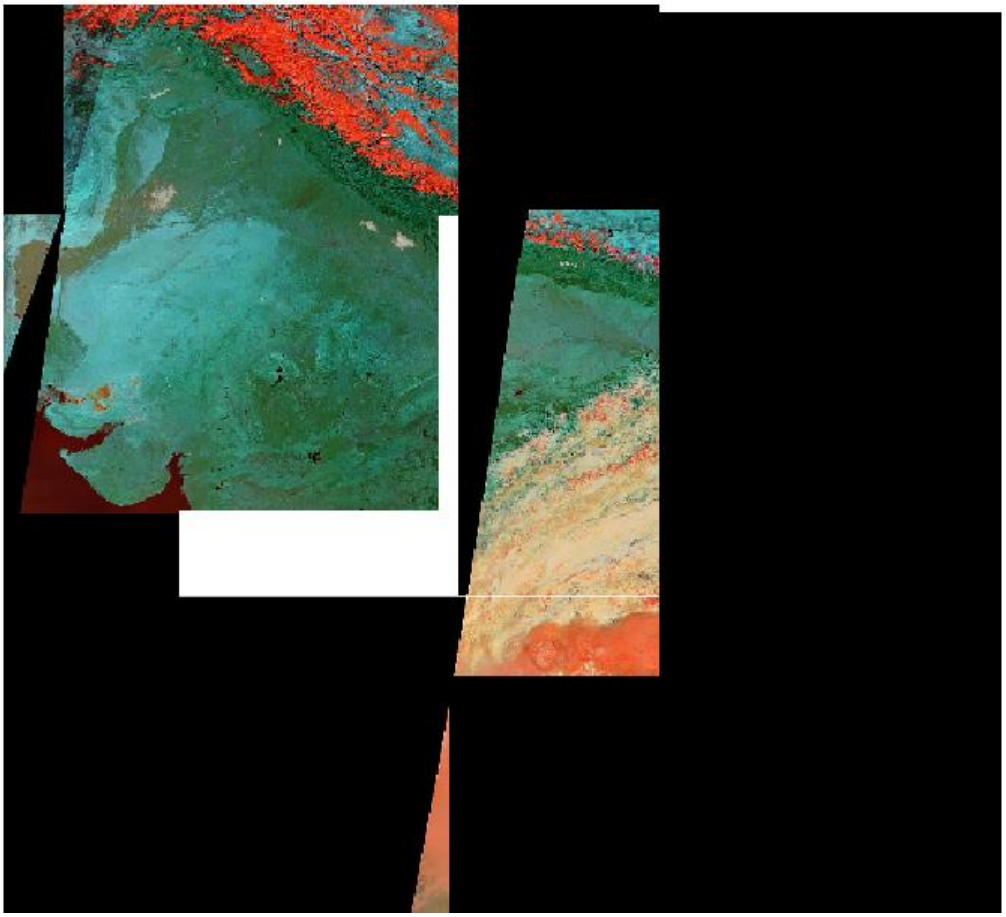
- **Go to Layer →Add Layer→ Add Raster Layer.**



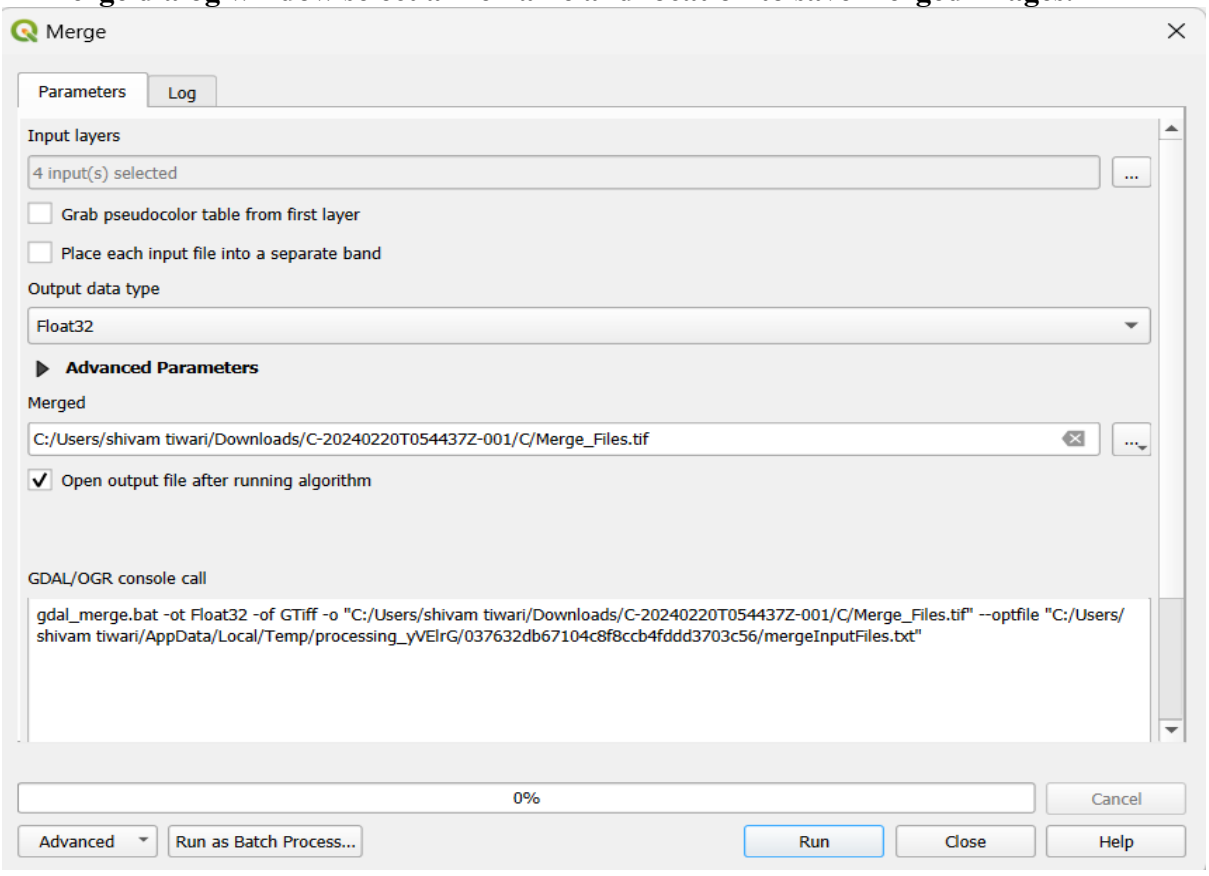
- **Select the following ".tif" raster images for India from data folder.**

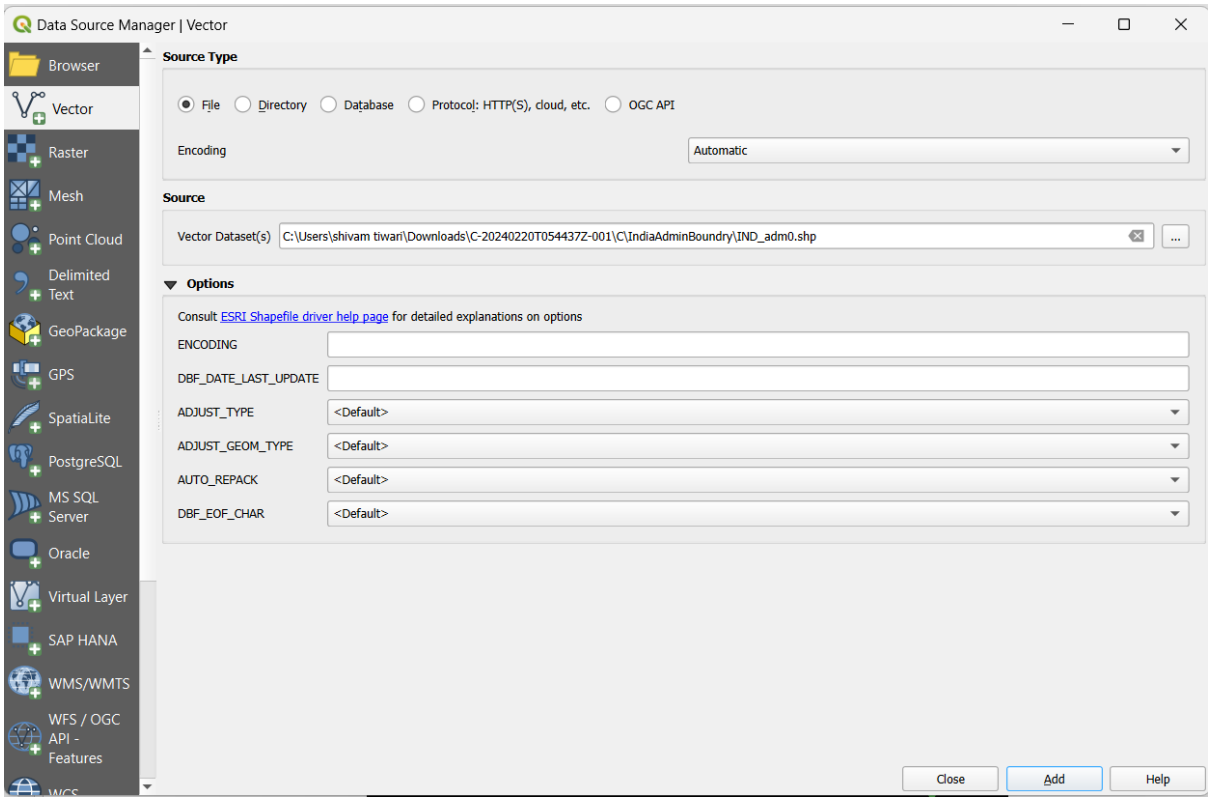
FAS_India1.2018349.terra.367.2km.tif
FAS_India2.2018349.terra.367.2km.tif
FAS_India3.2018349.terra.367.2km.tif
FAS_India4.2018349.terra.367.2km.tif

- **Press open**
- **In data source manager | Raster window click Add.**

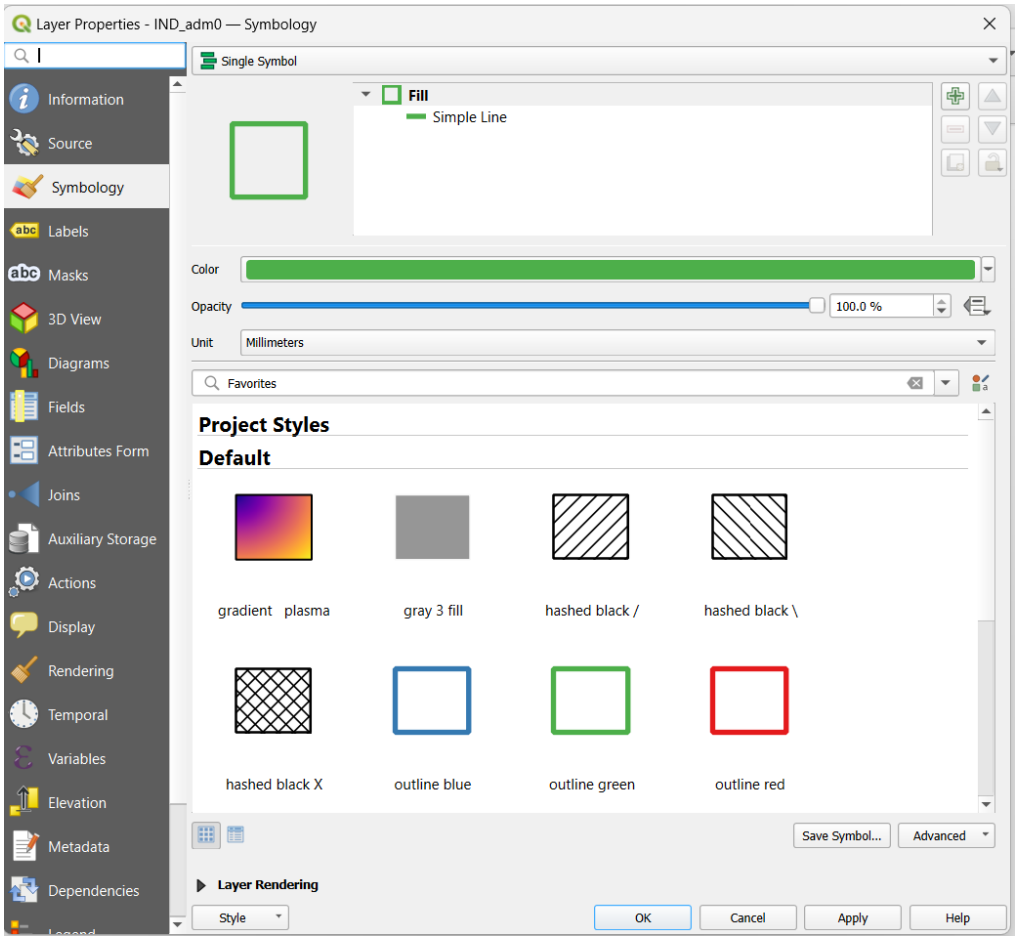


In Merge dialog window select a file name and location to save merged images.

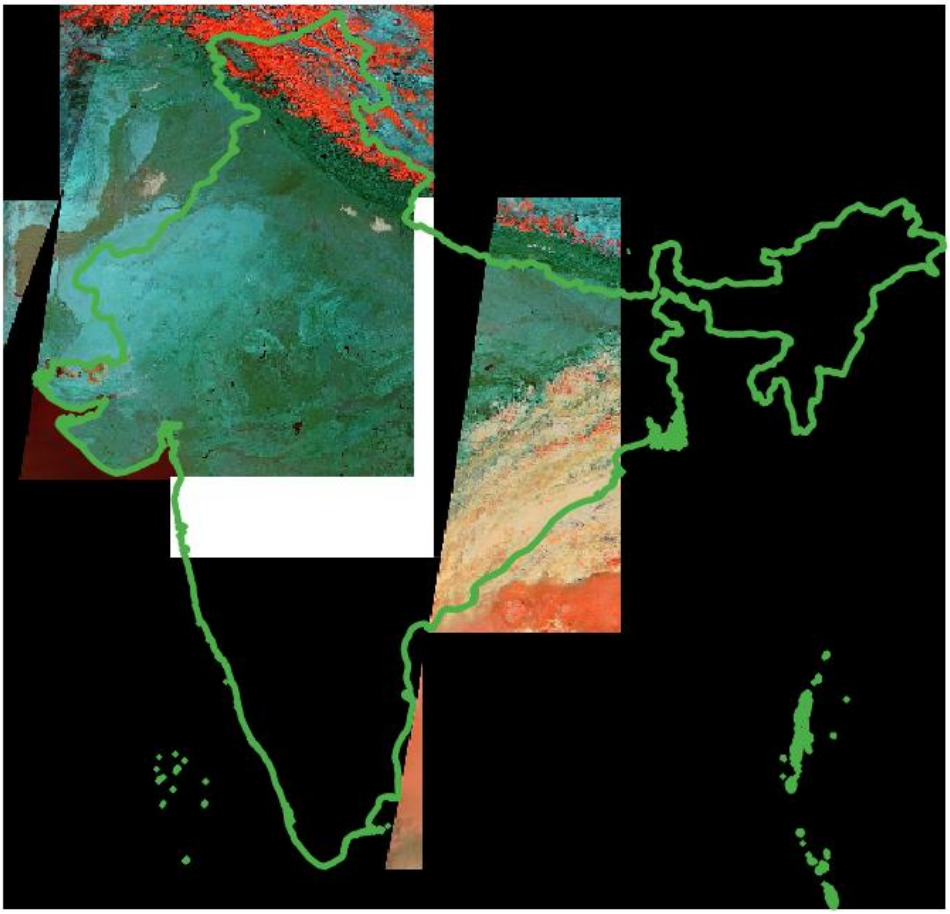




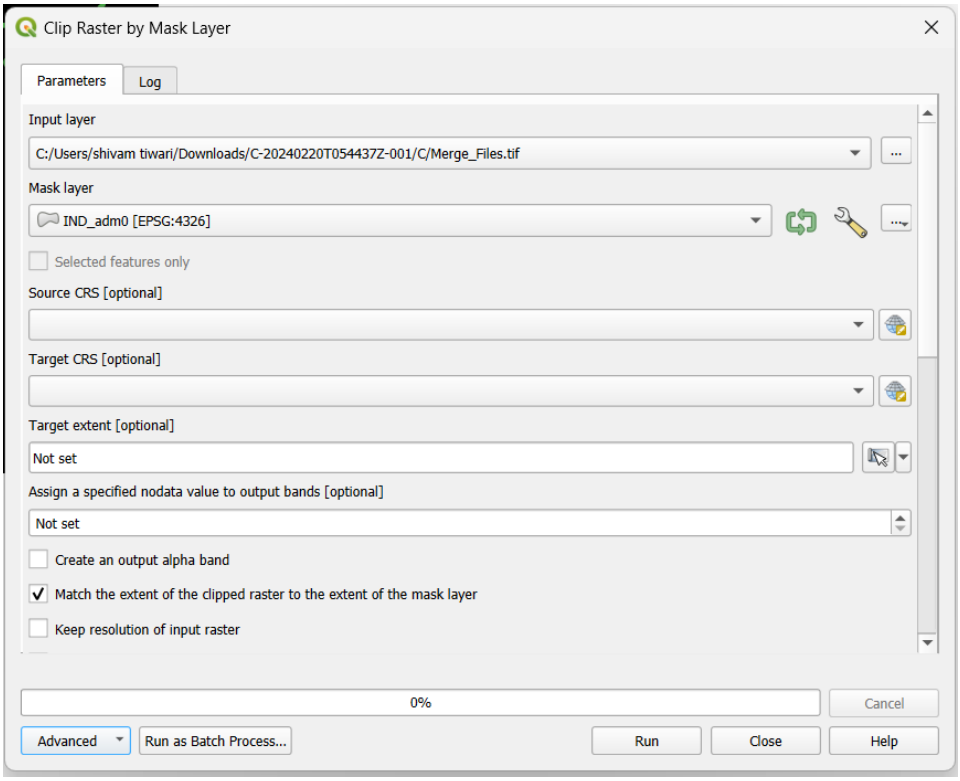
- **Save the file to "GIS_Workshop/Practicals/Practical_02/C/" location with the name as Merge_Files.tif**
- **Press Run and after completion of operation close the Merge window dialog box.**
- **You can now deselect individual layers from layer pane and only keep the merged raster file.**
- **Go to Layer❼ Add Vector Layer ❼ Select \GIS_Workshop\Practicals\Practical_02\C\IndiaAdminBoundry\IND_adm0.shp file.**



- **The result will be**



- **Go to Raster -→ Extraction--→ Clip Raster by Mask Layer**
- **Select the merge raster image as input and Ind_adm0 as mask layer.**
- **Select a file name and location for clipped raster as /Practical_02/C/Clipped_File.tif.**


Clip Raster by Mask Layer
Parameters
Log
Input layer
C:/Users/shivam tiwari/Downloads/C-20240220T054437Z-001/C/Merge_Files.tif
Mask layer
IND_adm0 [EPSG:4326]
Selected features only
Source CRS [optional]
Target CRS [optional]
Target extent [optional]
Not set
Assign a specified nodata value to output bands [optional]
Not set
Create an output alpha band
Match the extent of the clipped raster to the extent of the mask layer
Keep resolution of input raster
0%
Cancel
Advanced
Run as Batch Process...
Run
Close
Help

- **Press run**