Disaster Management
Assignment 5
QGIS – Raster Analysis

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2018122004

Q1 – Data Downloading

The data is downloaded from USGS Earth Explorer (logged in)

Link: https://earthexplorer.usgs.gov/

Google Drive Link for .TIF images:

https://drive.google.com/open?id=1q1dD2vx2yEZTx8xPDpN20vZ5U8vqKe_2

Data Type: Landsat 7 ETM+ C1 Level 1

Data ID: LE07_L1TP_144047_20000229_20170213_01_T1

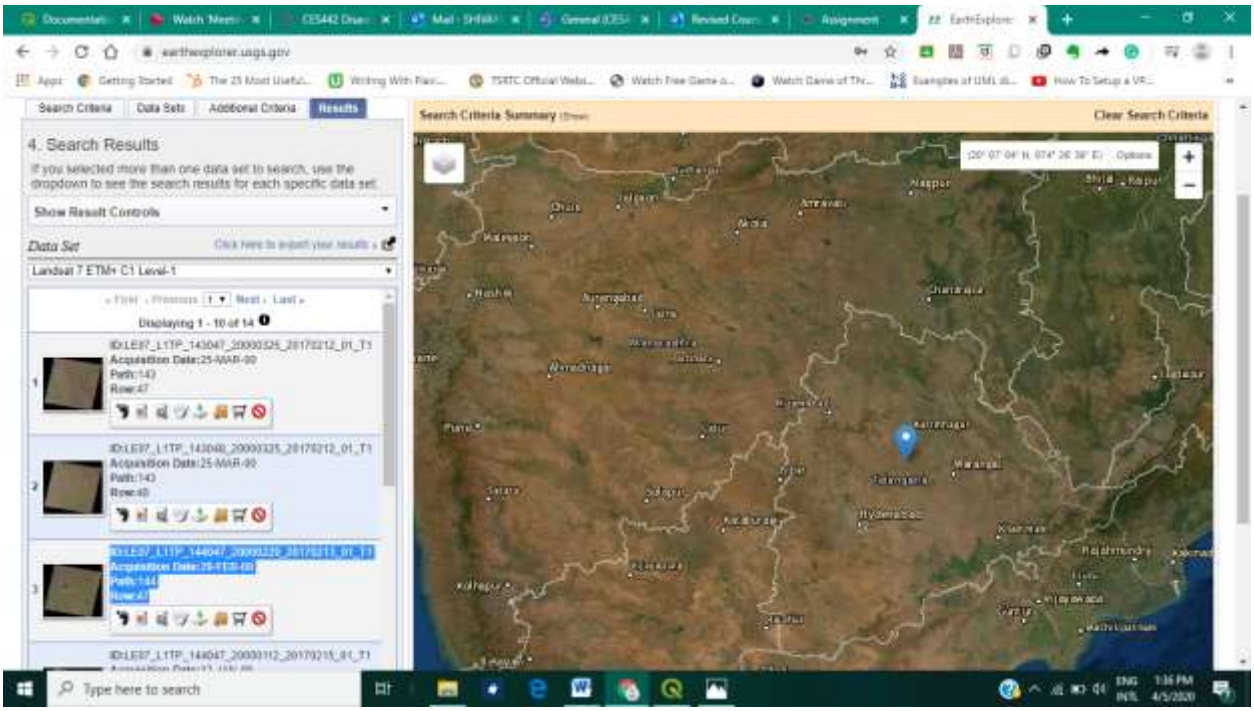
Data Acquisition Date: 29-FEB-00 (by satellite - Data time scale)

Path: 144

Row: 47

Area: Telangana, India

Data set Downloading:



Q2

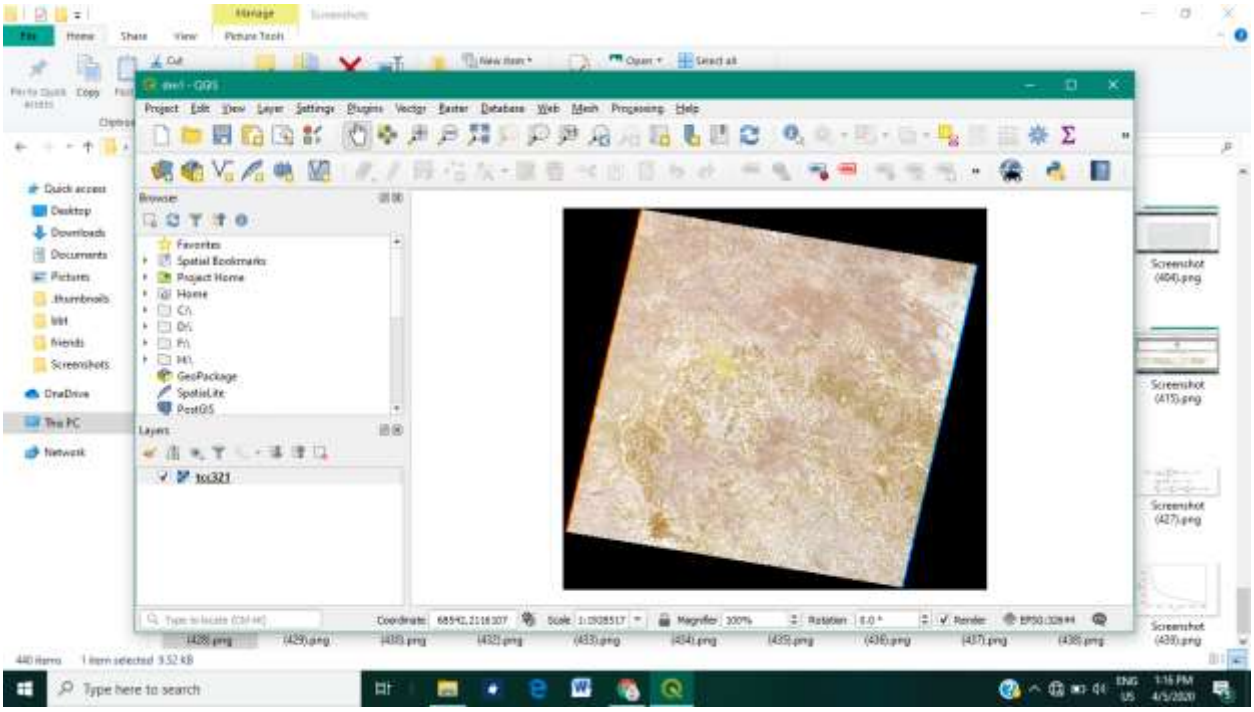
TCC and FCC – True Color Composition and False Color Composition

Merging Bands:
Each band has pixels with values ranging from 0-255, representing intensity values.
Each band is assigned a color – say instead of gradations of black and white, in a red band, we have gradations of red color.

The Landsat Data has 7 bands. They are in the order Blue, Green, Red, Near Infrared, Infrared, Shortwave Infrared, Thermal Infrared and Panchromatic. B, G, R bands are in the visible range.

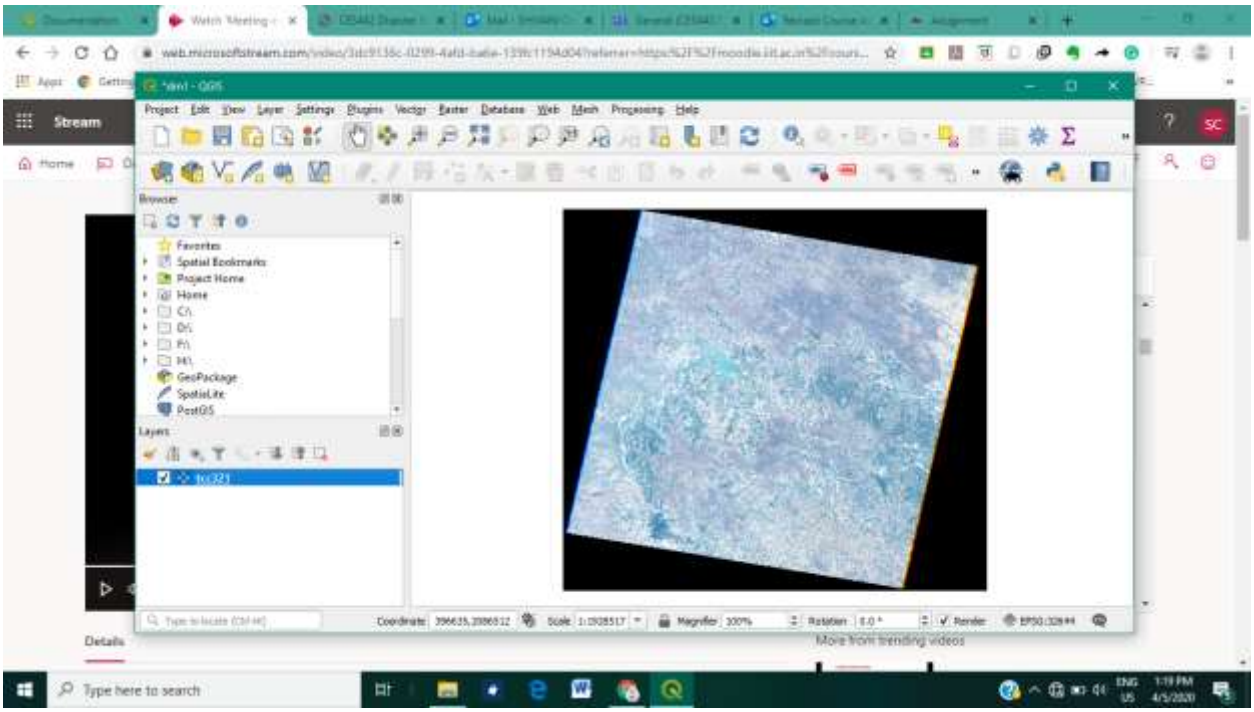
To obtain True Color composite, we need Blue, Green and Red components of an image. Therefore, merge the first three bands for **TCC**

Original Merged Image: 4 bands
Red (Band 1), Green (Band 2), Blue (Band 3) -Default

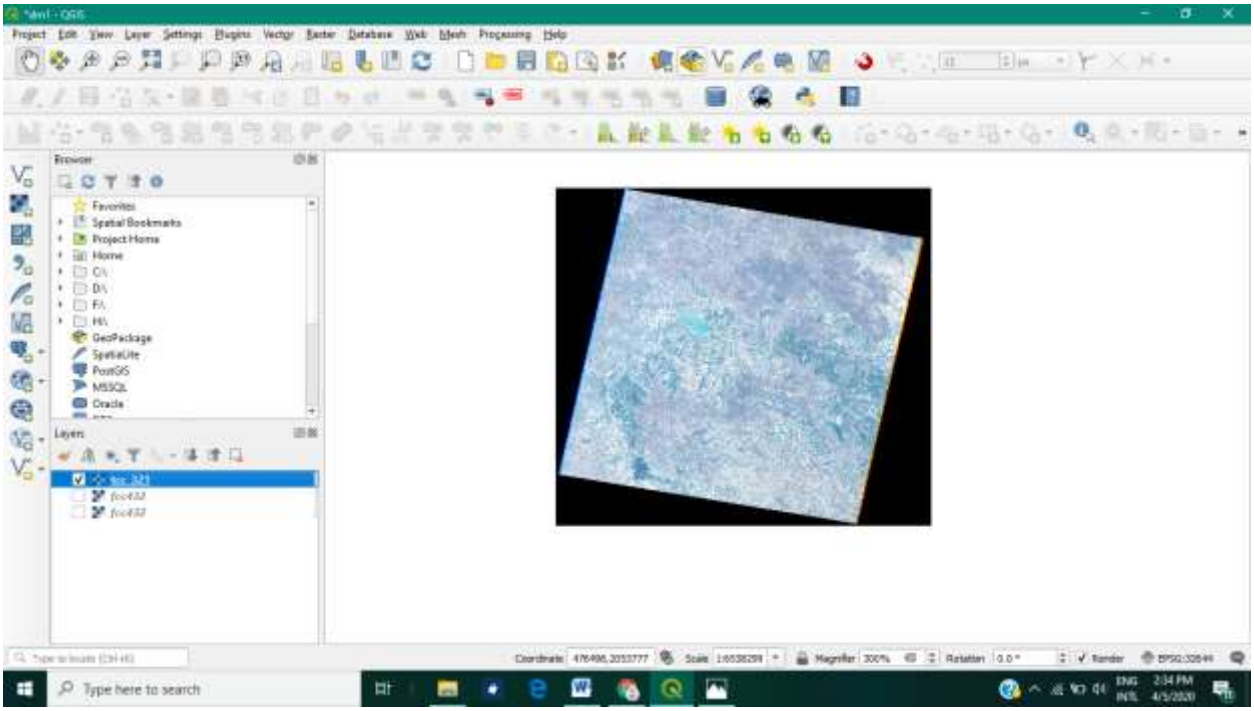


TCC
Merged Output of Red (Band 3), Green (Band 2), Blue (Band 1) is as follows:
Oversampling value = 2.00

Before Enhancing



After Enhancing

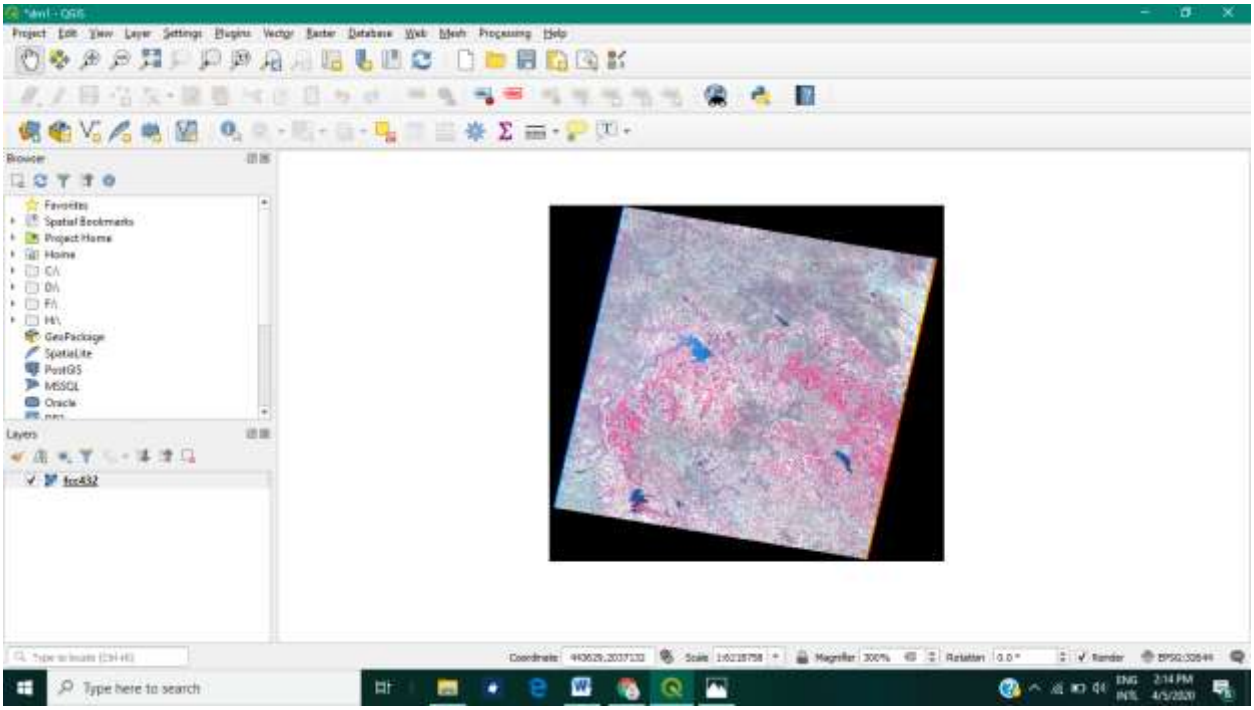


By changing intensity, contrast, saturation and such parameters, the merged image can be visualized in different ways.

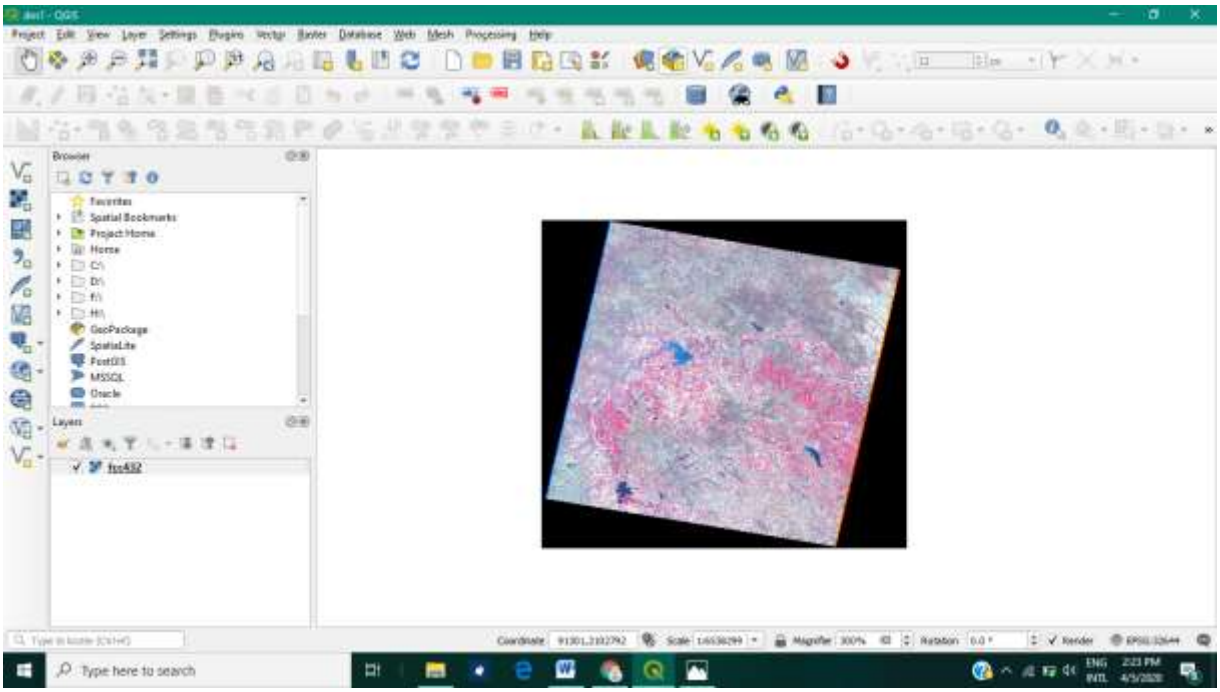
1. FCC

Merged Output of Red (Band 4), Green (Band 3), Blue (Band 2) is as follows: Oversampling value = 2.00

FCC 432 - Before Enhancing



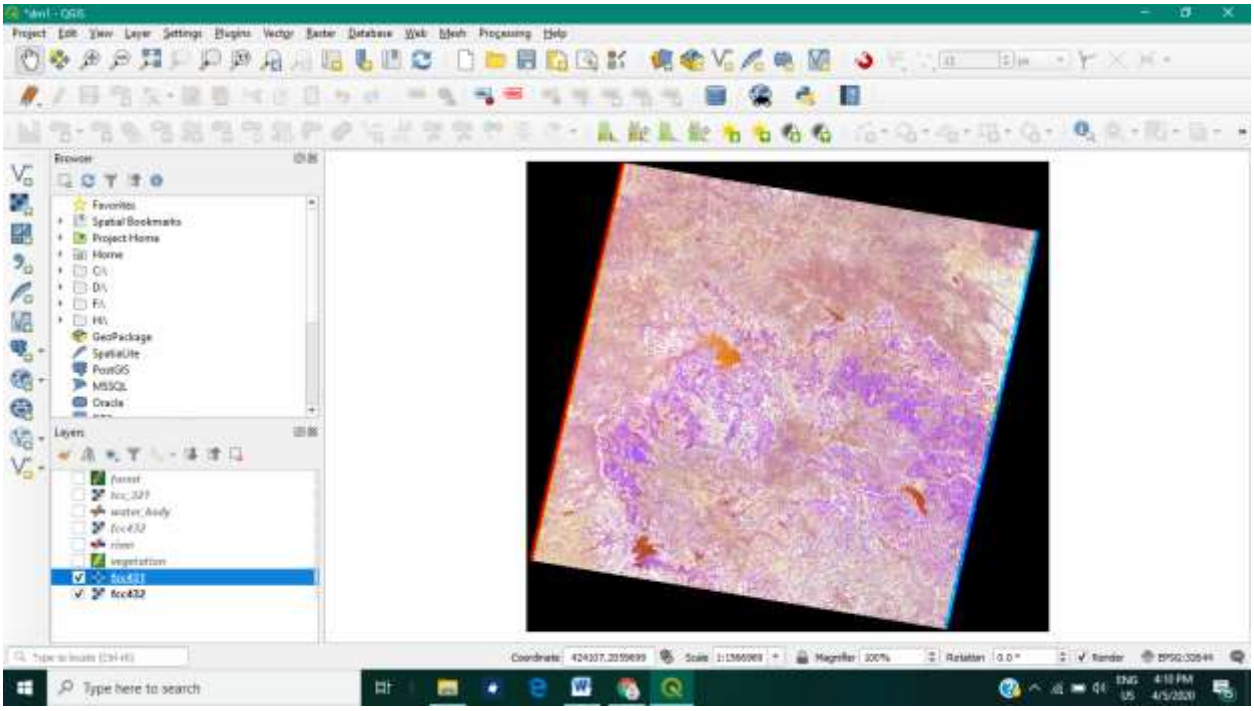
FCC 432 - After Enhancing



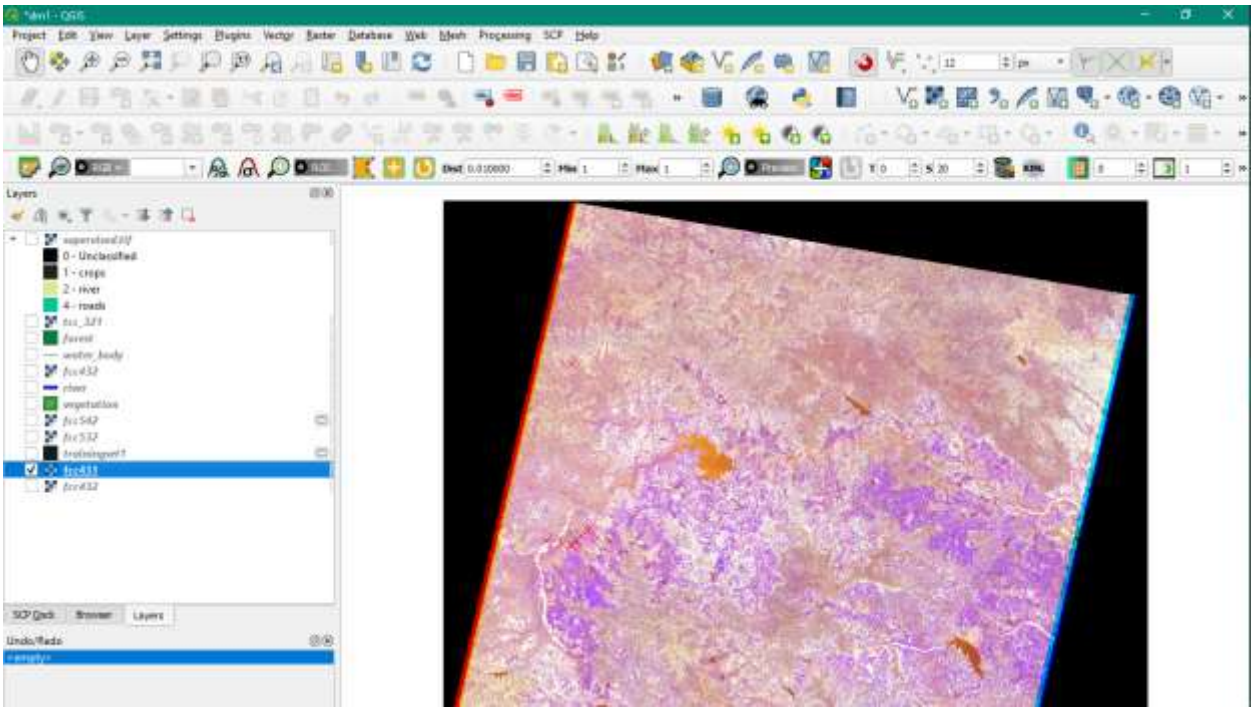
By changing intensity, contrast, saturation and such parameters, the merged image can be visualized in different ways. Oversampling value = 2.00

2. FCC 431

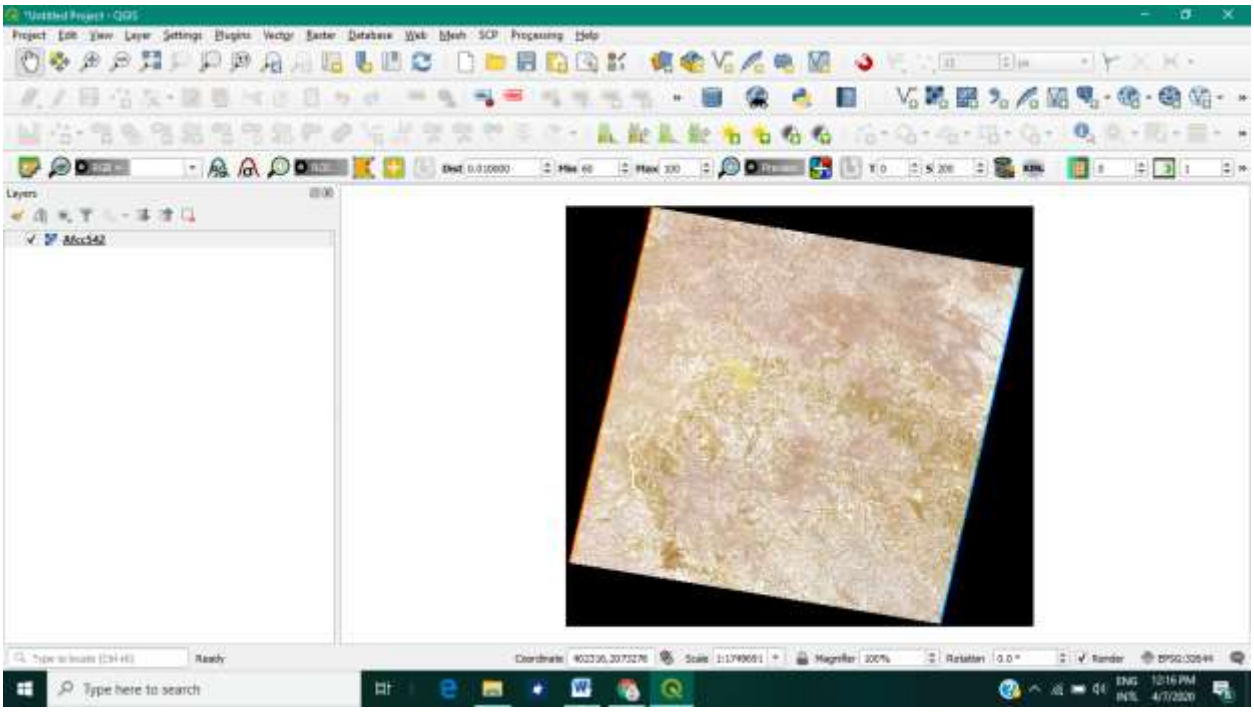
Before Enhancing



After Enhancing

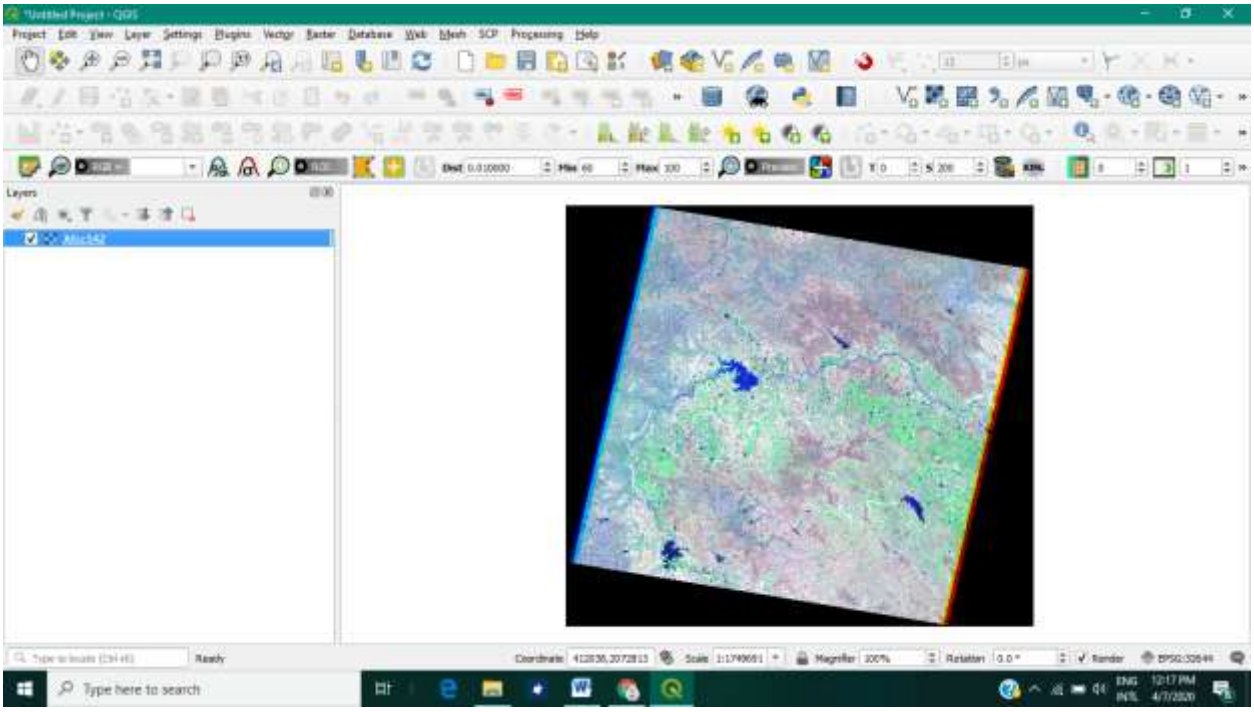


5 Bands Merged Image:

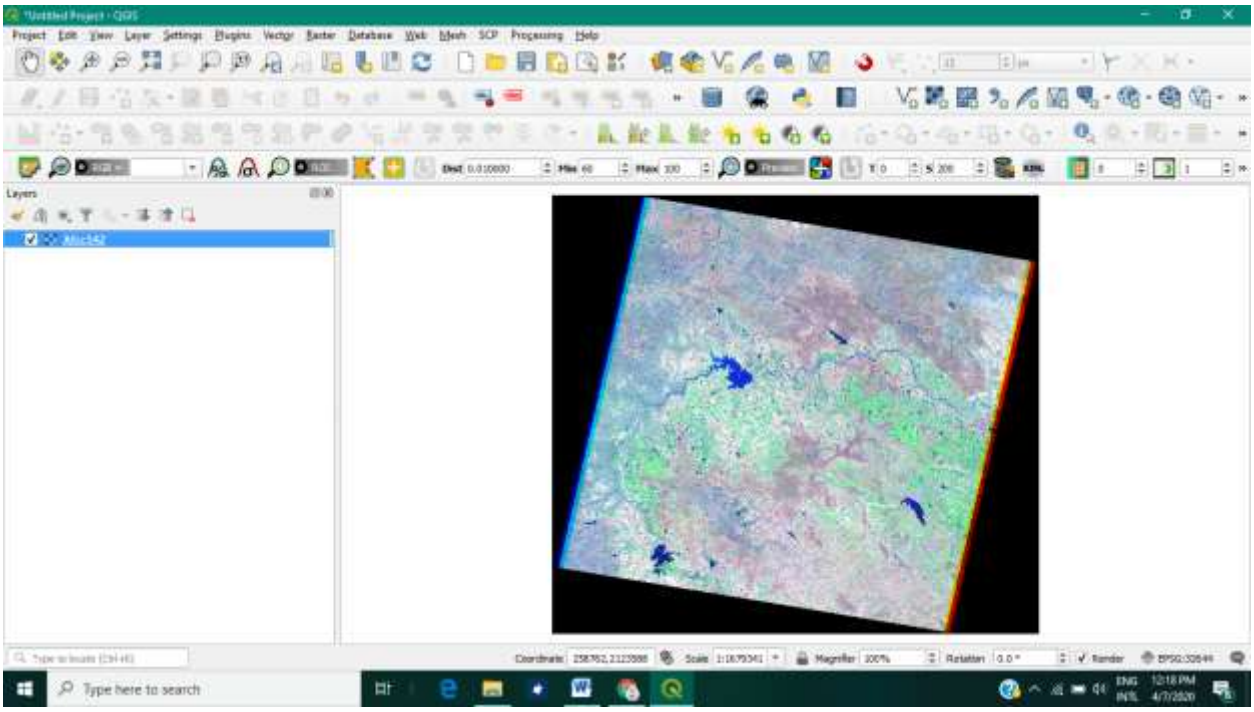


3. FCC 542

Before Enhancing

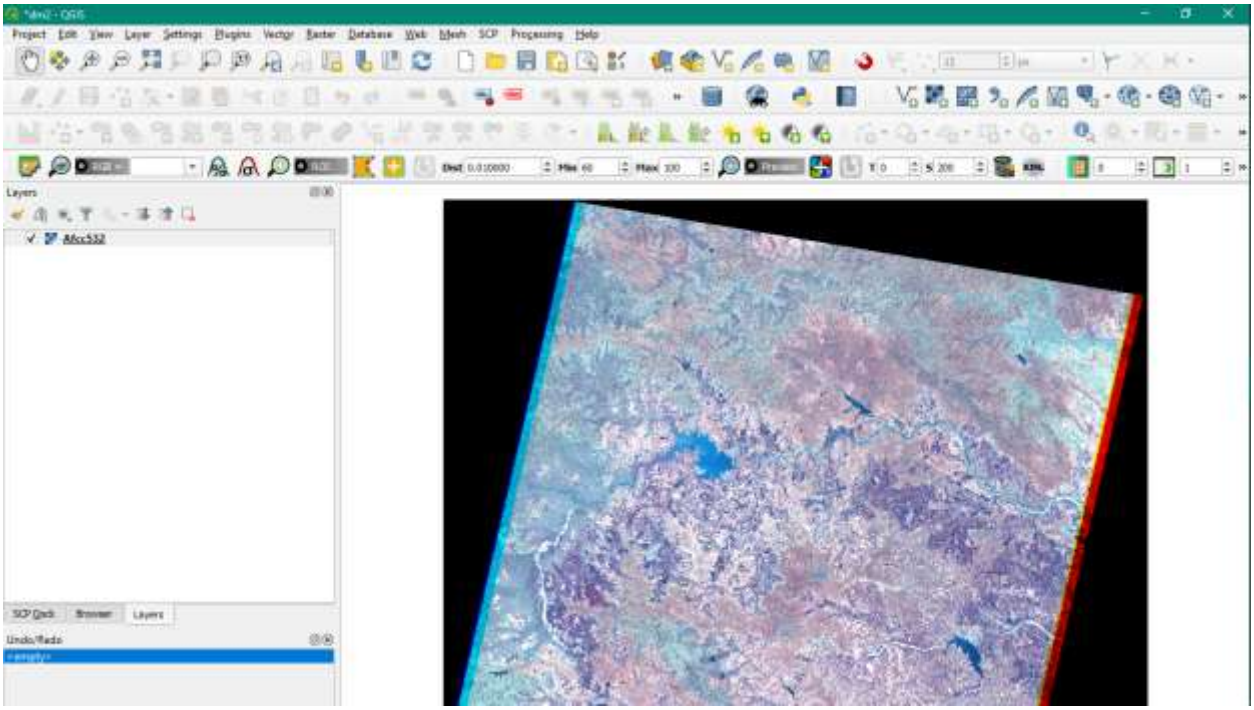


After Enhancing

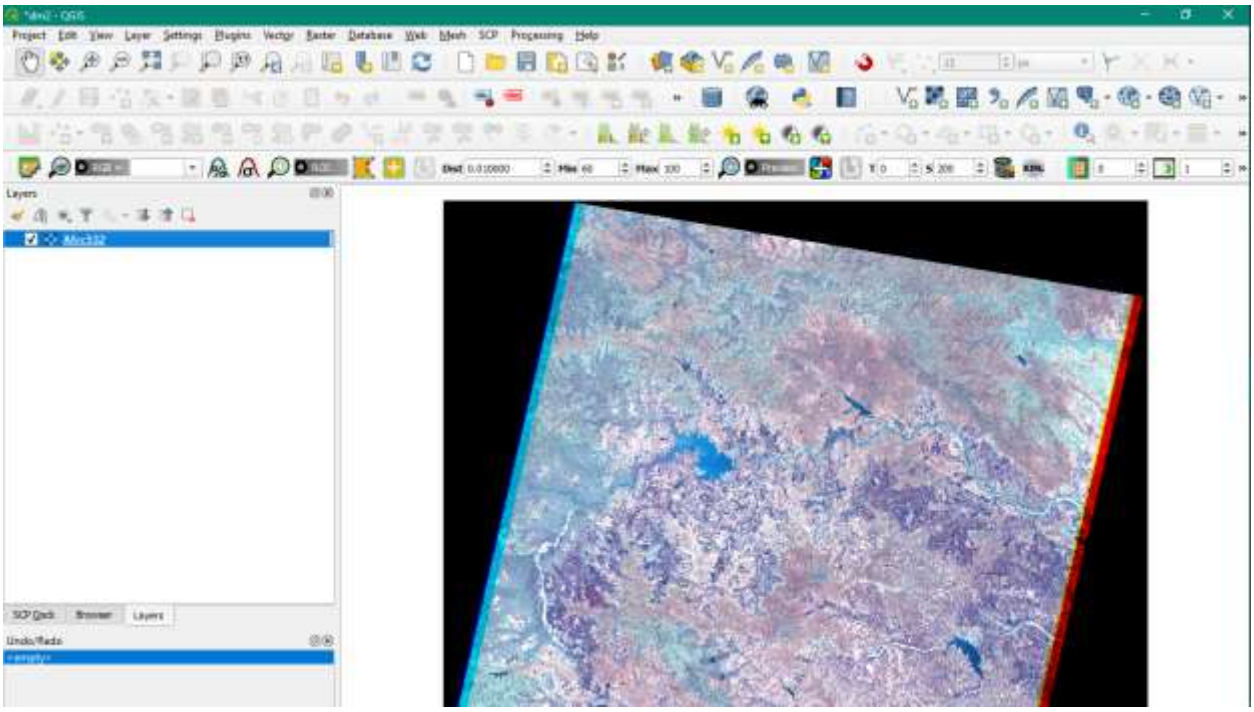


4. FCC 532

Before Enhancing

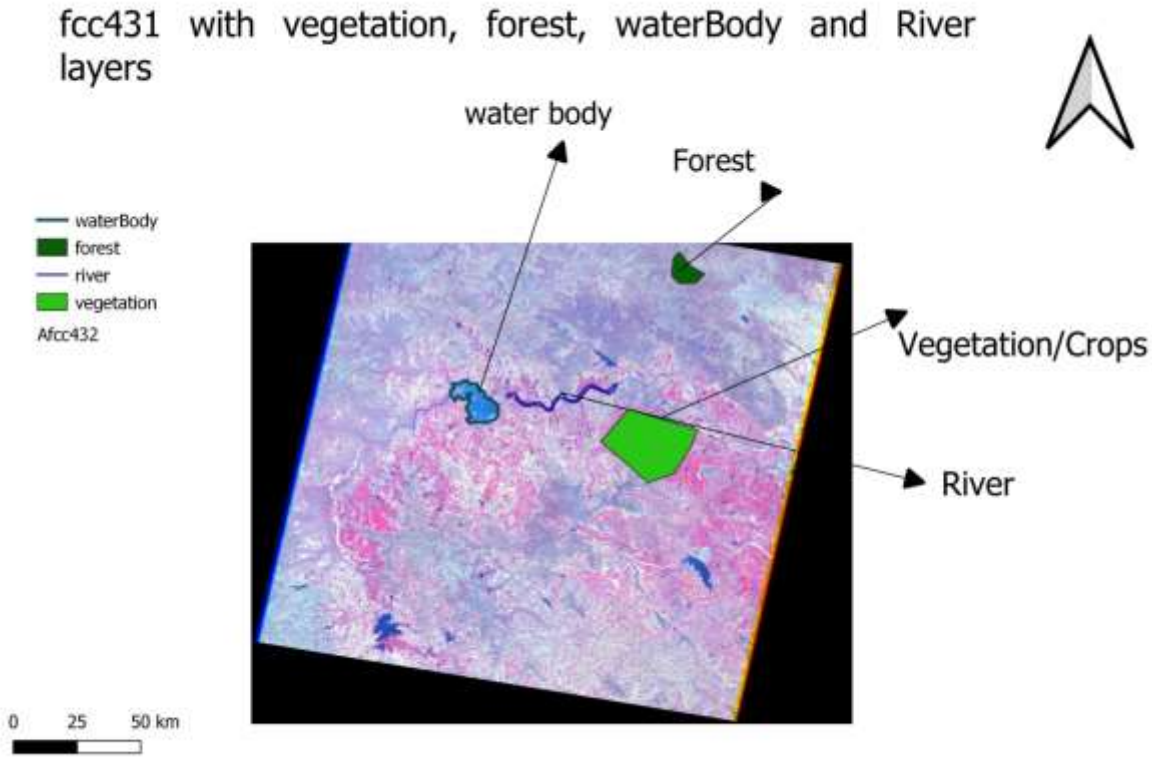


After Enhancing

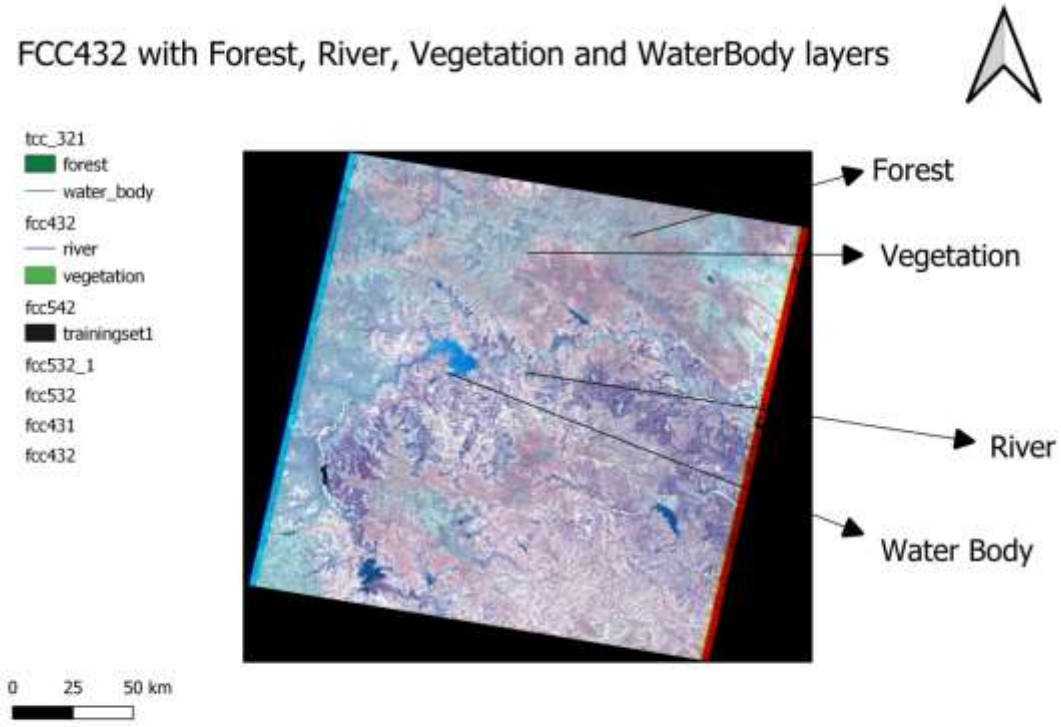


Q3 – Layers : Done on FCC431 and FCC432

Fcc431 with vegetation, river and forest layers:



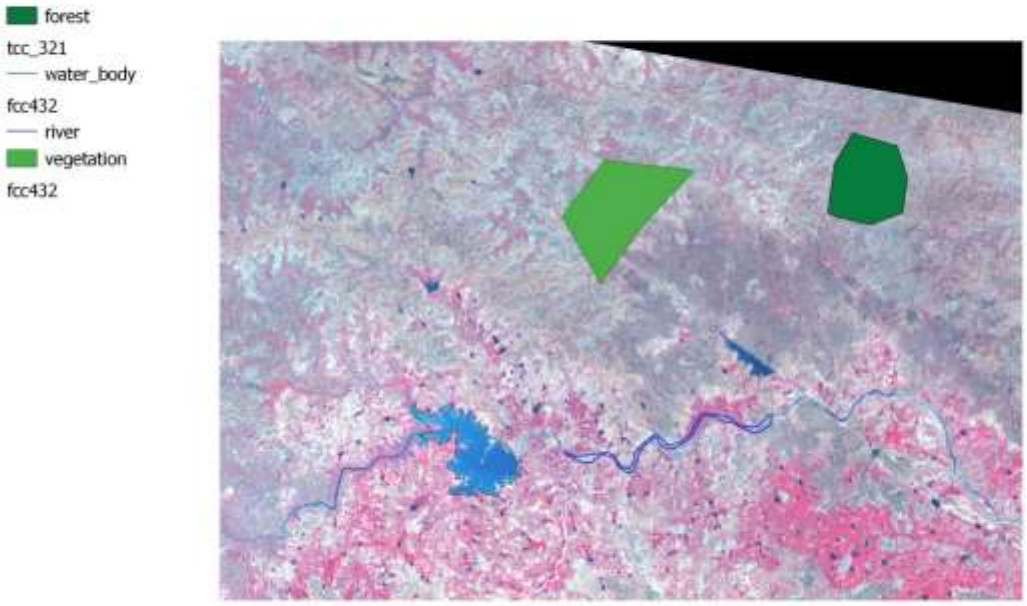
Vegetation, River, Water Body, Forest layers - Layout Image:
FCC 432



Zoomed layout version highlighting the layers

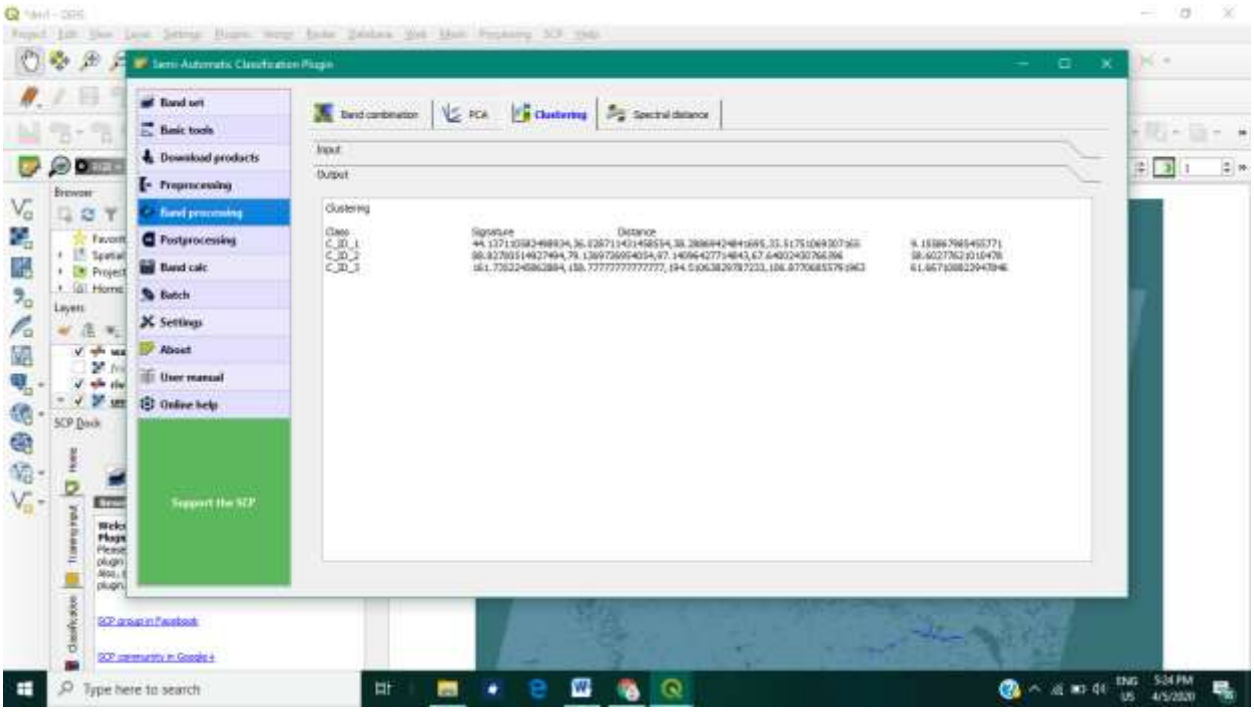
(The layers were not selected in the layers panel in the above image – therefore, not visible. Please find them in another layout image attached below)

FCC423 with Vegetation, River, Forest and Waterbody layers



Q4 - Unsupervised Learning:

1. **K-means Clustering:**
   Number of classes =3, Number of Iterations=1


Semi-Automatic Classification Plugin
Band set
Basic tools
Download products
Preprocessing
Band processing
Postprocessing
Band calc
Batch
Settings
About
User manual
Online help
Support the SCP
Band combination
PCA
Clustering
Spectral distance
Input
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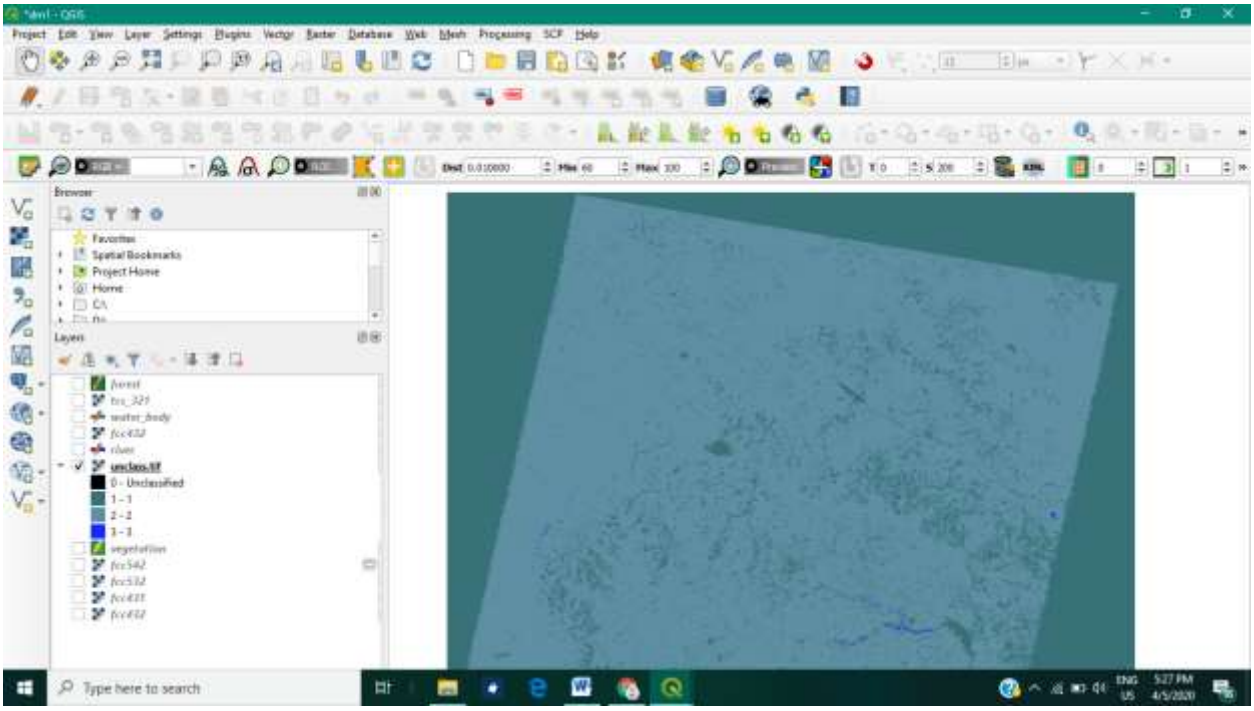
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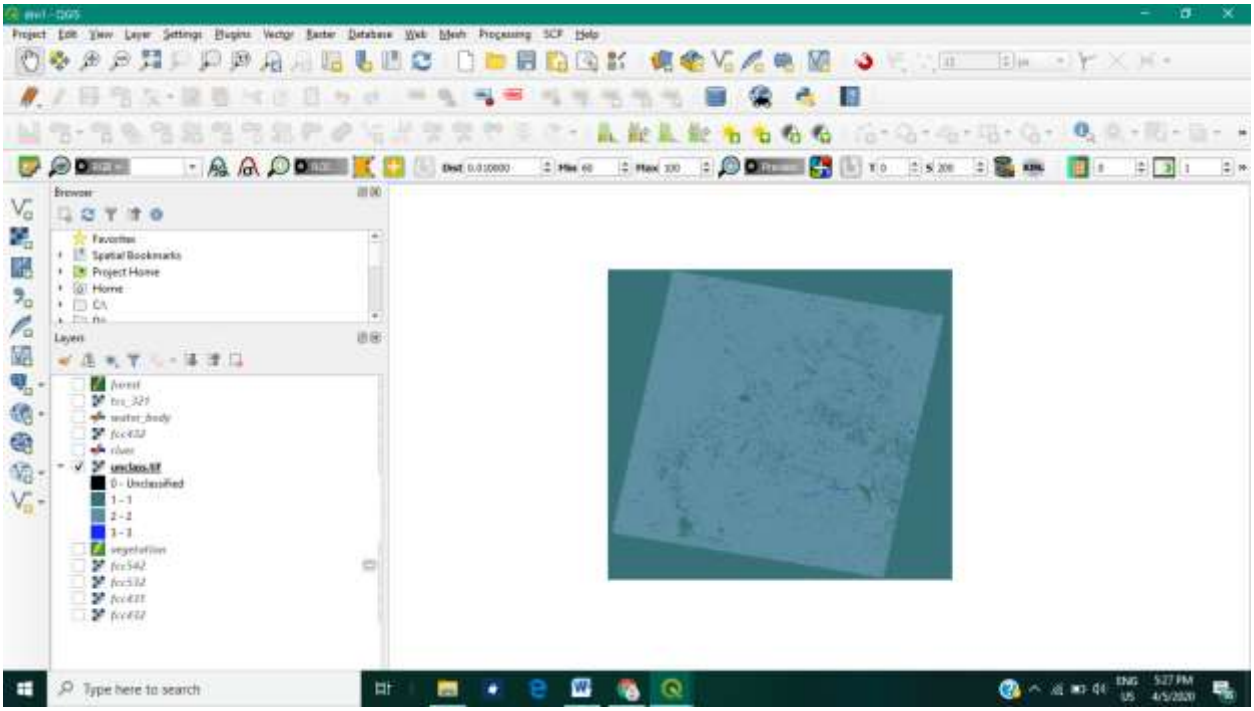
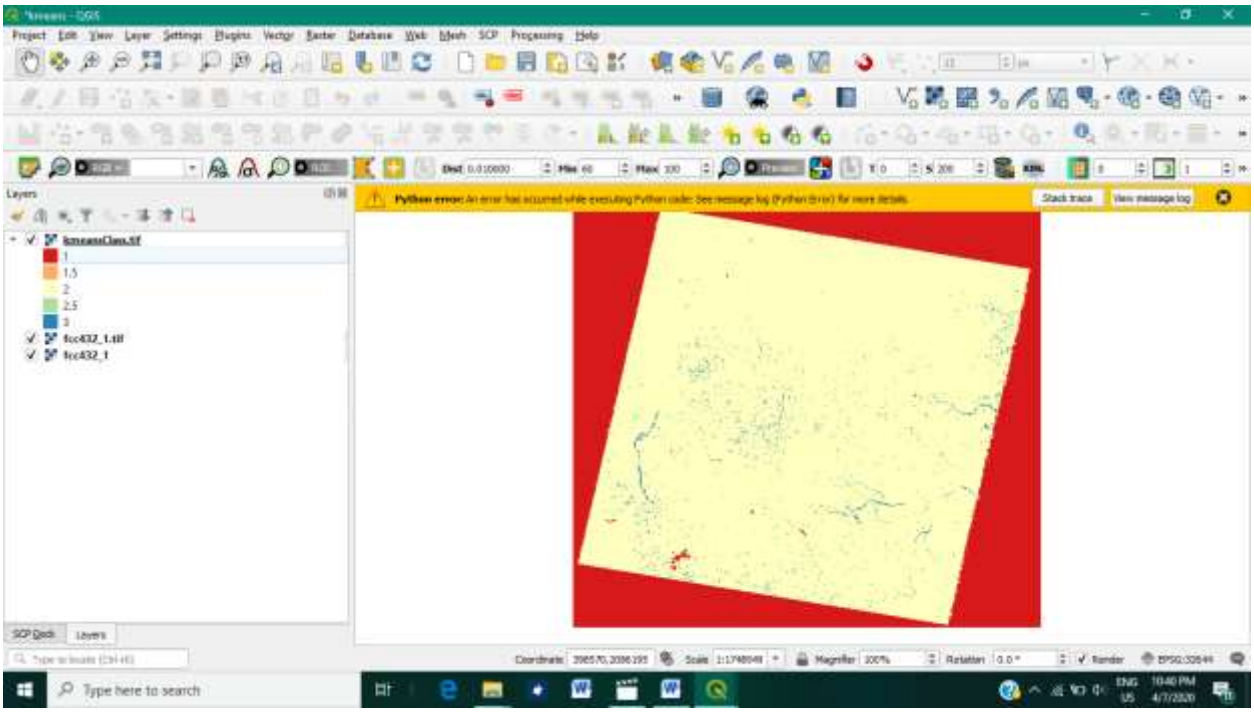
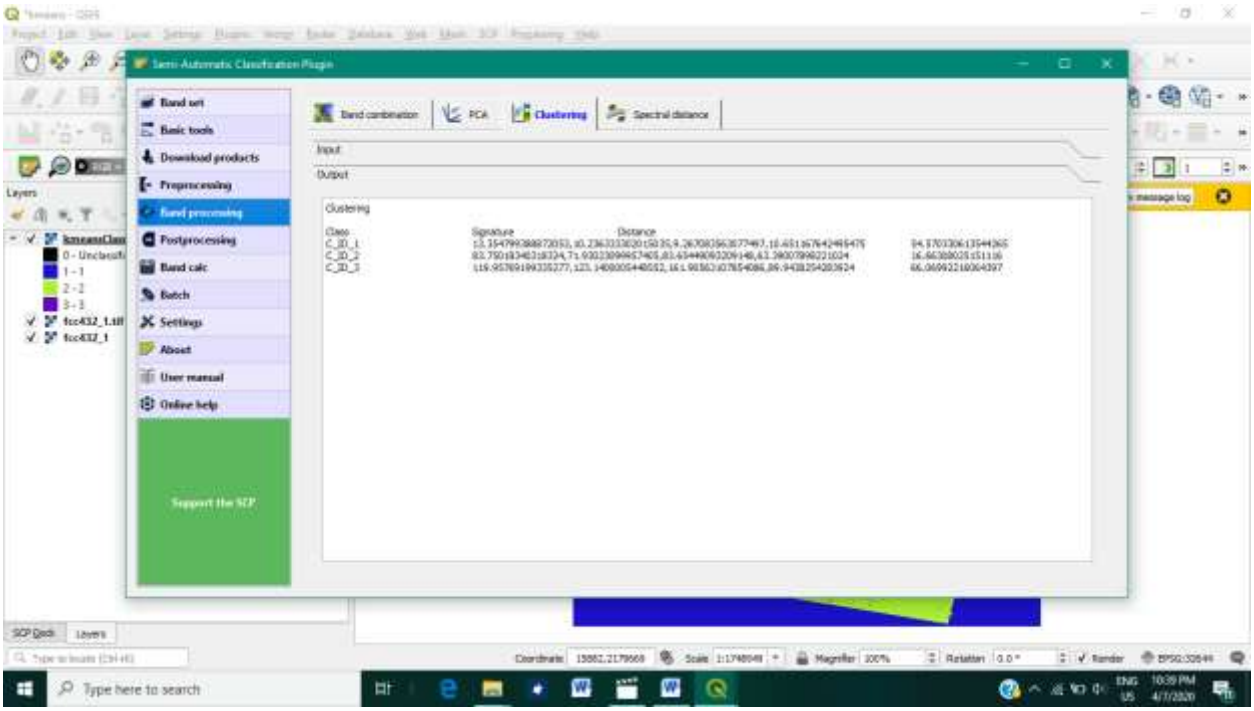


Kmeans example 2: Iterations = 2




Semi-Automatic Classification Plugin
Band set
Basic tools
Download products
Preprocessing
Band processing
Postprocessing
Band calc
Batch
Settings
About
User manual
Online help
Support the SCP
Band combination
PCA
Clustering
Spectral distance
Input
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Class
Signature
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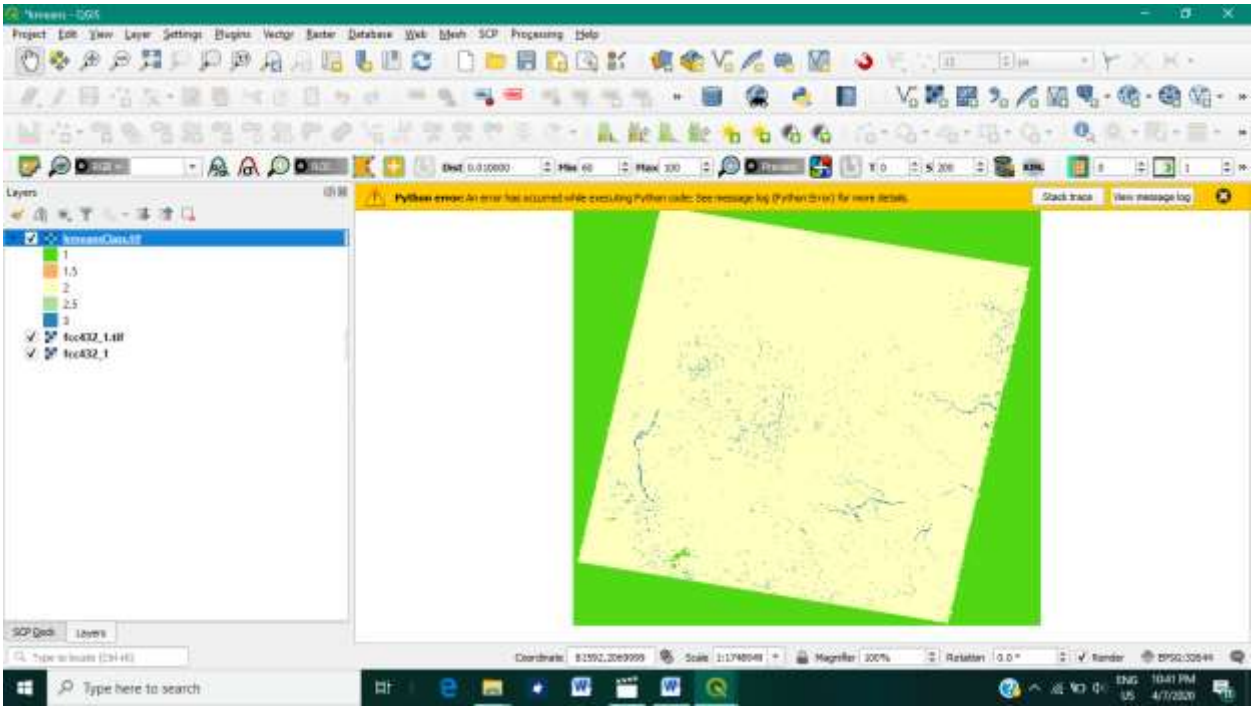
Layers
1
1.5
2
2.5
3
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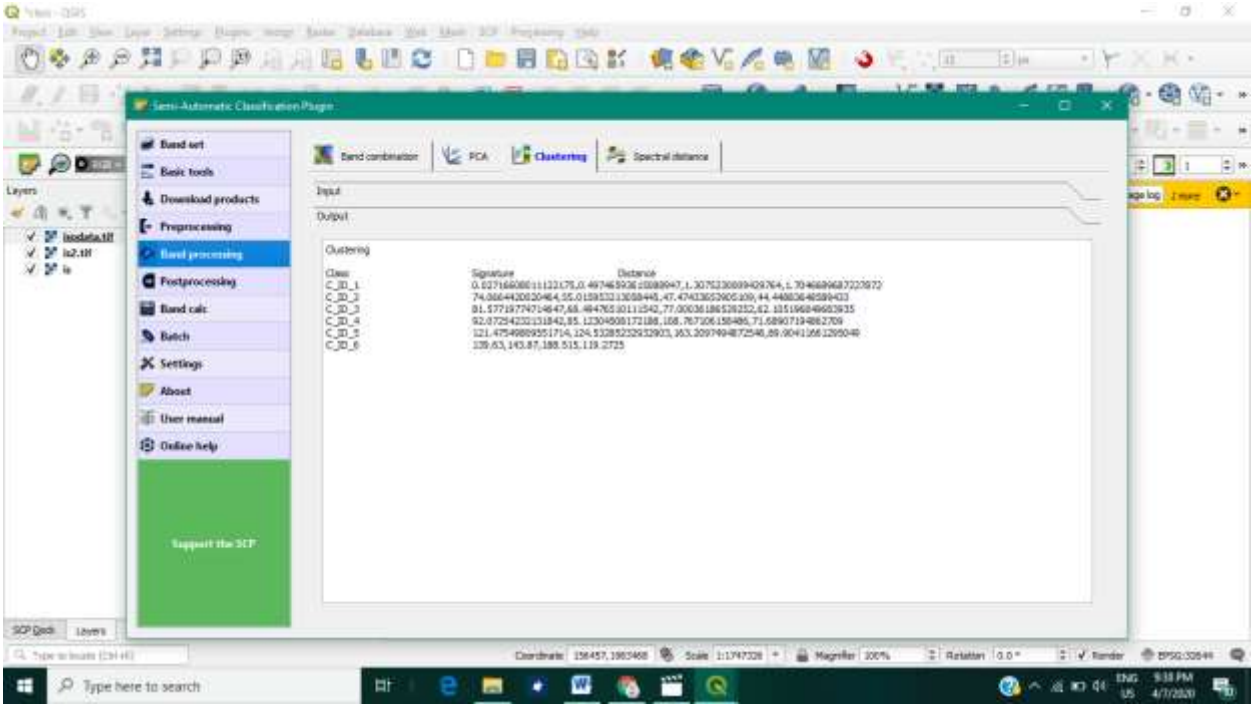
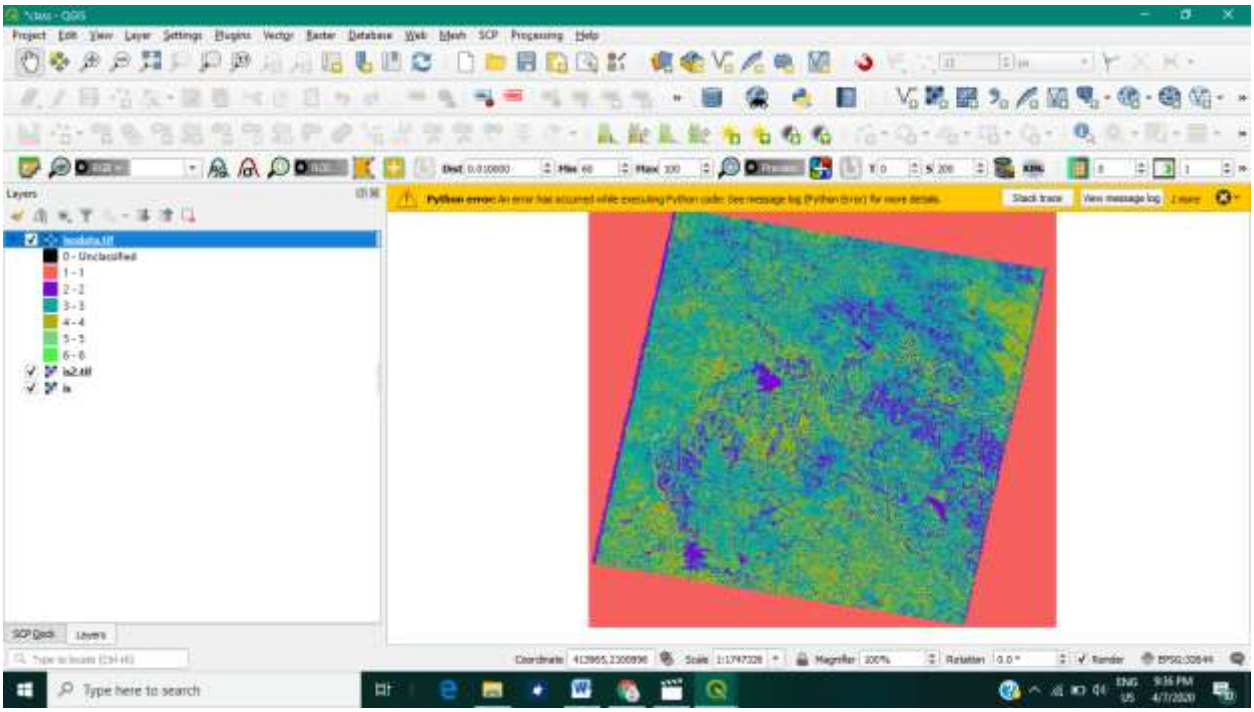
Unsupervised Learning:

2. **Isodata Algorithm: Iterations = 2**



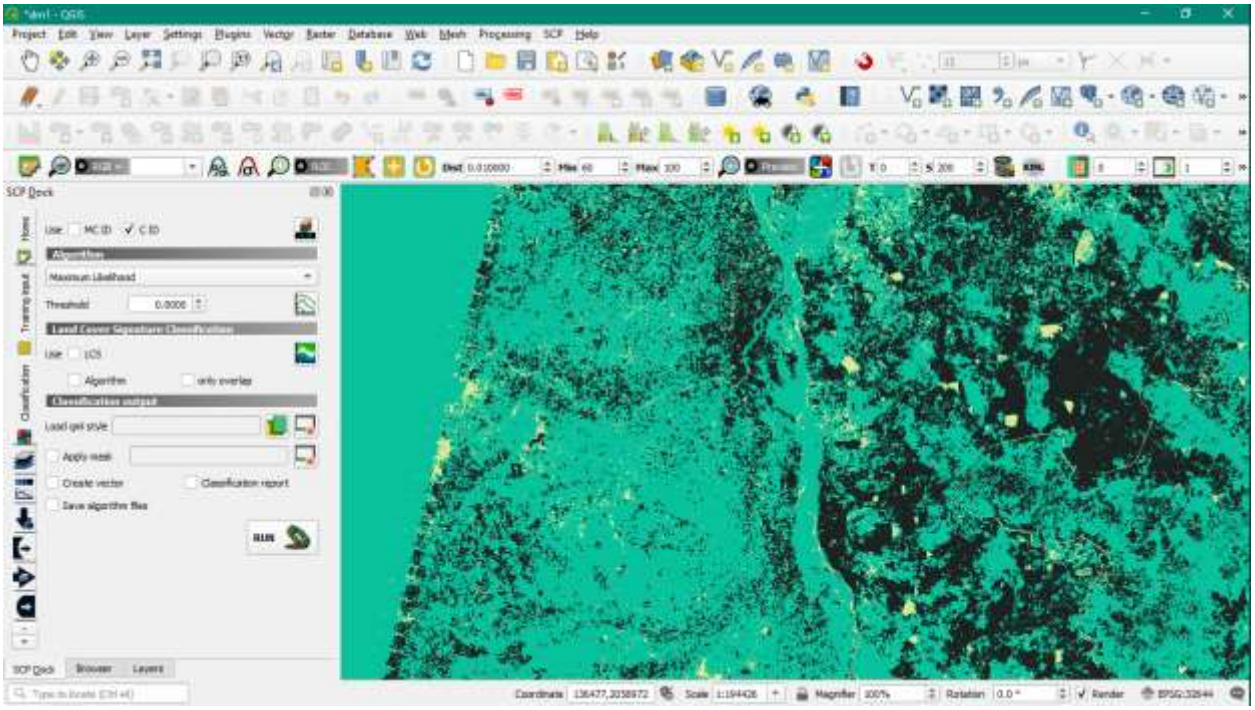


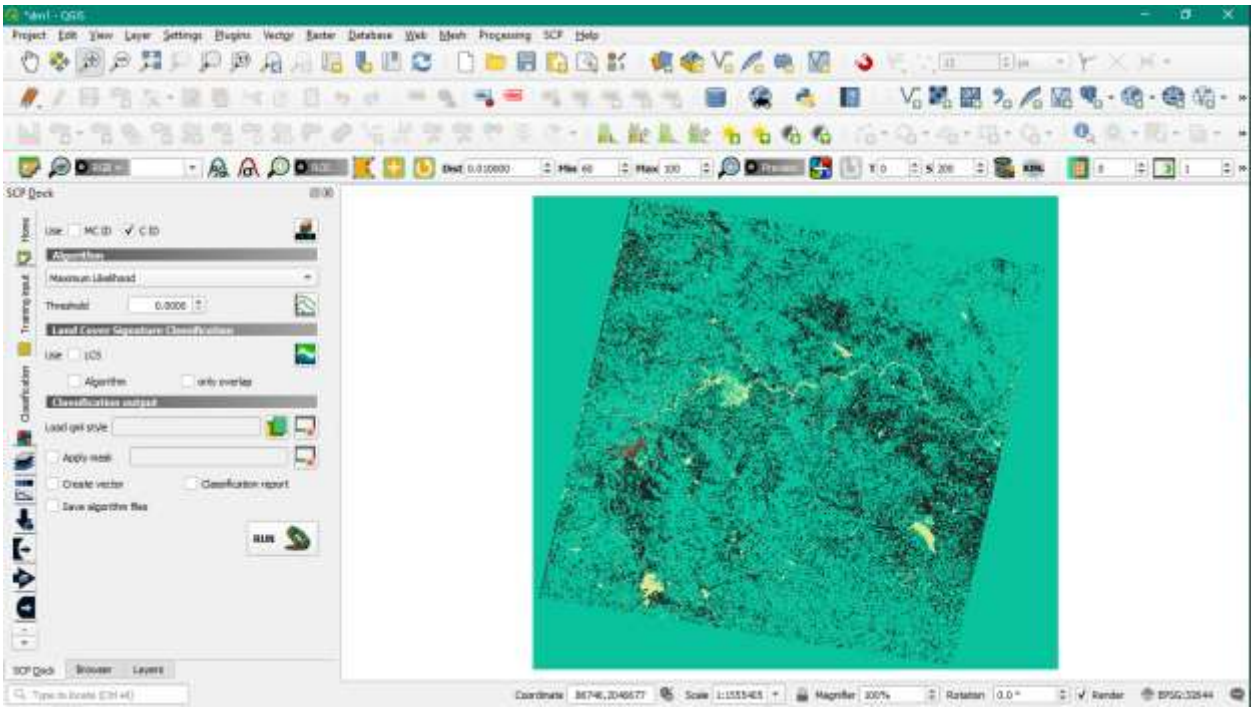
Q5 - Supervised Learning:

1. **Maximum Likelihood Algorithm**

No. of classes = 4

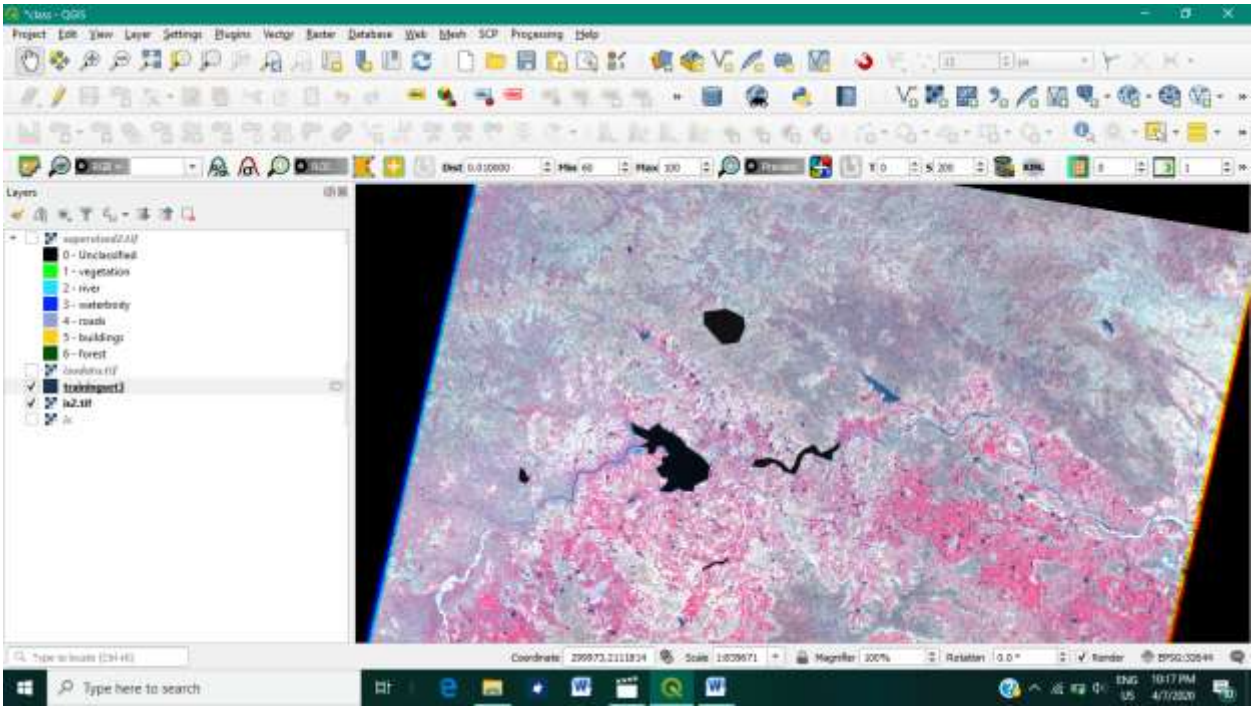
Crops, River, Roads, Unclassified

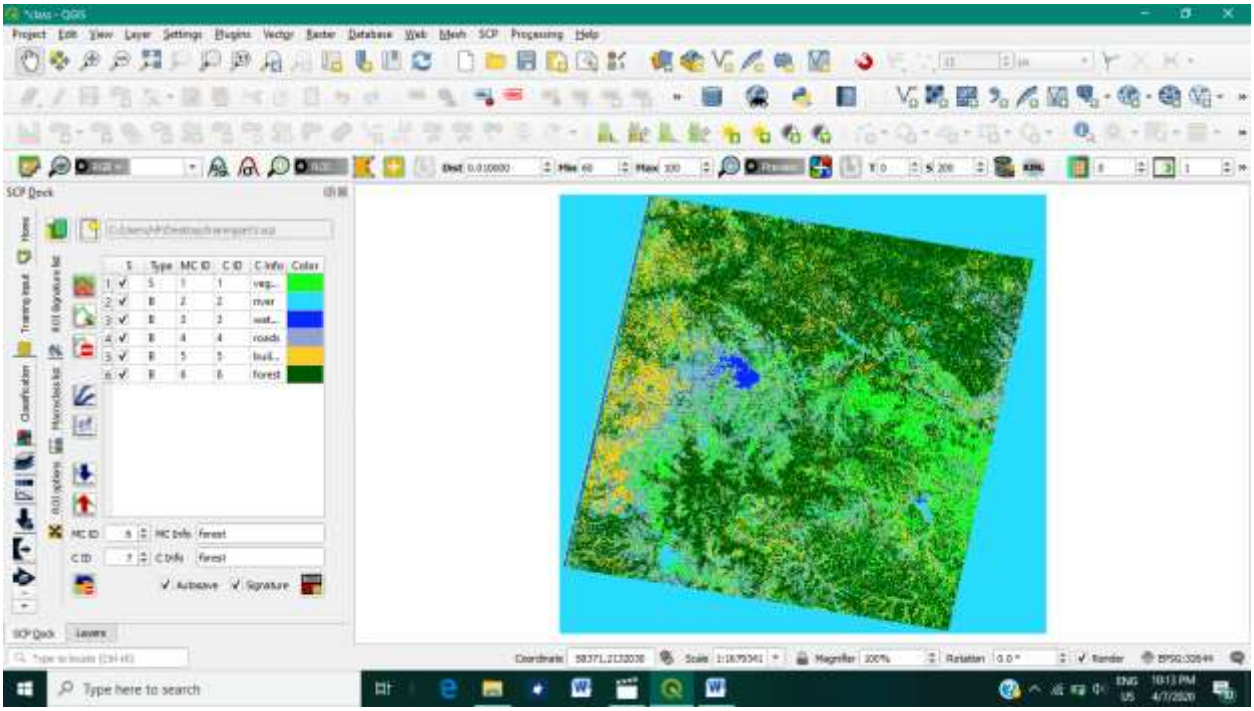




2. **Maximum Likelihood Algorithm**
   No. of classes = 6
   Crops/Vegetation, River, Forest, Roads, water body, Buildings, unclassified

Supervised Trained sets – ROI Polygon

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SCP Dock
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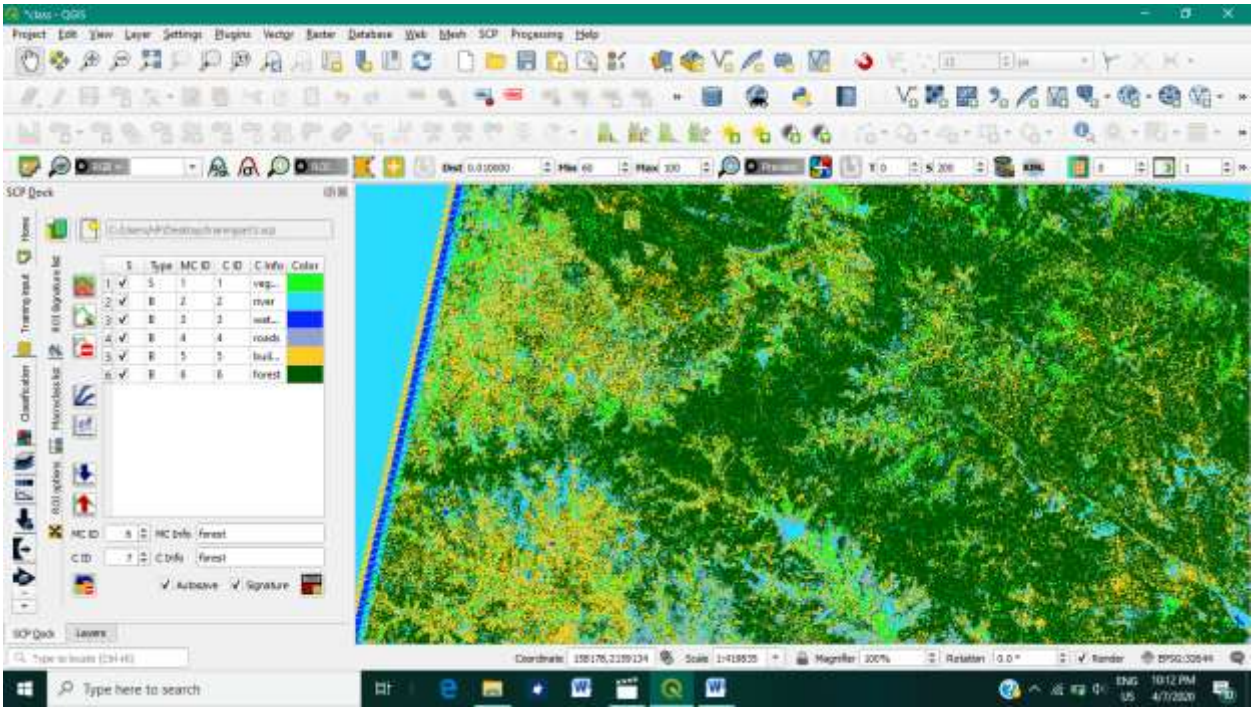
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh SCP Processing Help
SCP Dock
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