Dated: 16.04.2021   Name: Shika Rao
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BITS F442 Remote Sensing and Image Processing
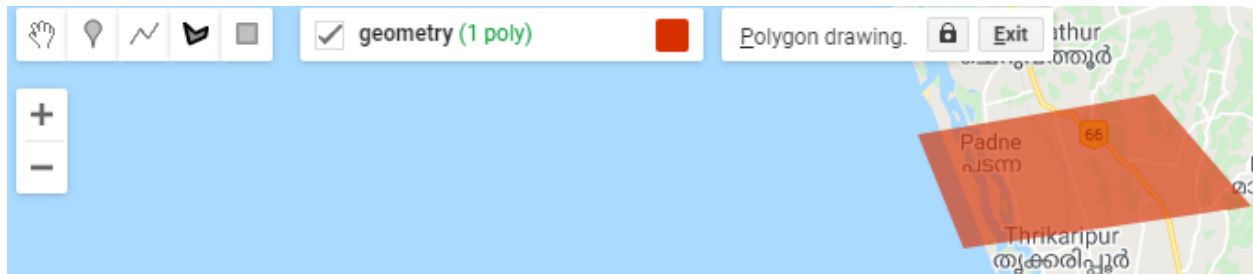
Lab-4 NDVI from Google Earth Engine

Google Earth Engine:

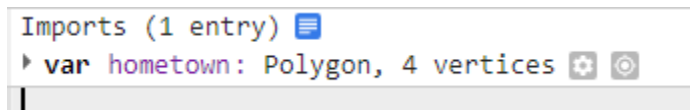Website: https://code.earthengine.google.com/

Step-1: To access the datasets of your study area.

For all the projects, access USGS Landsat 8 Collection 1 Tier 1 and Real-Time data Raw Scenes.

Identify your home town and add the geometry as polygon

Name the geometry as hometown

Load the imagery of Landsat 8 of the region created for the period between 2021 January to till date

var img = ee.ImageCollection("LANDSAT/LC08/C01/T1_RT")

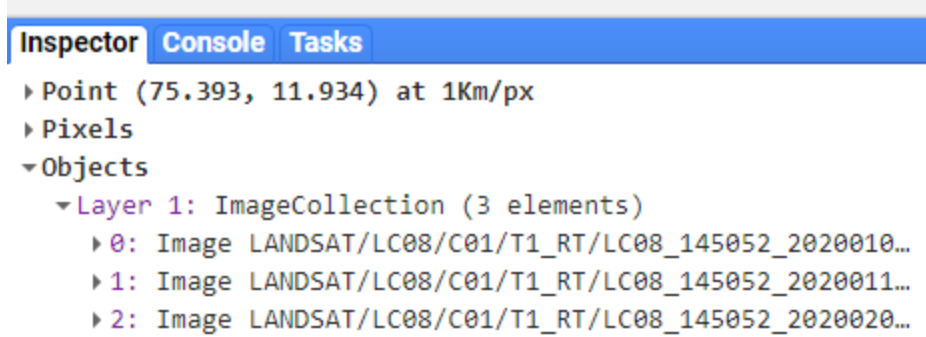 .filterDate('2021-01-01','2021-04-16')

 .filterBounds(hometown);

Map.setCenter(75.40973211141204,11.837087892571882, 9)

 Map.addLayer(img)

Observe the number of images and metadata details using the inspector tab at right side

```
Inspector  Console  Tasks
▶ Point (75.393, 11.934) at 1Km/px
▶ Pixels
▾ Objects
   ▾ Layer 1: ImageCollection (3 elements)
      ▶ 0: Image LANDSAT/LC08/C01/T1_RT/LC08_145052_2020010…
      ▶ 1: Image LANDSAT/LC08/C01/T1_RT/LC08_145052_2020011…
      ▶ 2: Image LANDSAT/LC08/C01/T1_RT/LC08_145052_2020020…
```

You can see the cloud cover details of the image.

//To visualize the bands better

var vizParams = {

  bands: ['B5', 'B4', 'B3'],

  min: 0,

  max: 30000,

  gamma: [0.95, 1.1, 1]

};

Map.setCenter(75.40973211141204,11.837087892571882, 9);

Map.addLayer(img, vizParams);

To remove the images with cloud cover.

Add the below code in the var img statement

.filter(ee.Filter.lt('CLOUD_COVER', 5));

To clip ROI from the image

Add the below code to get the clipped image.

.map(function(image){return image.clip(hometown)});

To generate NDVI datasets for Landsat 8 images:

Extract bands corresponds to NDVI ie NIR and R;

var Image1 = ee.Image(img.first());

//[to get any image - var list=img.toList(img.size()); then var Image1 = ee.Image(list.get(10));]

var b4=Image1.select('B4');

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```
var b5=Image1.select('B5');
```

```
var ndvi= Image1.expression ('(B5-B4)/(B5+B4)',{'B5':b5,'B4':b4});
```

```
Map.addLayer(ndvi)
```

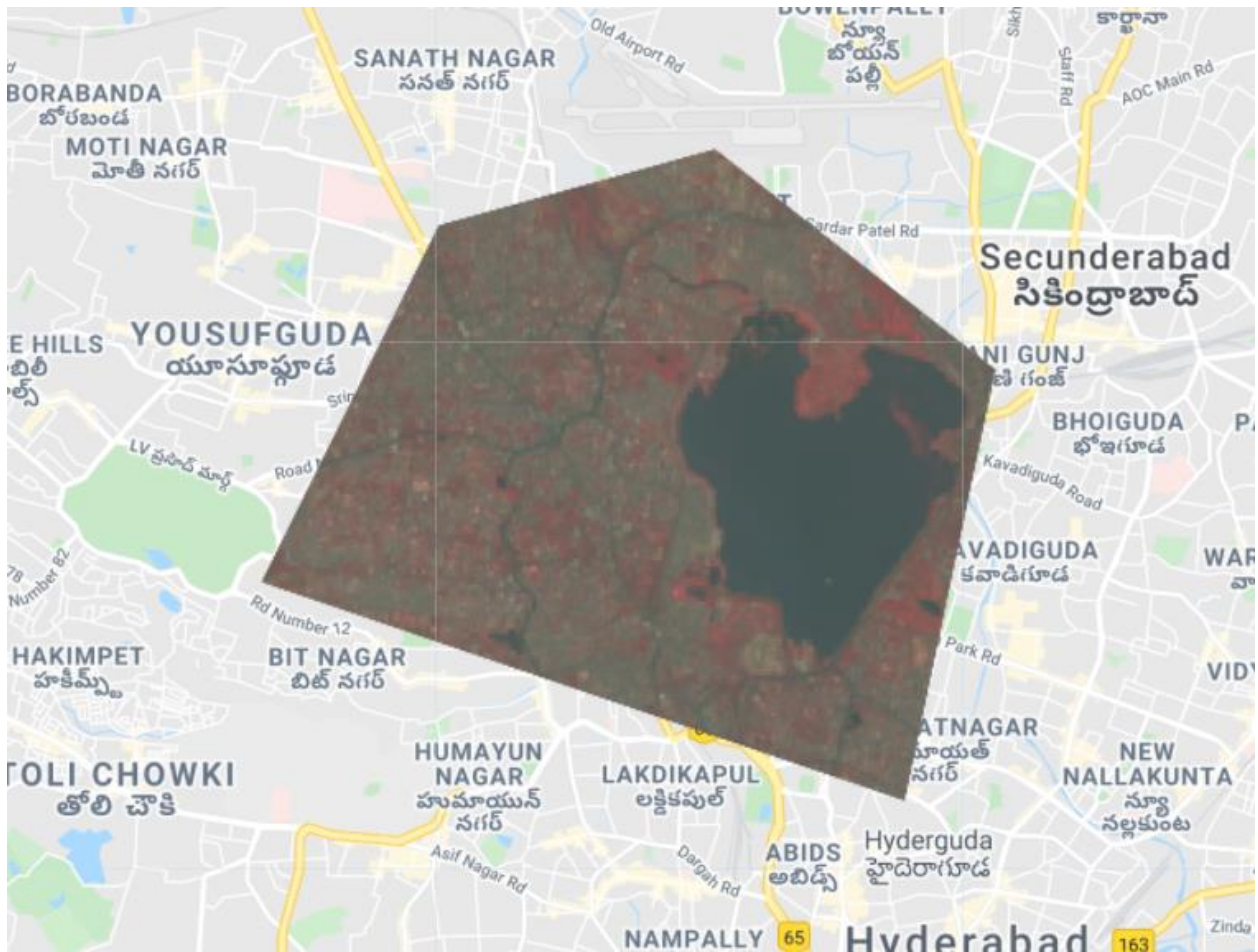**Extract the land area and water area**

```
var water=ndvi.lt(0);
```

```
var land=ndvi.gt(0);
```

```
Map.addLayer(water);
```

```
Map.addLayer(land);
```

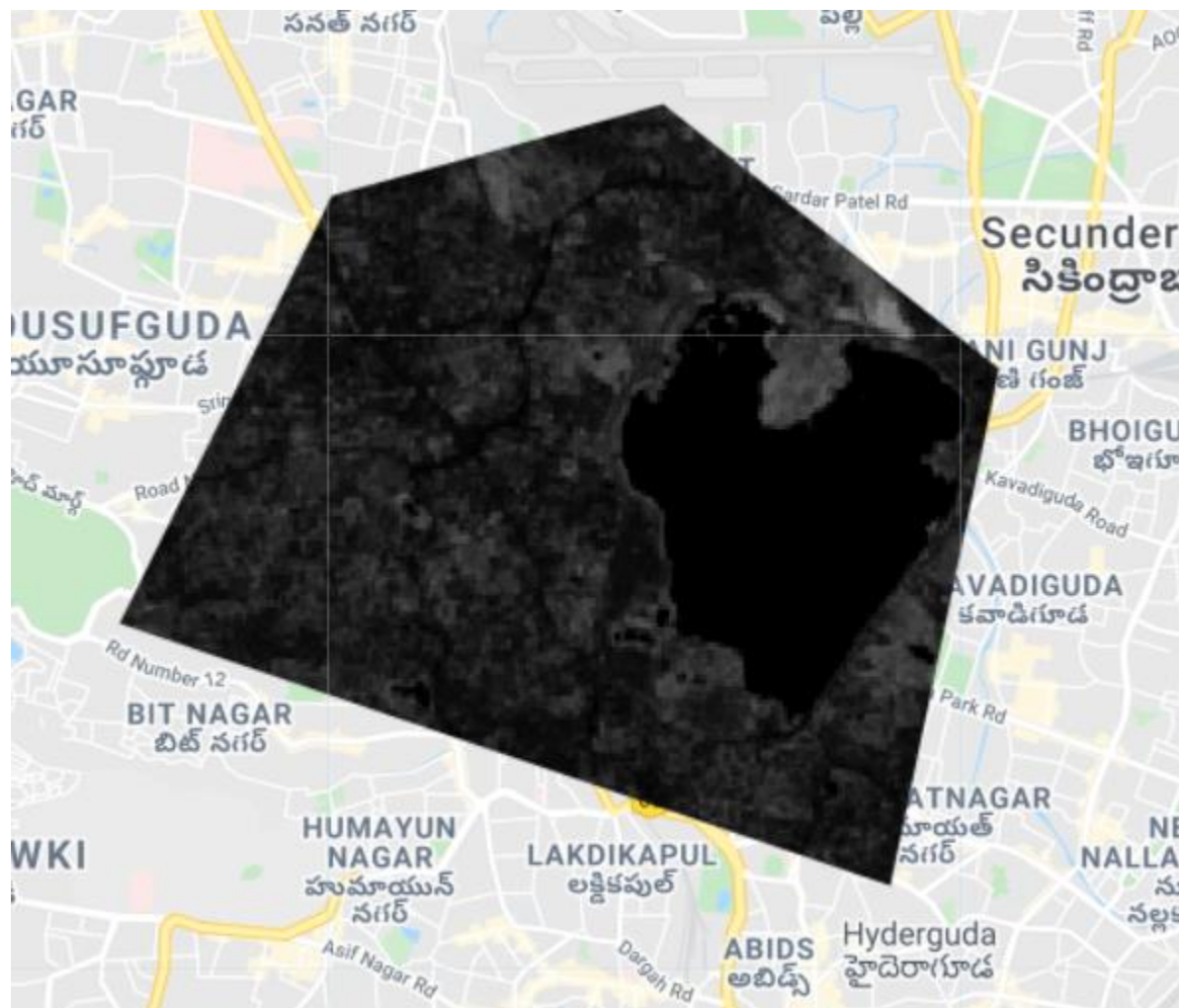Submit the following screenshots pasted in this document

1. Clipped image of your hometown

2. NDVI image

3. Land only

4. Water only