MKSSS Cummins College OF Engineering for Women, Pune

Name: Sharayu Kondubhairy

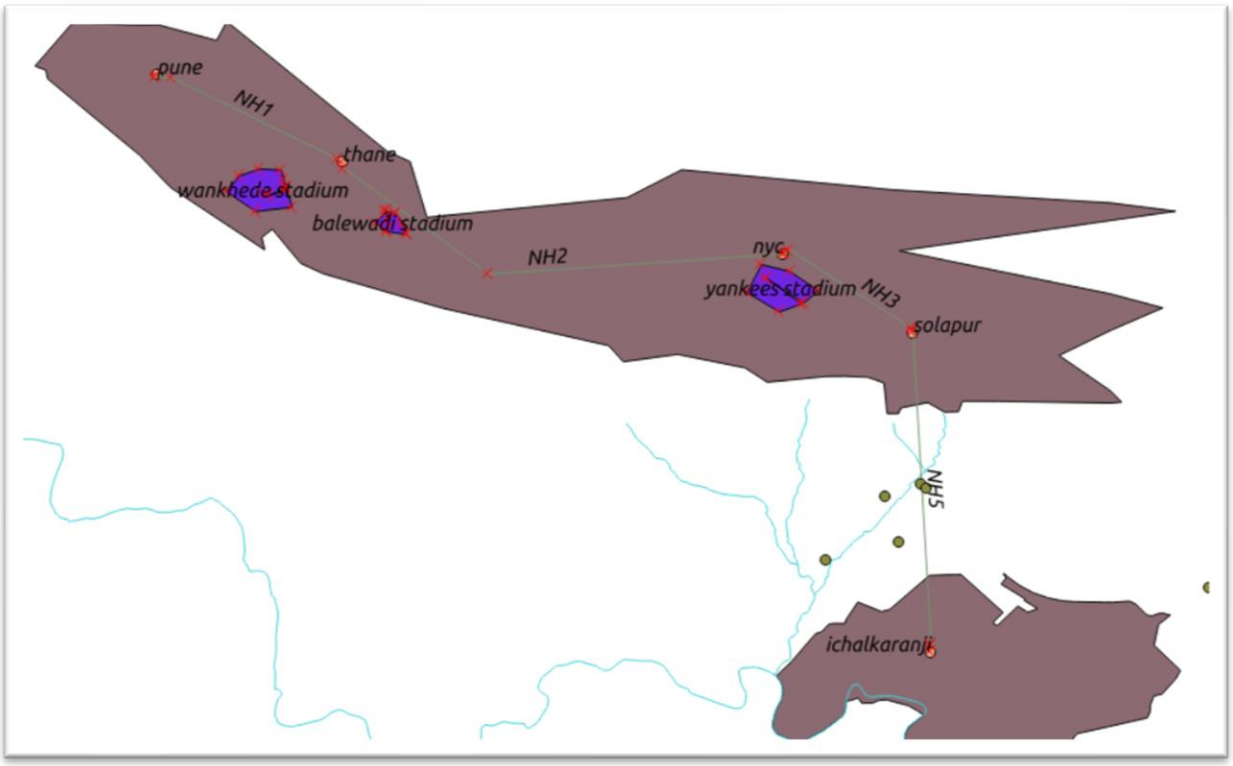
CNum: UEC2021321

Date: 13 Jan 2025

Remote Sensing Lab 1

EXPERIMENT – 1
Title: Introduction to QGIS software and spatial data

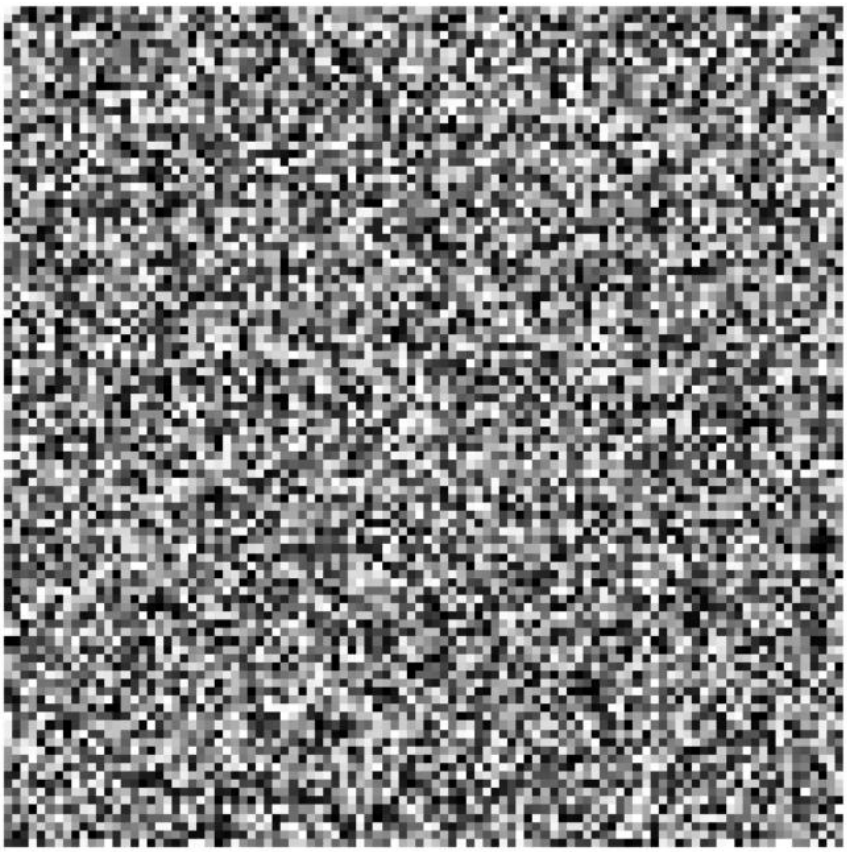
Part (A): To create a basic map and represent vector data features (point, line, polygon) on the map using QGIS



Part (B) Process raster data
Write Python program to create raster data (using QGIS-> Python Console)

```
from osgeo import gdal, osr
import numpy as np

# Parameters for raster creation

output = "output.tif"
```

```
x_size = 100  # Number of columns
y_size = 100  # Number of rows
band_count = 1
data_type = gdal.GDT_Float32


# Create raster dataset
driver = gdal.GetDriverByName('GTiff')
ds = driver.Create(output, x_size, y_size, band_count, data_type)
##ds.GetRasterBand(1).WriteArray(rasterband)
if ds is None:
   print("Failed to create the raster file.")
else:
   # Set geotransform and projection (optional)
   ds.SetGeoTransform([0, 1, 0, 0, 0, -1])  # Origin X, pixel size, rotation
   srs = osr.SpatialReference()
   srs.SetWellKnownGeogCS("WGS84")
   ds.SetProjection(srs.ExportToWkt())

   # Generate some data
   rasterband = np.random.random((y_size, x_size))
   #rasterband = np.zeros((y_size, x_size))

   # Write data to the first band
   band = ds.GetRasterBand(1)
   band.WriteArray(rasterband)
   rlayer = iface.addRasterLayer(output)
   print('Raster file created successfully.')
```



Part (C) Create band composites (or virtual raster)
Software platform: QGIS 3.28, 3.34

Vegetation analysis