Hands-On

Preparation of base map

Training Course on
'Marine GIS for Operational Oceanography'

January 18-22, 2016

Dr. P C Mohanty
mohanty@incois.gov.in

International Training Centre for operational Oceanography(ITCO),

INCOIS, Hyderabad, India

What is Base map ?

- Basemaps contain reference information which provides different geospatial information based on what the cartographer is trying to communicate.

- Typical GIS data and imagery that make up the layers for a basemap: streets, parcels, boundaries (country, county, city boundaries), shaded relief of a digital elevation model, waterways, and aerial or satellite imagery.

Overview

I. Create new feature class (point, line and polygon)

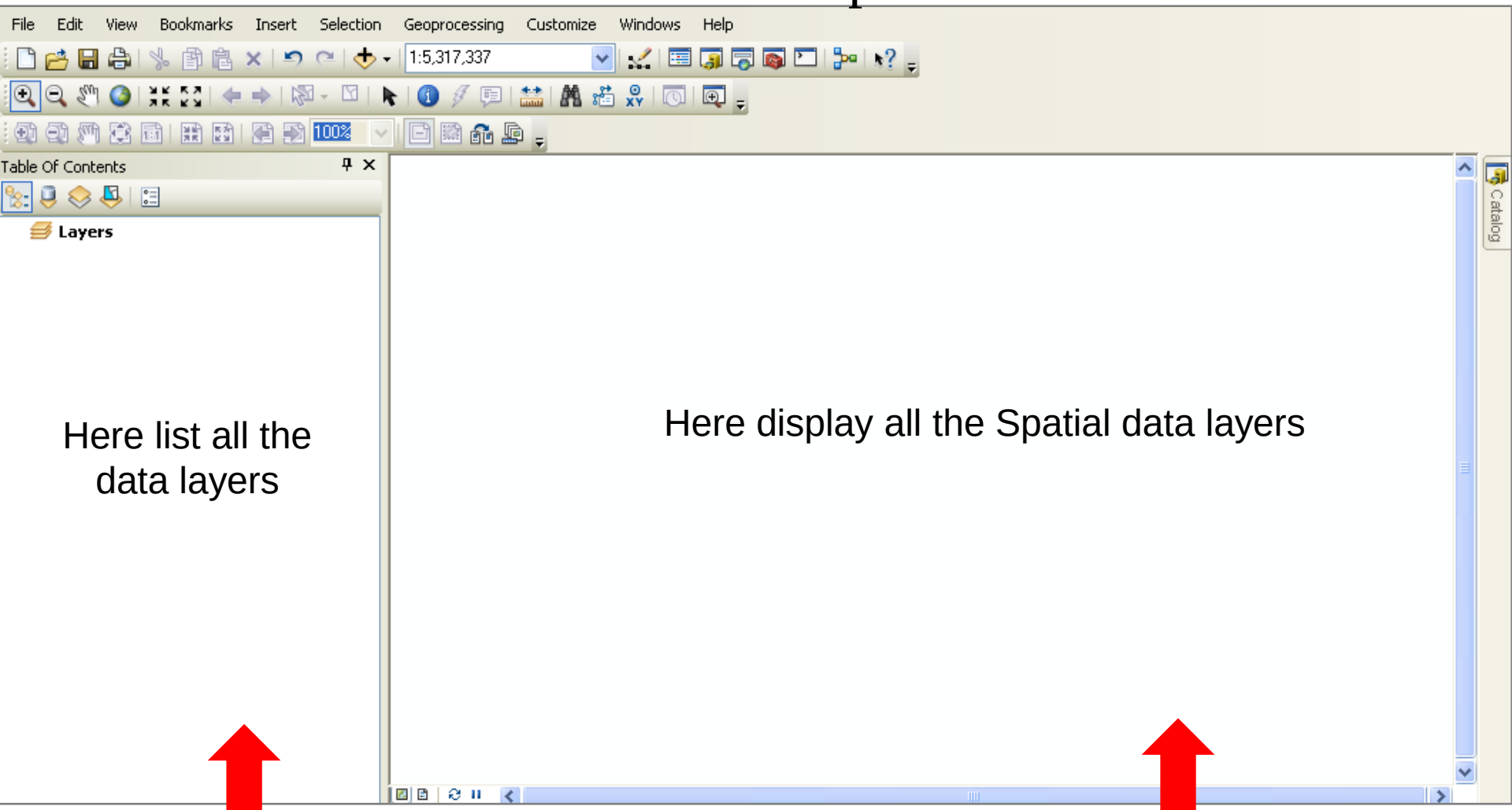
II. Digitize feature class: River, village, administrative boundary and others

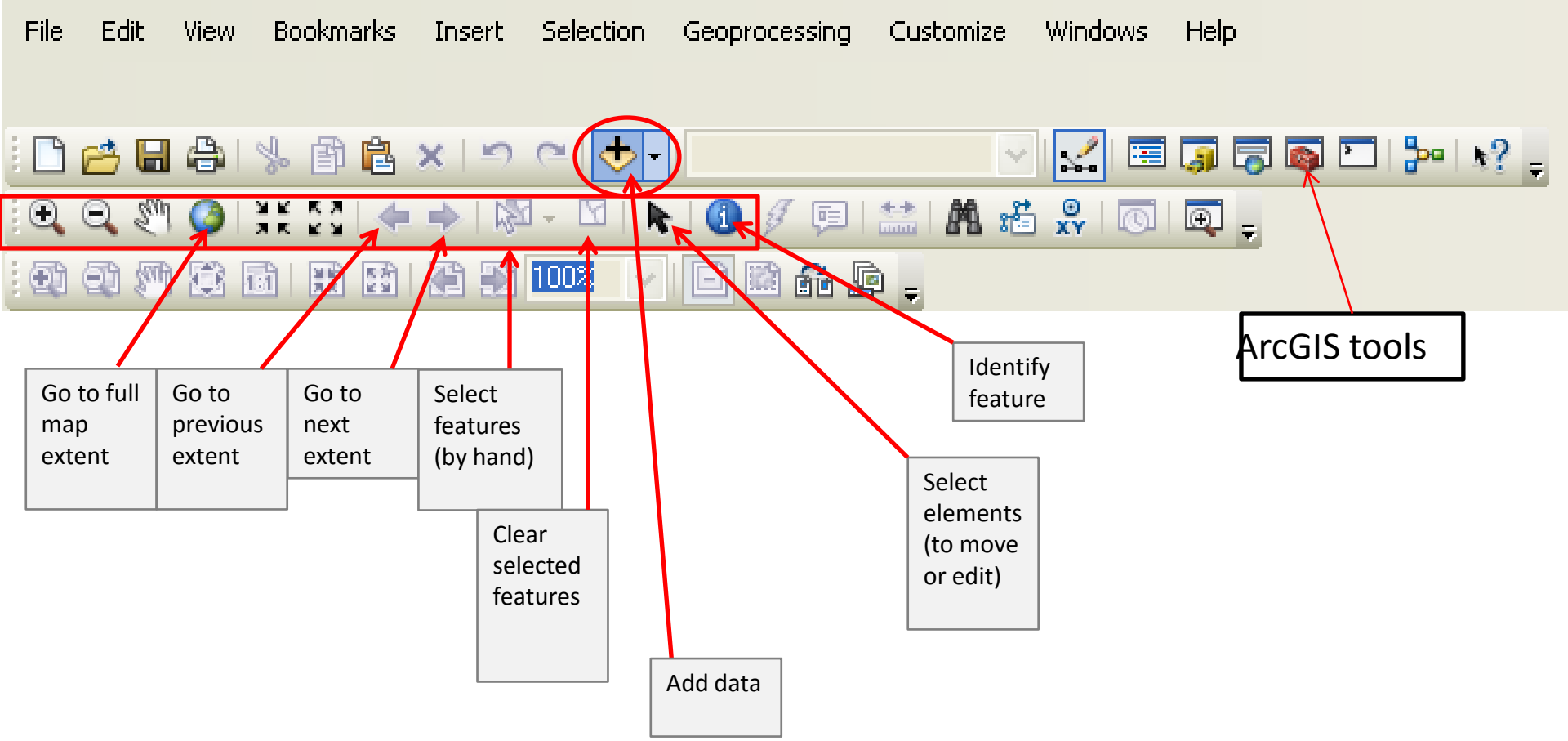
III. Features Selection Criteria

- Select by attribute
- Select by location
- Select by graphics

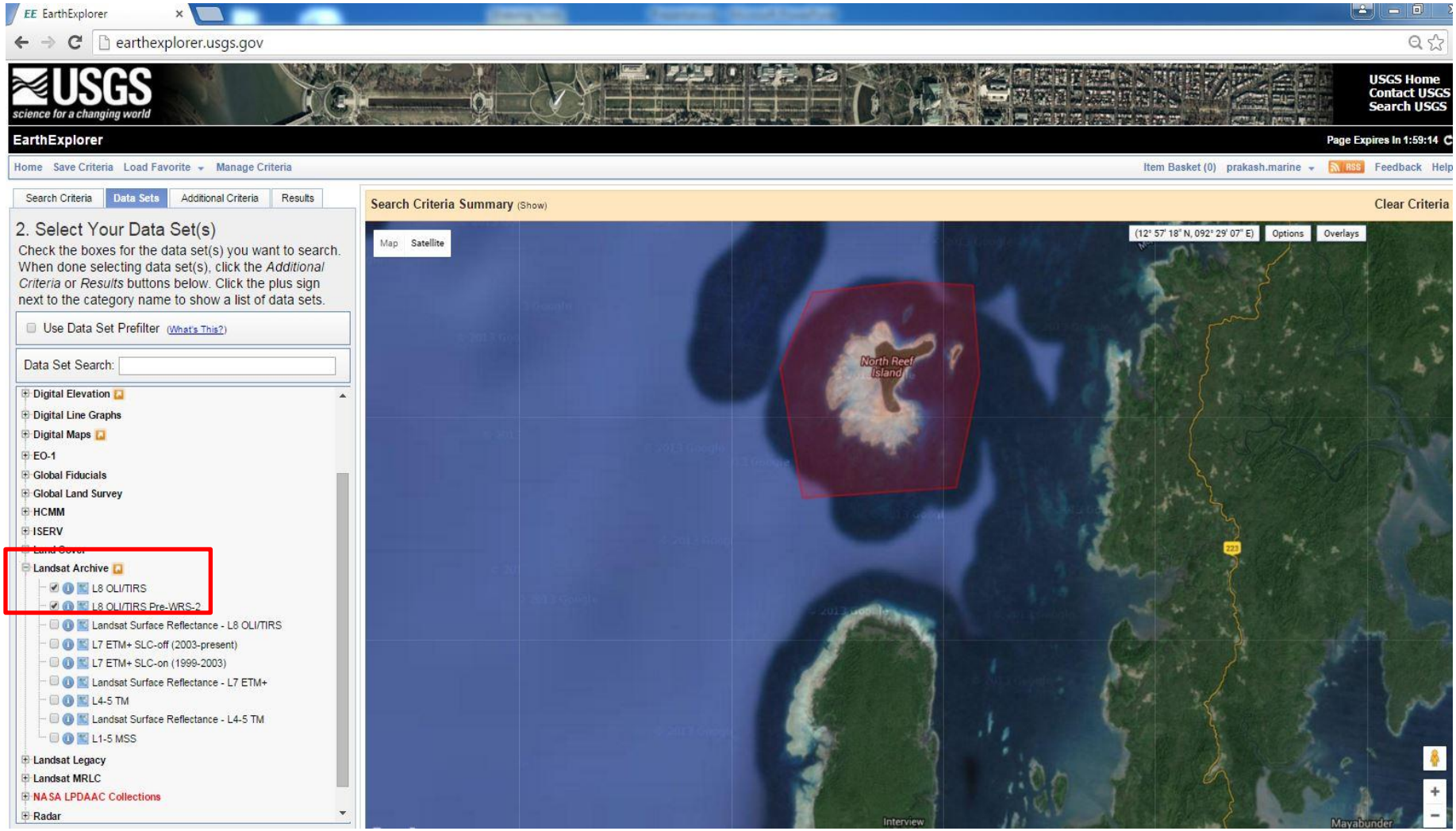
IV. Layout view and generation different maps (Base map, Rainfall, maximum Tsunami wave height and topography maps)

ArcGIS view port

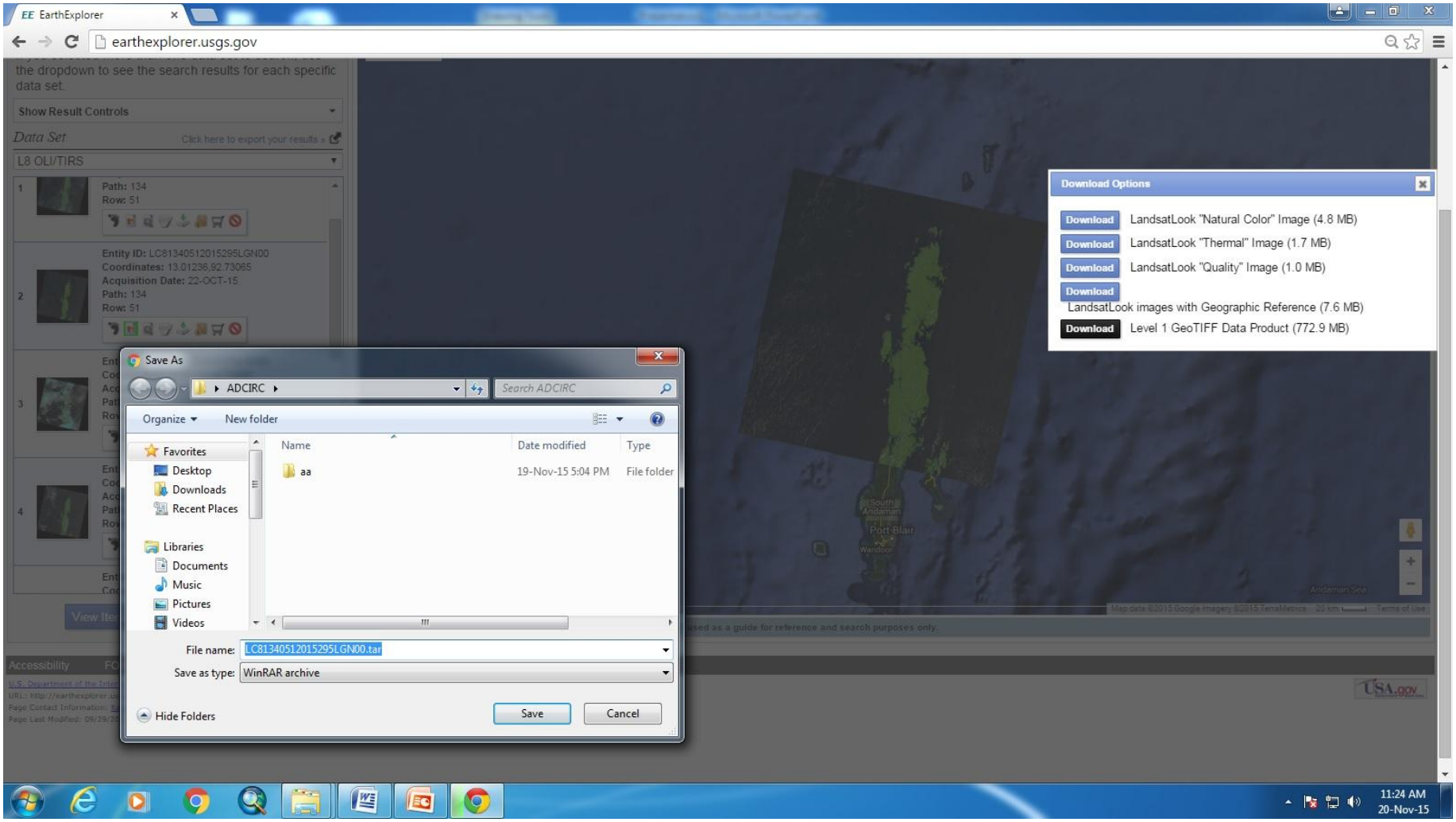



File
Edit
View
Bookmarks
Insert
Selection
Geoprocessing
Customize
Windows
Help
100%
XY
ArcGIS tools
Go to full map extent
Go to previous extent
Go to next extent
Select features (by hand)
Clear selected features
Add data
Select elements (to move or edit)
Identify feature

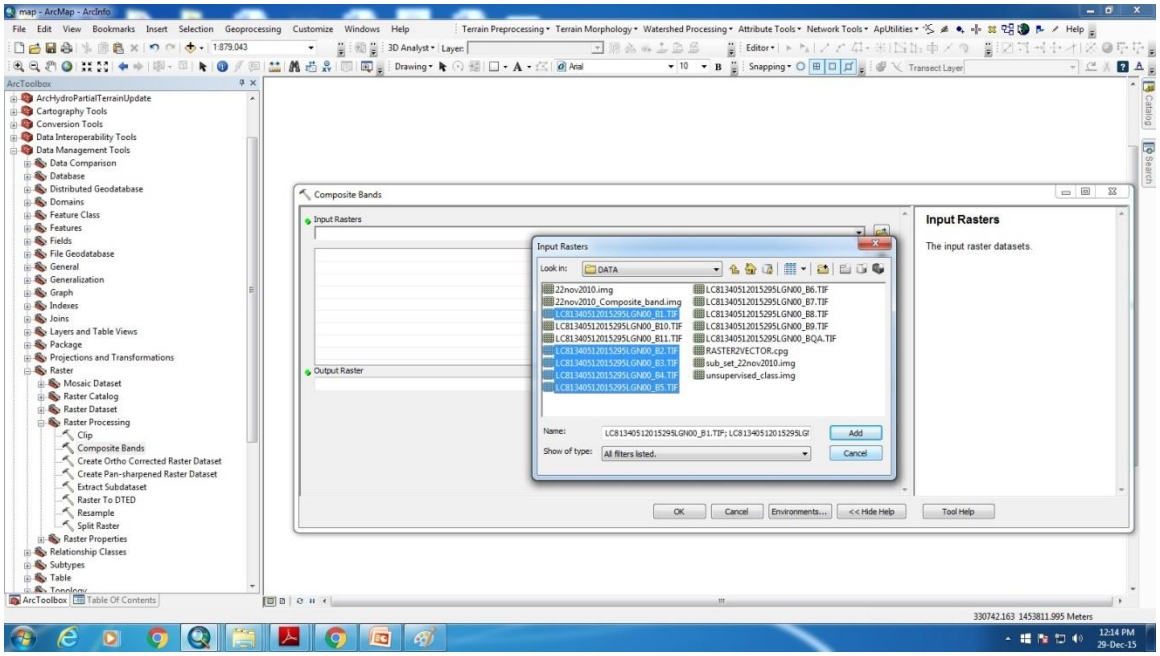
Download Landsat data from http://earthexplorer.usgs.gov/



Download Landsat data

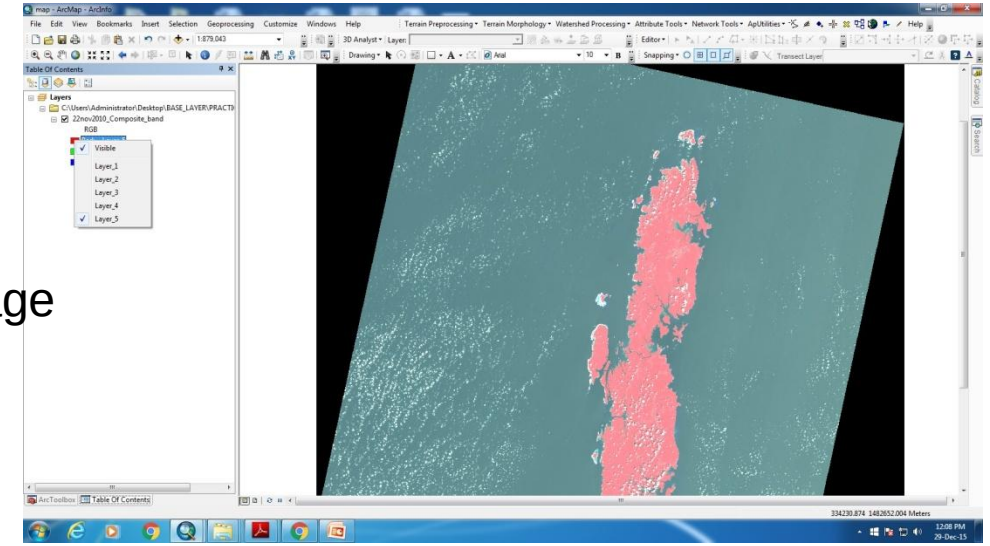


Band Composite

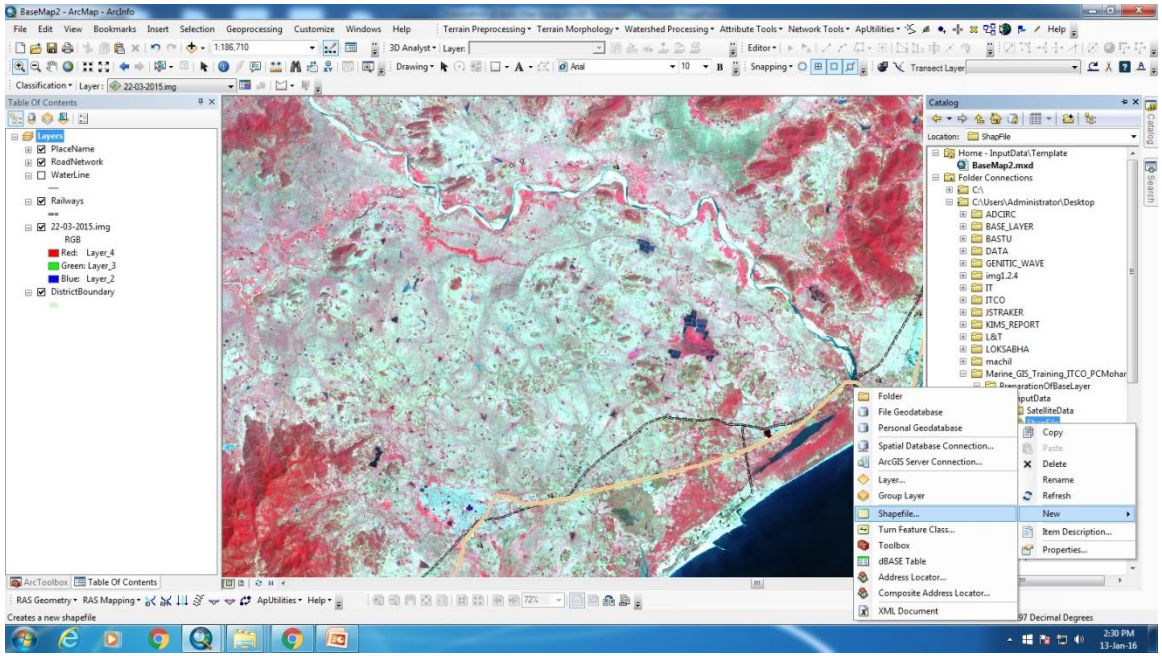


Go to Data Management Tool→ Raster → Raster Processing → Composite Bands then select band1,2,3,4 and 5

FCC Landsat Image



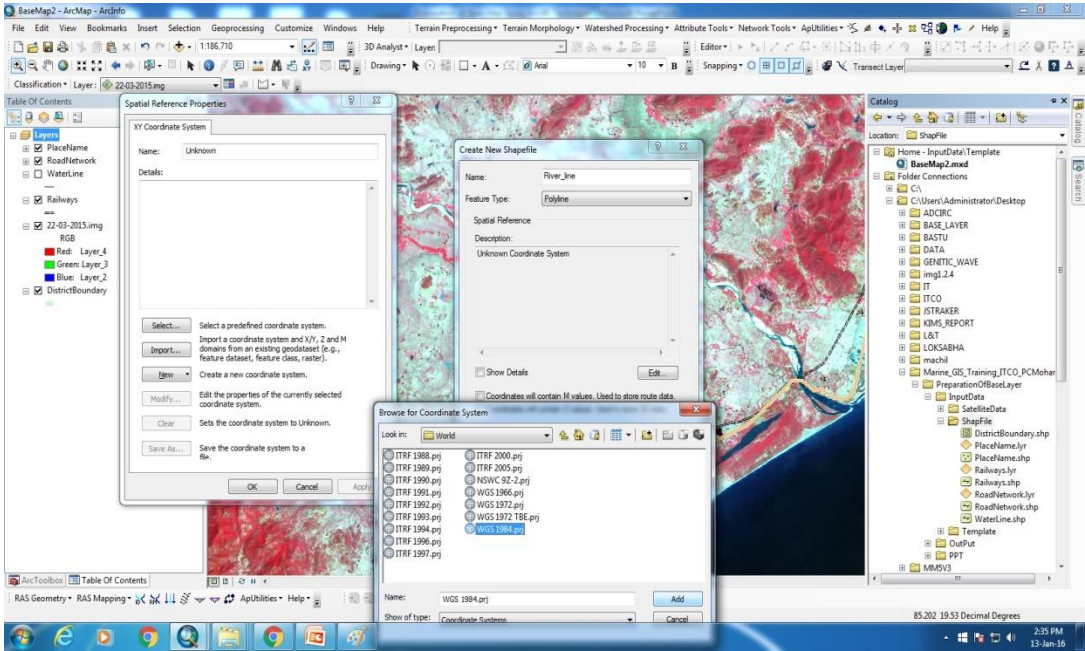
Create New feature shapfile

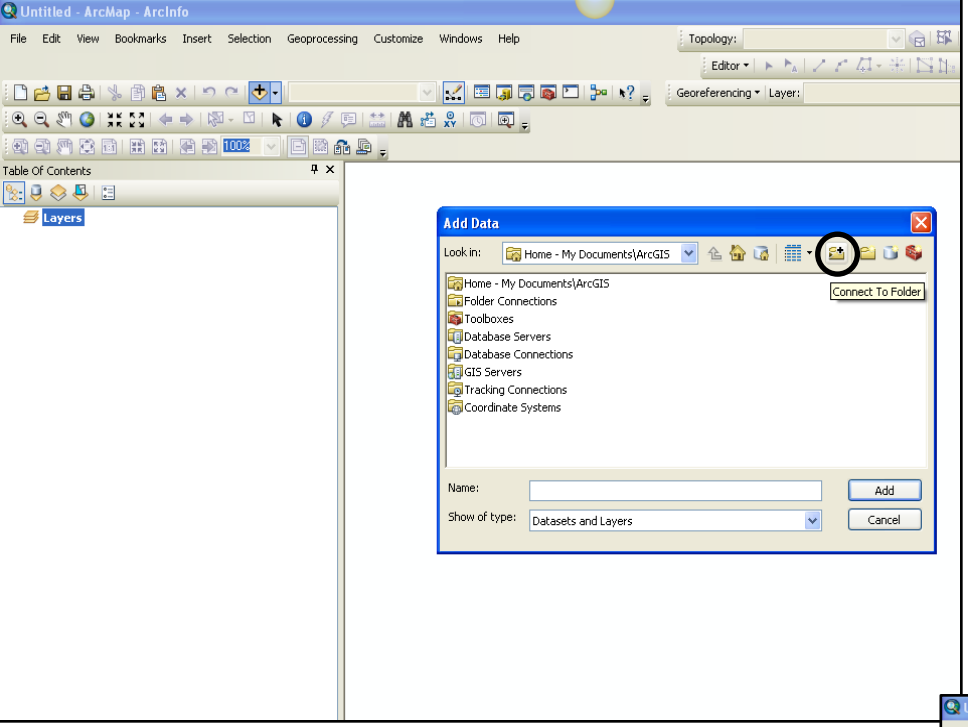


Go to Catalog →Navigate to Working folder → Right click on folder and Create Shapfile

- Create New shapfile window will popup.
- Insert File Name and feature type as polyline.
- Go to edit button, then select predefined coordinate system and assign to geographic wgs84 projection.

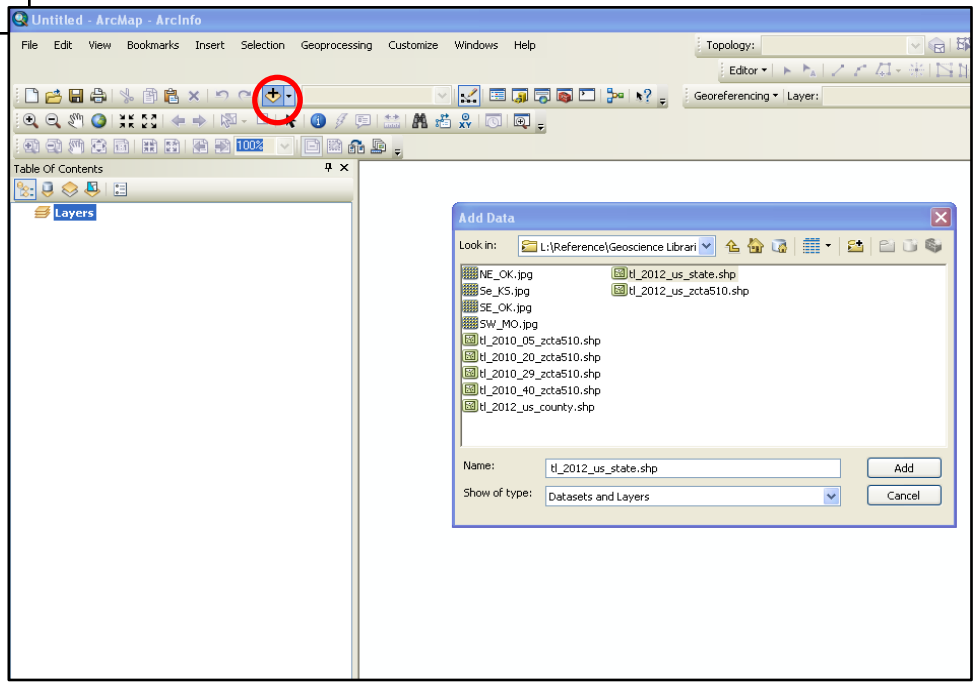
Assign projection to shapefile



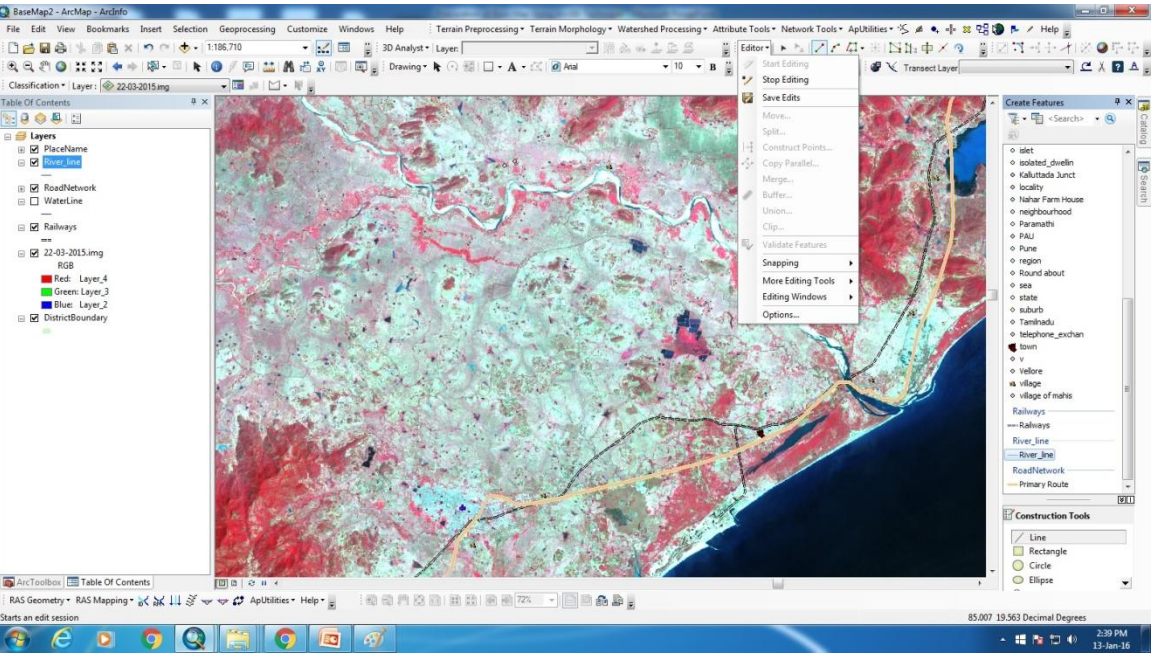


First you have to “connect” to the folder you want to use in order for it to appear as a choice in your drop-down list, using the “Connect to Folder” button.

Add all blank feature class (line, point and polygon) files and satellite data to generate base layer database using add data button.

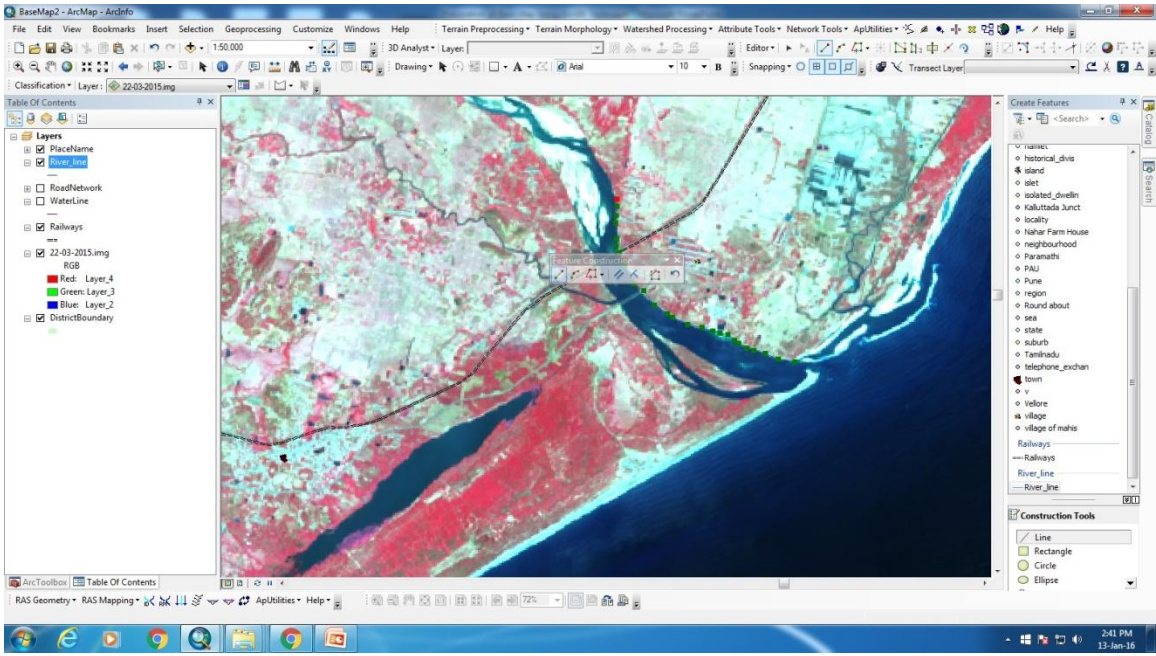


Start Editing

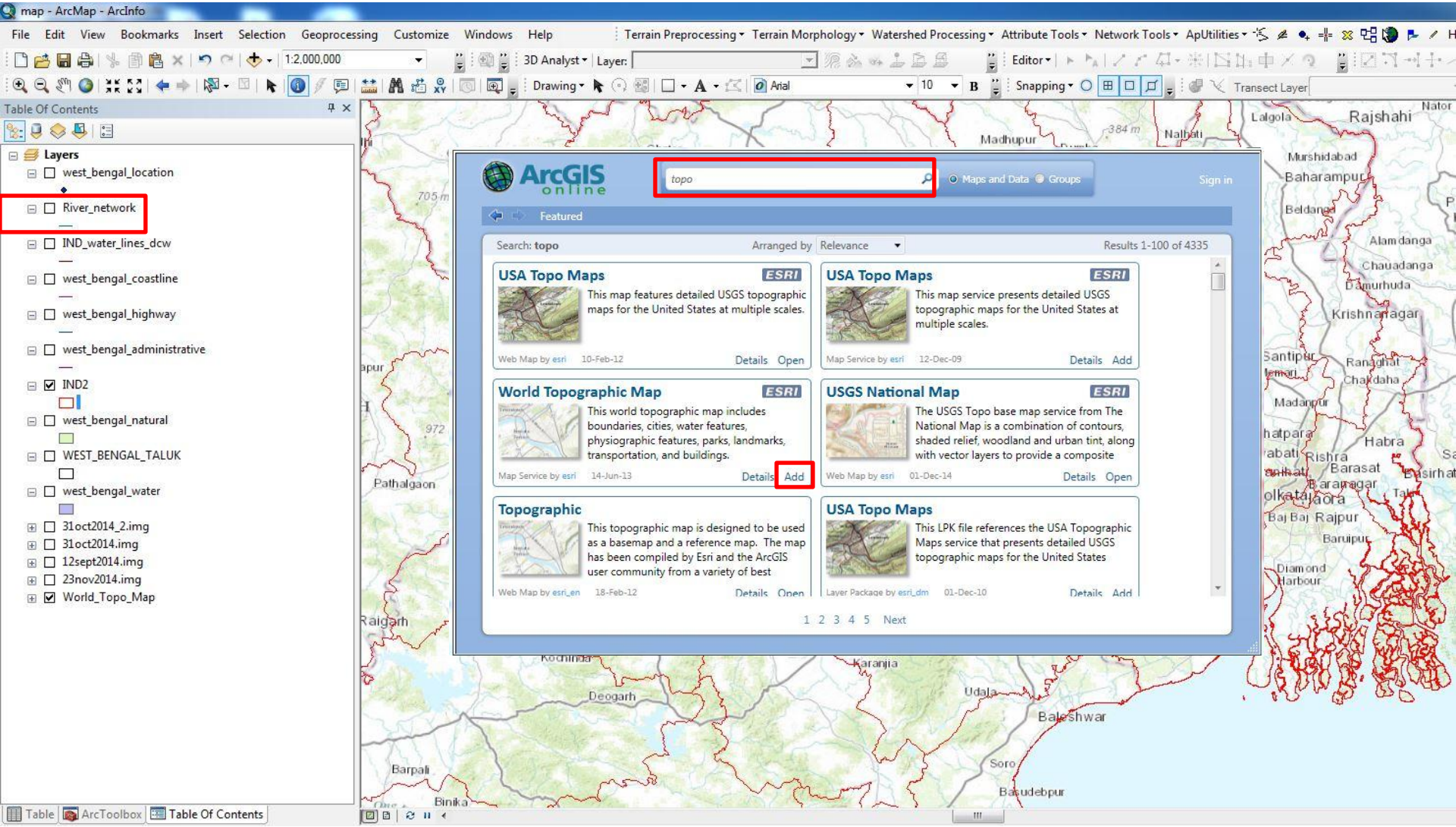


Feature Digitization

Go to customize and navigate to toolbars → Check Editor button. Click on Editor button → Start Editing and fix the map scale for digitization of feature class

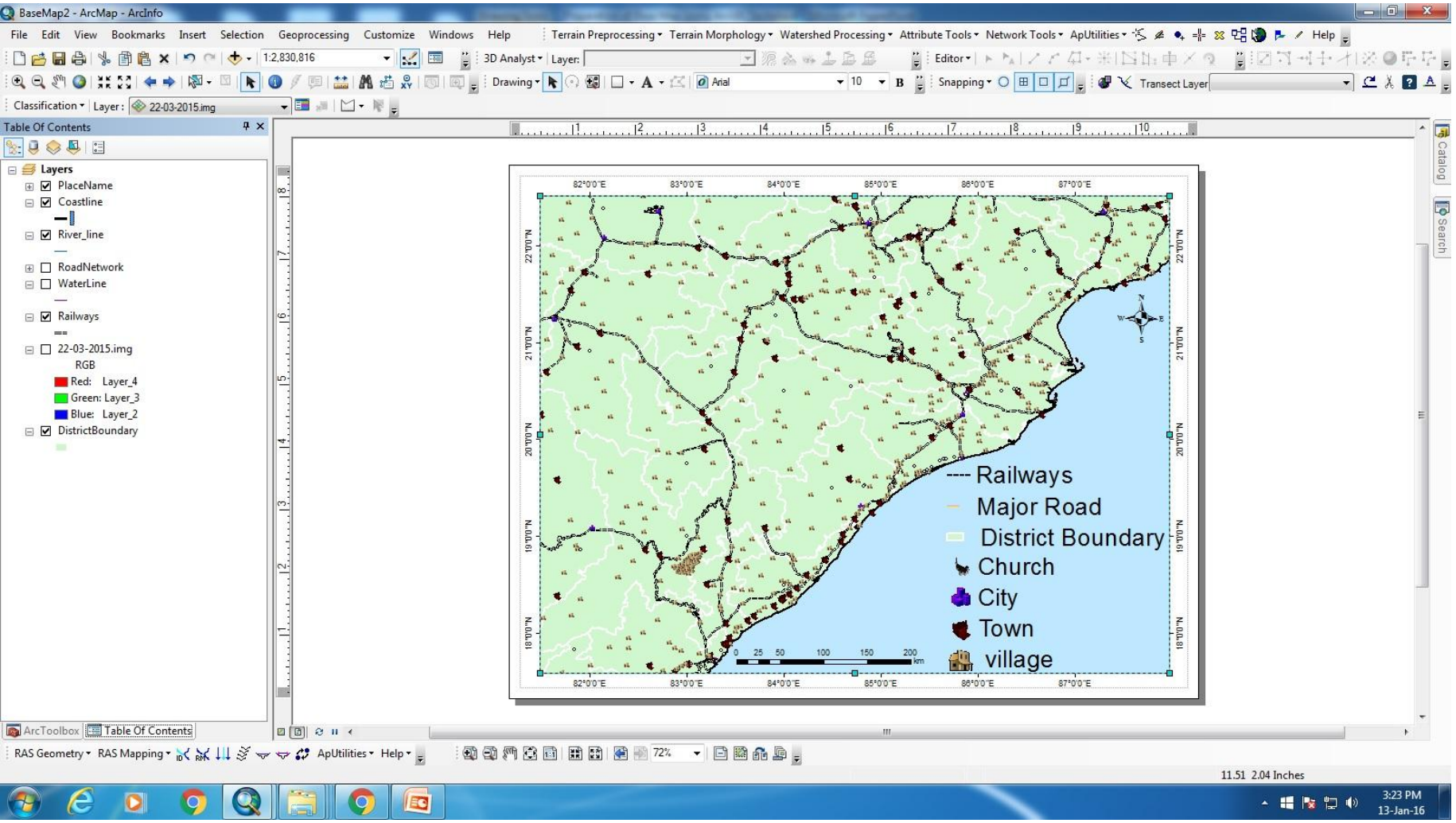


Add online base layer Data



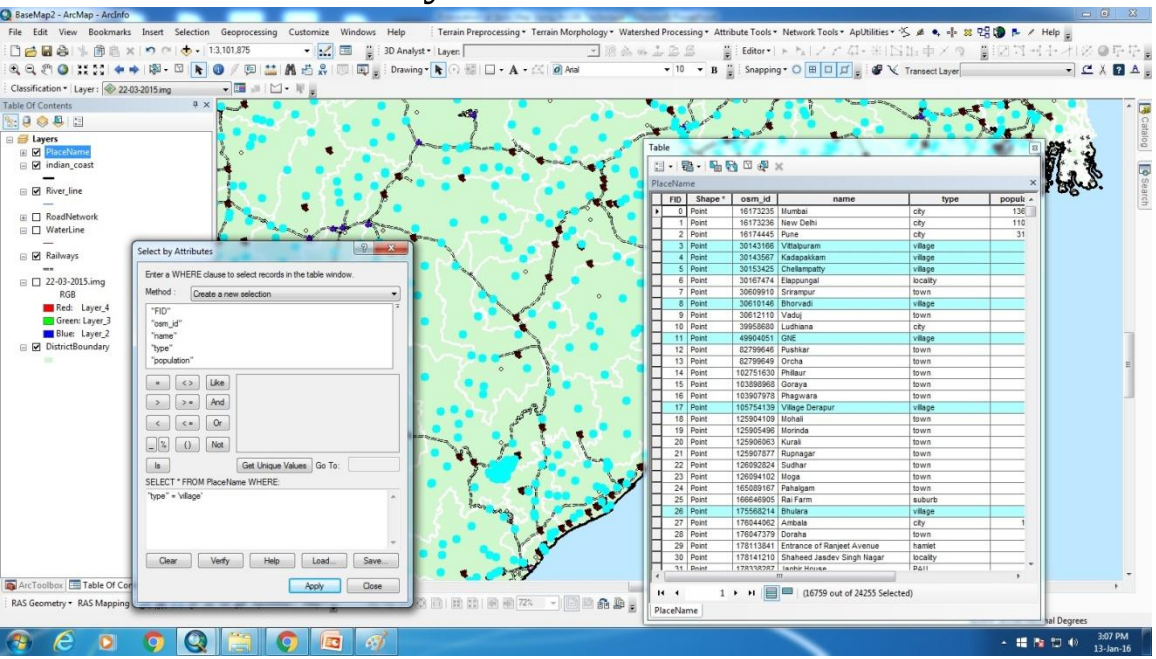
Go to file → Click on ArcGIS Online and add world Topographic map

Add Base Data



Input Base Layer: RoadNetwork, Railways, PlaceName, WaterLine, Shoreline and DistrictBoundary

Select by Attribute



Selection criteria based on Attribute:

Right click on data layer → open attribute table→ Table option and click select by attribute.

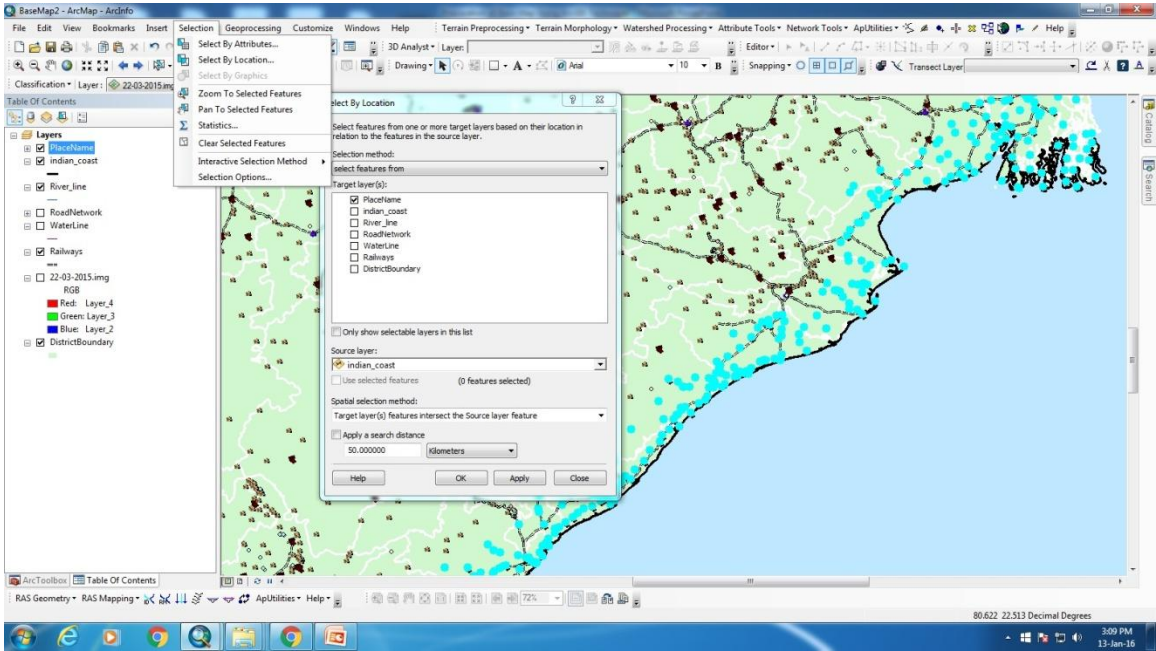
Define the selection methods and based on unique value Build a query for geo-spatial analysis.

Select by Location

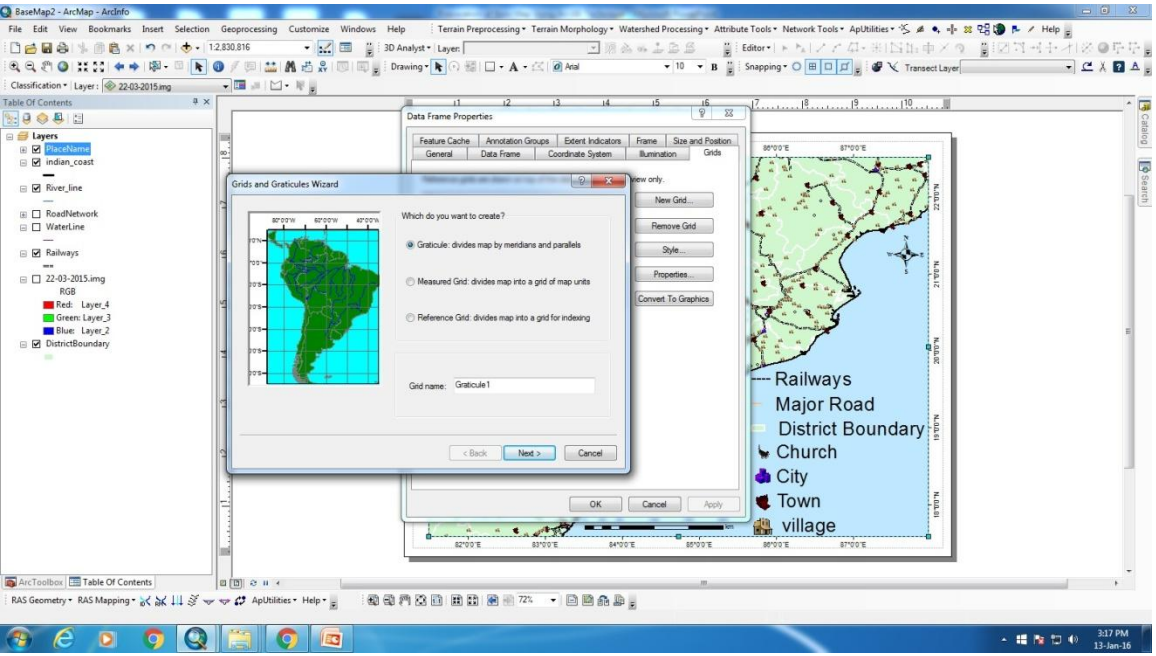
Selection criteria based on Location:

Go to selection → click on select by location then check target feature and source layer.

Define the spatial selection method as per requirements

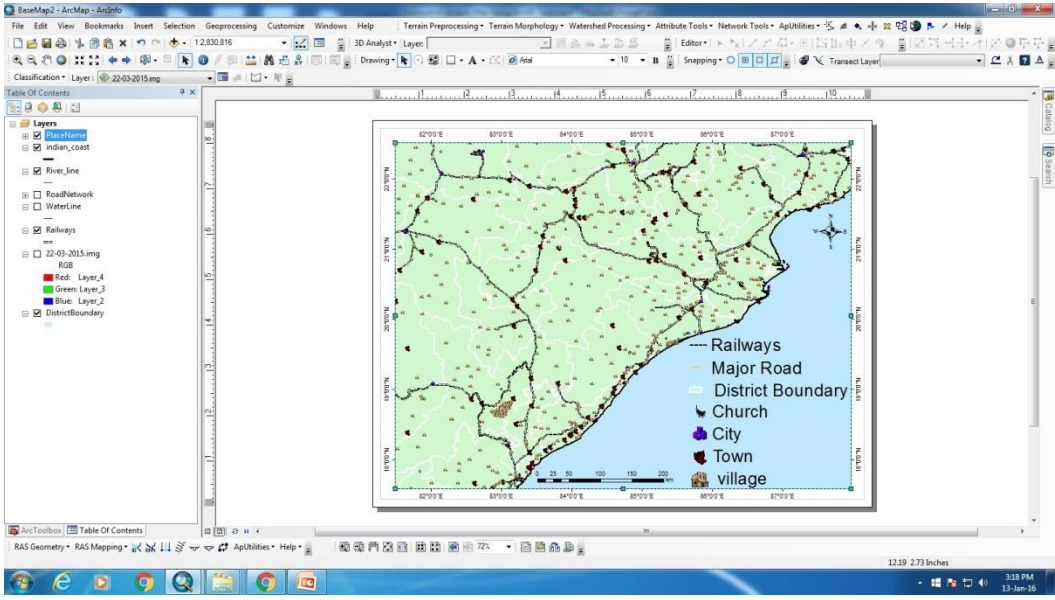


Go to C:\Users\Administrator\Desktop\Marine_GIS_Training_ITCO_PCMohanty\PreparationOfBaseLayer\InputData\Template
Open BaseMap2.mxd in ArcGIS

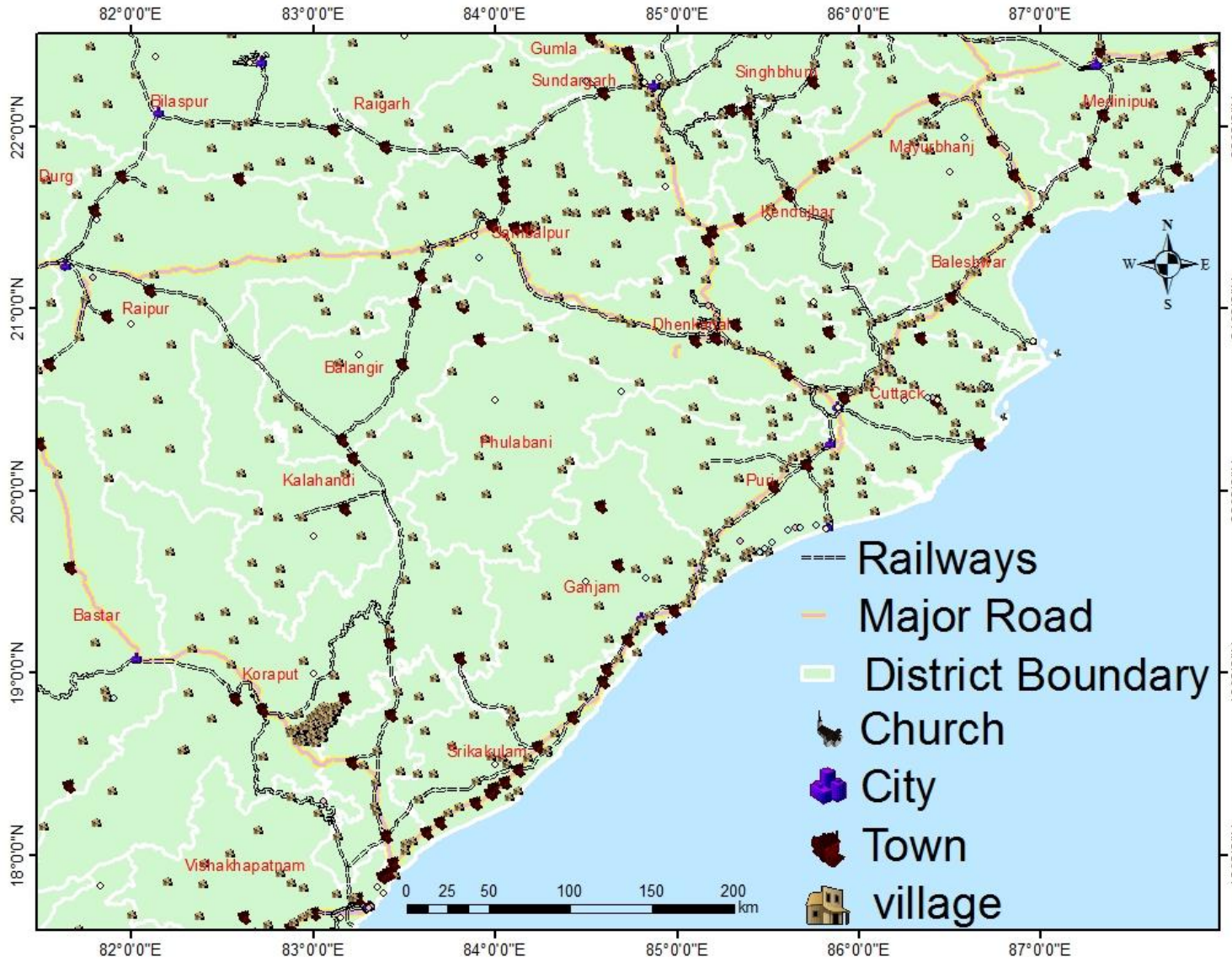


Generation of Base Map:

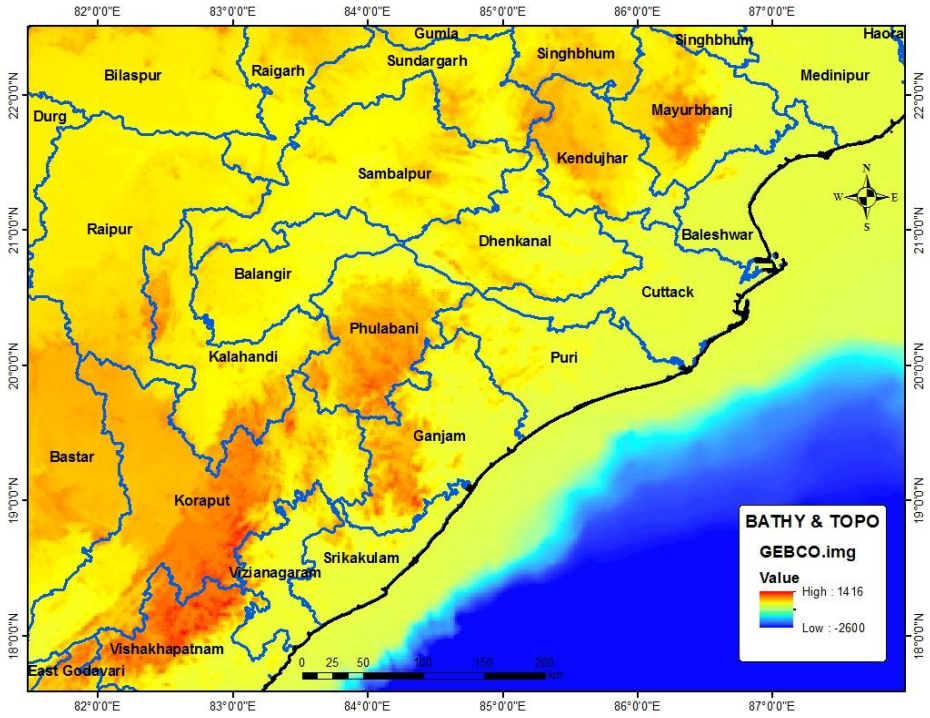
- Click on Layout View → Right click on layout window→ go to properties and click on grid.
- Insert → click on legend, North Arrow and scale bar and other marginal details.
- File → export map to generate final Base layer map



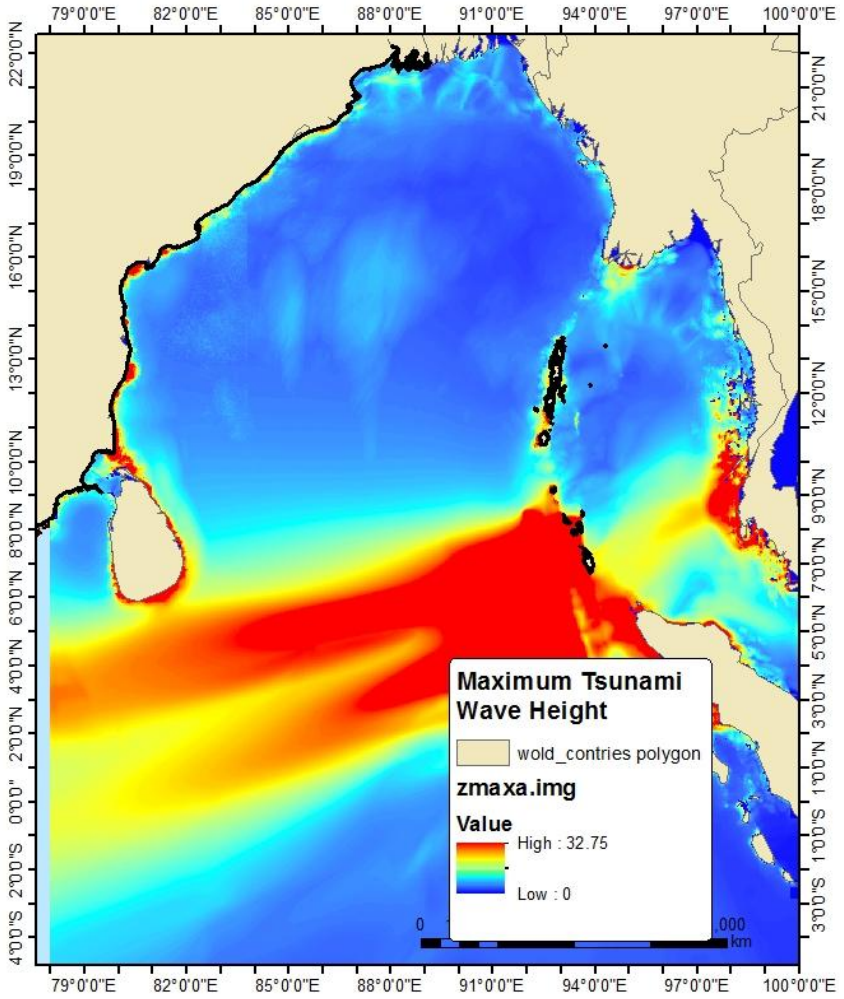
Final Base Map



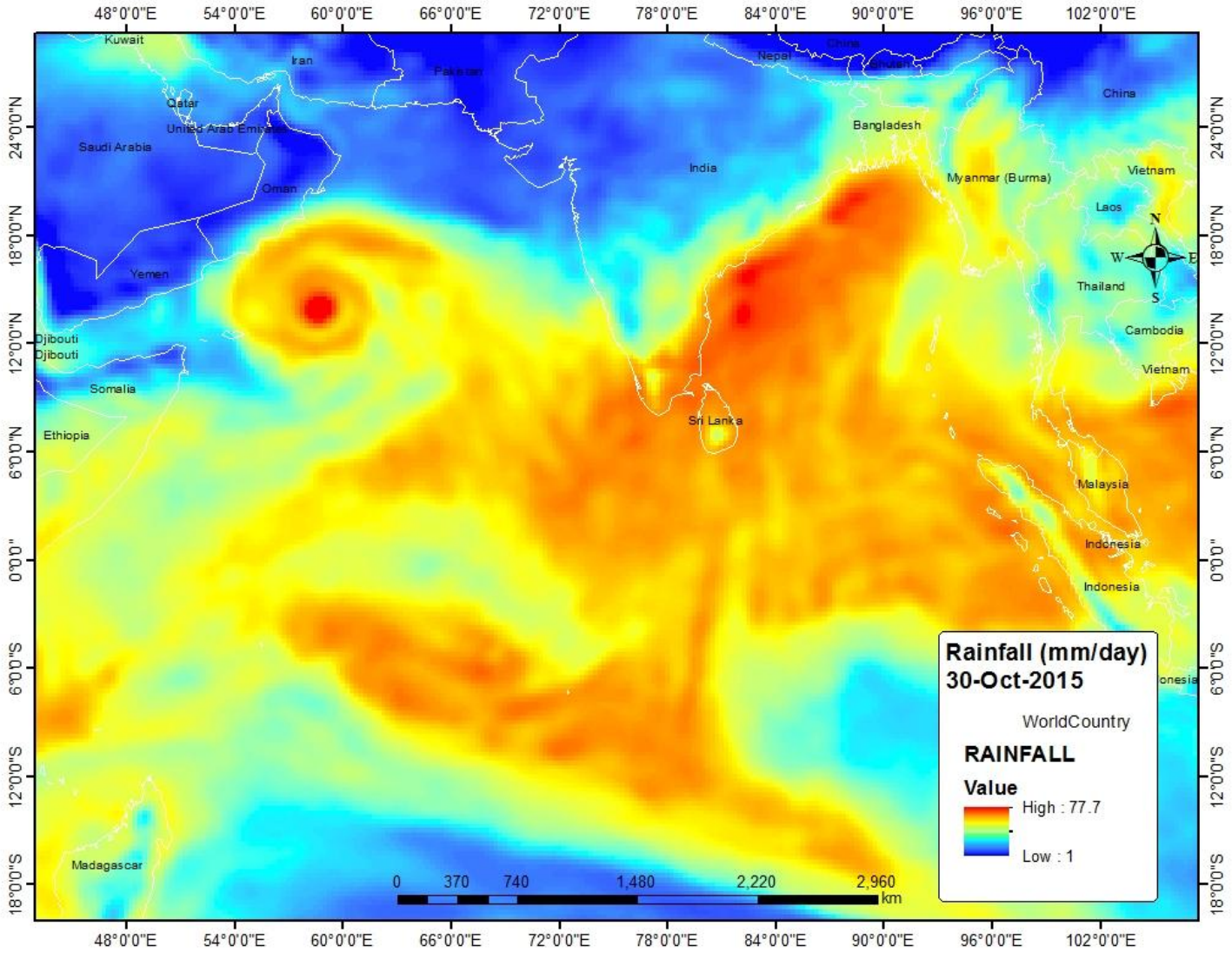
Topography & Bathymetry Map

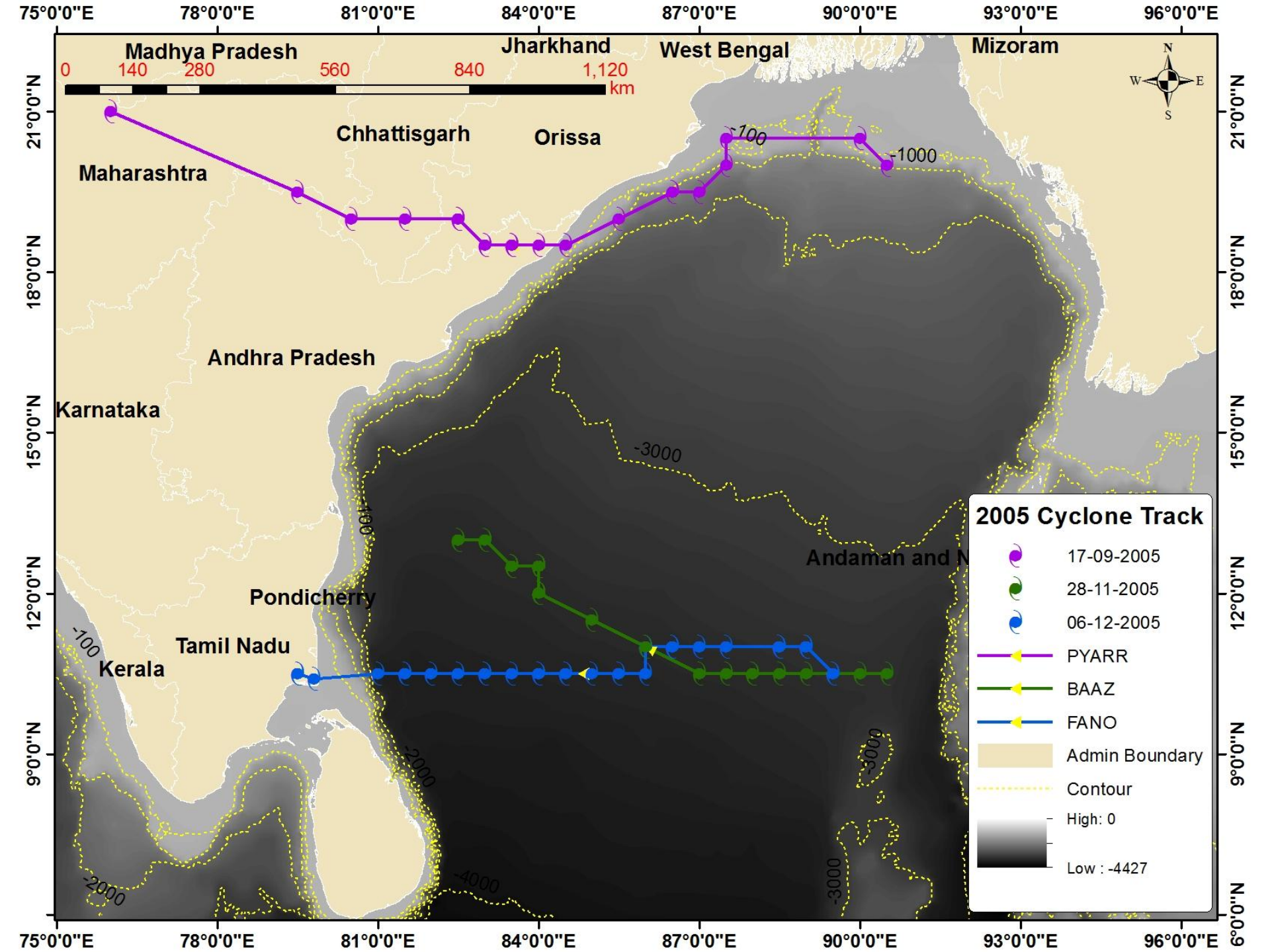


Maximum Tsunami Wave height



Rainfall on 30th Oct 2015




75°0'0"E
78°0'0"E
81°0'0"E
84°0'0"E
87°0'0"E
90°0'0"E
93°0'0"E
96°0'0"E
21°0'0"N
18°0'0"N
15°0'0"N
12°0'0"N
9°0'0"N
6°0'0"N
Madhya Pradesh
Jharkhand
West Bengal
Mizoram
0 140 280 560 840 1,120
km
N
W
E
S
Chhattisgarh
Orissa
Maharashtra
Andhra Pradesh
Karnataka
Pondicherry
Tamil Nadu
Kerala
Andaman and N
-100
-1000
-3000
-2000
-4000
2005 Cyclone Track
17-09-2005
28-11-2005
06-12-2005
PYARR
BAAZ
FANO
Admin Boundary
Contour
High: 0
Low : -4427

Thank You