

Hands On

Data Editing and Analysis

**Training Course on
'Marine GIS for Operational Oceanography'**

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Overview

Identifying amenities and buildings around our places of interest

- Clip
- Merge
- Buffer
- Location query
- Point density map
- Tools required
 - ArcMap (Spatial analyst)

Data credits:

Metro extracts - <http://metro.teczno.com/#chennai>

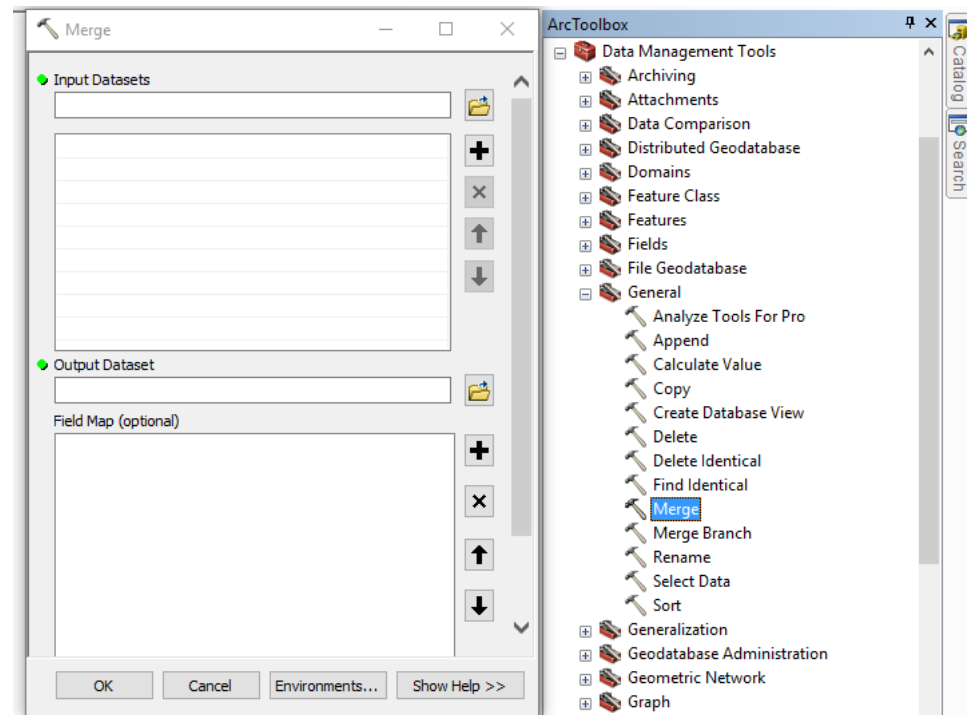
Task 1 – Merging

Goal: To merge multiple shapefiles into a single shapefile

- Open new ArcMap document and navigate to the data folder
- Add hospitals, Fire_stations, Fuel_stations, Schools and townhall to the table of contents to merge these layers

ArcTool Box → Data Management Tools → General → Merge

- Input Datasets = hospitals, Fire_stations, Fuel_stations, Schools and townhall
- Specify output file: browse to your network drive and save the new shape file as “amenities_total.shp”



Task 2 – Clipping

Goal: To use “admin.shp” file to cut out a subset of the road.shp, and create a new shapefile

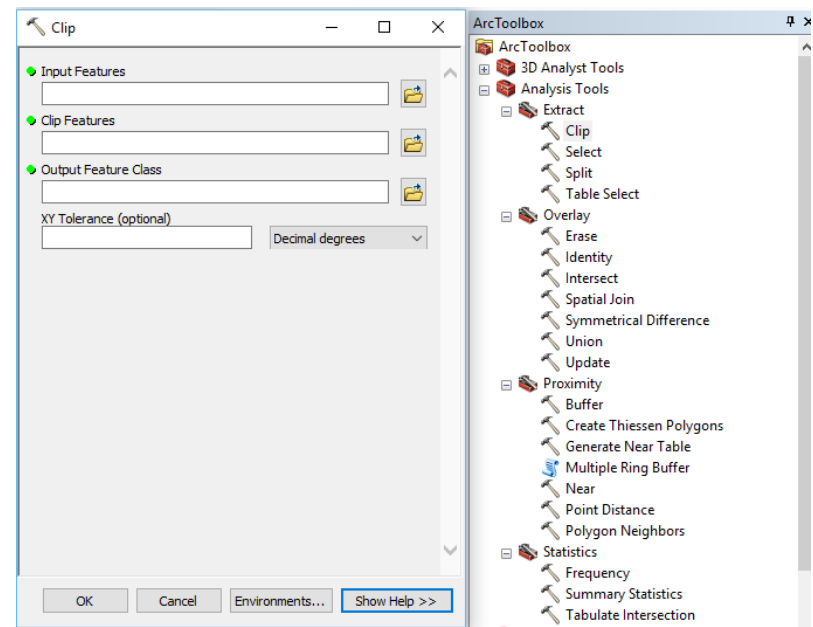
- add road.shp and admin.shp to the TOC; Using the symbol / properties editor, make the clipbox.shp a clear and open polygon with no fill color.
- Use the “admin.shp” to create a subset of amenities.shp and save them to a new shapefile

ArcTool Box → Analysis Tools → Extract → Clip

Input Features= amenities_total.shp

Clip Feature = admin.shp

Output Feature class = browse to your network drive and save the new shape file as amenities.shp“



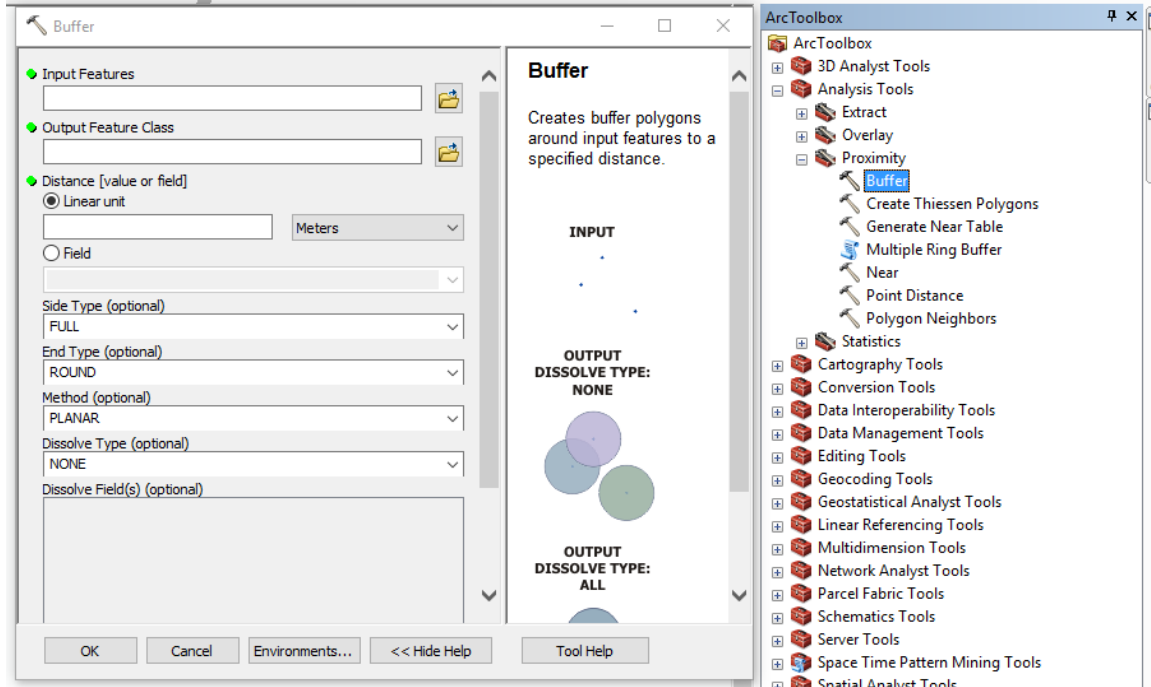
Now perform the same above task for buildings_total.shp and name it as and buildings.shp respectively

Task 3 – Buffer

Goal 1 : To generate a two kilometre buffer for “poi.shp” and locate the buildings and amenities in that region

Add “poi.shp” to the view and goto **ArcTool Box → Analysis Tools → Proximity → Buffer**

- select input features = poi.shp
- Output Feature class = buffer.shp
- Linear Unit = Specify distance (2000)



Goal 2 : To select features in the amenities.shp and buildings.shp which are within the two kilometres of poi.shp and export them as new shapefiles

Explore different spatial selections methods

The screenshot displays the ArcMap software interface. On the left, the 'Table of Contents' panel shows a list of layers: poi, amenities, buildings, and admin. The main map area shows a geographical region with several red stars representing 'poi' features and numerous cyan circles representing selected features from the 'amenities' and 'buildings' layers. On the right, the 'Select By Location' dialog box is open. The 'Selection method' dropdown is set to 'select features from'. The 'Target layer(s)' section has checkboxes for 'poi', 'amenities', 'buildings', and 'admin', with 'amenities' and 'buildings' checked. The 'Source layer' dropdown is set to 'poi'. The 'Spatial selection method for target layer feature(s)' is set to 'are within a distance of the source layer feature'. The 'Apply a search distance' checkbox is checked, with a search distance of 5000.000000 Meters. The 'Apply' button is highlighted in blue.

Untitled - ArcMap

File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help

1:265,347

Table Of Contents

- Layers
 - poi
 - amenities
 - buildings
 - admin

Select By Location

Select features from one or more target layers based on their location in relation to the features in the source layer.

Selection method:
select features from

Target layer(s):

- poi
- amenities
- buildings
- admin

Only show selectable layers in this list

Source layer:
poi

Use selected features (0 features selected)

Spatial selection method for target layer feature(s):
are within a distance of the source layer feature

Apply a search distance
5000.000000 Meters

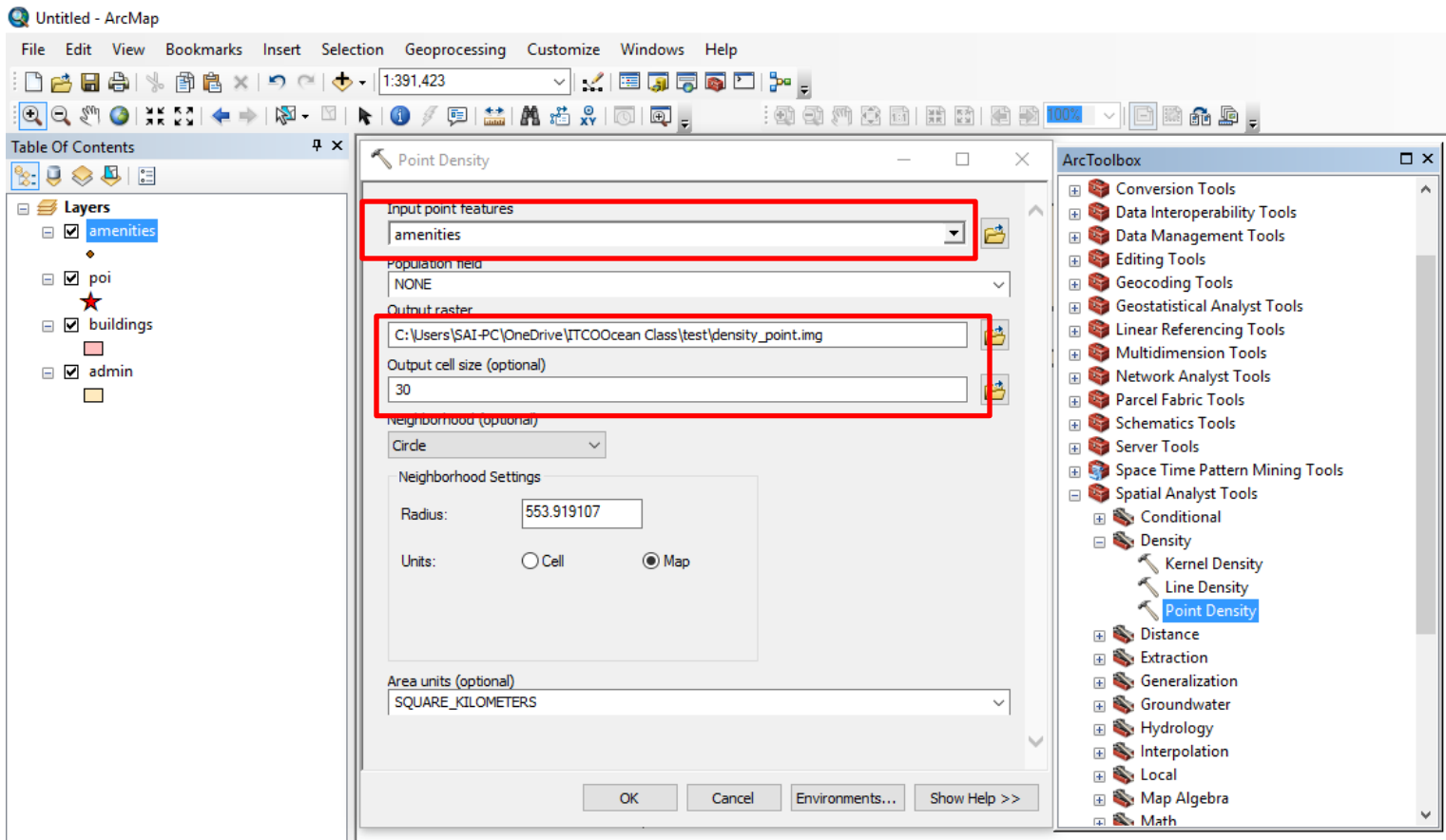
[About select by location](#) OK Apply Close

Task 3 – Creation of point density map (kernel density map)

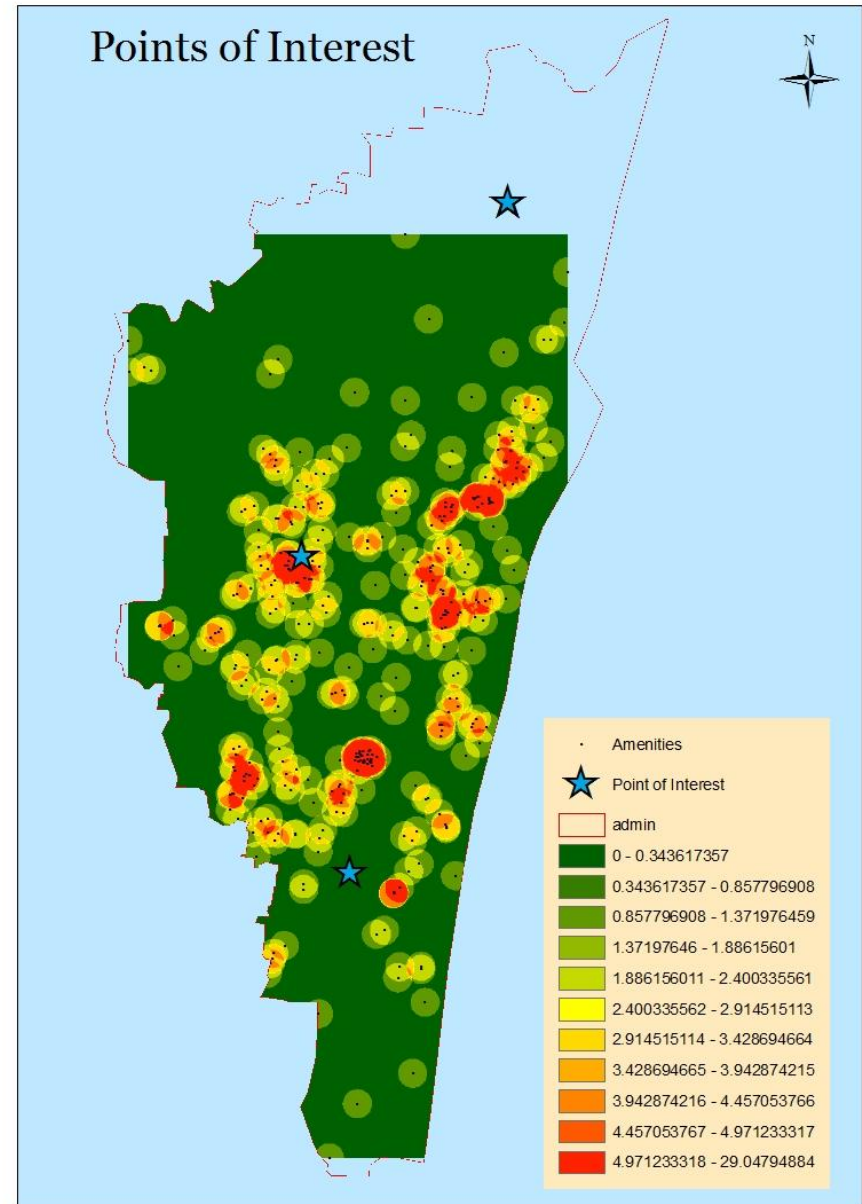
Arc toolbox → Spatial Analyst Tools → Density → Point Density

Input Point Feature = amenities.shp

Output folder = choose the location and name with an extension (.img or .tif)



Change the symbology and insert legend, north arrow and export the map



Other Useful resources:

On spatial analyst:

<http://desktop.arcgis.com/en/desktop/latest/guide-books/extensions/spatial-analyst/tutorial/about-the-spatial-analyst-tutorial.htm>

<http://help.arcgis.com/en/arcgisdesktop/10.0/pdf/spatial-analyst-tutorial.pdf>

<http://pro.arcgis.com/en/pro-app/tool-reference/spatial-analyst/an-overview-of-the-spatial-analyst-toolbox.htm>

On QGIS:

<http://qgis.com/>

<http://www.qgistutorials.com/en/>

On GIS:

<http://www.gisblog.com/>

<http://hcl.harvard.edu/libraries/maps/gis/tutorials.html>

<http://gis.stackexchange.com/>