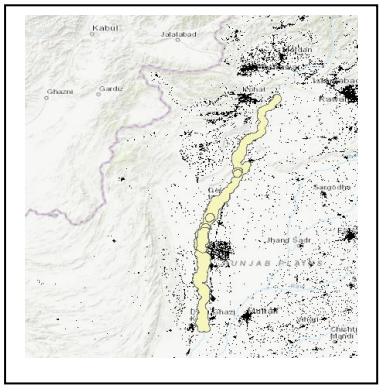
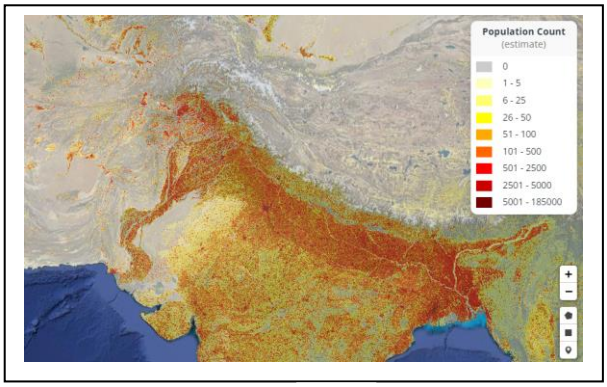
## Disaster Risk Management with Geoanalytics

This study aims to explore a workflow for population estimation after delineating the flood extent using HECRAS hydrological model. Following steps were carried out for estimation of population under flood hazard within the middle segment of River Indus.

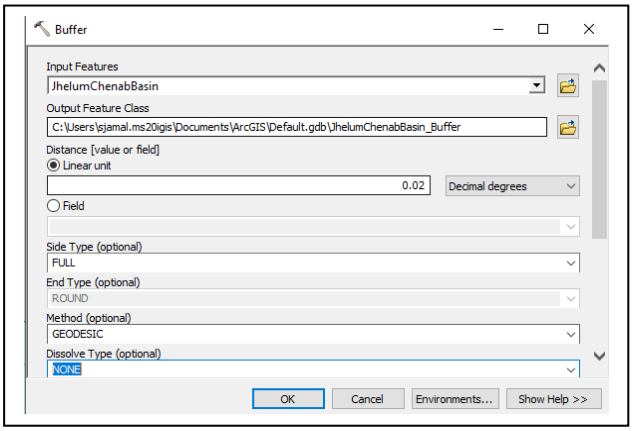
- Downloaded Land Scan Global Data for 2010 and 2020 accessed using the link: https://landscan.ornl.gov/
- Extracted the shapefile for the Indus River Reach in the unsteady flow condition. The shapefile can be visualized over a basemap in following figure.



(a)




(b)




(c)

- Created a 2.2 kilometre square buffer around the river. Then created a 5 $km^2$ around the river boundary. Clipped the population raster's for the buffer zone to find the population residing within the hazardous area. Using the population data for land scan for 2020,

Population within the buffer zone = **48896**

(d)

The following estimation indicates there is still a population of nearly 48896 within a specific 271 kilometre river reach. The density of population can be visualized in shades of grey in the figure d. These people tend to posses high vulnerability of losses due to floods. This study was carried out using Landscan Global data that has a spatial resolution of 1 kilometre. This itself is a limitation as higher resolution can lead to more appropriate results. With increasing amount of discharges within the rivers in the region, a further detailed analysis using state of the art procedures is necessary.