Title: Flood Risk Assessment in Chennai: Integrating DEM, LULC, and Sentinel-1 SAR Data for 2023 Flood Extent Analysis

Objective: This project aims to analyze the flood-prone areas of Chennai by integrating Digital Elevation Models (DEM) to identify low-lying regions, Land Use Land Cover (LULC) data for understanding landscape changes, and Sentinel-1 SAR data to map the flood extent during the 2023 floods.

Challenges Faced in the Project

Navigating through various data sources, websites, and determining where and how to download the necessary datasets has been a significant challenge. I successfully obtained DEM data from USGS Earth and have processed it for smoother elevation analysis. I am currently classifying low-lying areas in Chennai based on the city's average elevation to assess potential flood-prone zones.

While attempting to download the GCC and Non-GCC boundary maps, I ended up with a KML file of only the GCC limits. I converted it into a Feature Class and am now working on converting it to a shapefile. However, I am still figuring out how to clip the Chennai district boundaries from a larger state-level boundary map, as all the data I have is in KML format. Additionally, there is a misalignment between the district boundary and GCC boundary files, which I need to resolve, or I may pivot the project's focus accordingly.

I have downloaded the Land Use Land Cover (LULC) dataset for comparative analysis and statistical purposes but am still exploring how to overlay an older map of Chennai to better highlight the rise in urbanization. I am also in the process of understanding how to download, preprocess, and map the flood extent using Sentinel-1 data and hope to accomplish this soon.

While I know the goal is to perform a meaningful analysis of the impact of urbanization and inadequate urban planning on flood risks, my limited experience has made this a learning process. I am confident that with continued research, I will refine the project's focus. As a result, the project title and objectives may evolve, but I am determined to stay on track and will reach out for help if I encounter significant roadblocks.