

**SMT201 - Geographical Information Systems for Urban Planning**

**AY 2023/2024 Semester 1**

**Project Proposal**

**Post-Flood Accessibility Analysis**

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# MOTIVATION

Anthropogenic climate change has increased the possibility of heavy rainfall in north-eastern Libya by 50 times. Along with poorly-built dams, Libya is particularly vulnerable to floods. This is further exacerbated by the lack of capacity to respond adequately to disasters, considering the poor socio-economic situation in Libya where the needs of citizens are largely not met. Therefore, we hope to **use GIS to assist in flood response efforts in Libya to assist in humanitarian efforts and improve the well-being of vulnerable communities in Derna, Libya.**

# PROJECT OBJECTIVES

In this project, we will focus on fulfilling the following objectives:

1. Using vector and raster data to understand the flood extent in Libya with respect to emergency facilities and affected sites, creating a map to set the context.
2. Performing GIS Analysis to understand the current accessibility of evacuation centres through mapping the:
   1. The distribution of accessibility to healthcare facilities and evacuation centres (schools) in the form of a choropleth map
   2. The service areas of healthcare facilities and evacuation centres in the form of a buffer map
3. Suggesting other flood management methods that the Derna government could perhaps adopt, as part of our analysis.

# DATA

Projected CRS: EPSG:3177 - LGD2006/ Libya TM

For base map:

* <https://elearn.smu.edu.sg/d2l/le/content/360586/viewContent/2264710/View> (Derna\_city\_250m\_hexagon)

Raster data:

* <https://data.humdata.org/dataset/worldpop-population-density-for-libya> (Population Density of Libya)

For flood extent:

* <https://data.humdata.org/dataset/flood-impact-assessment-in-derna-city-centre-east-province-libya>

With respect to facilities:

* Current roads (<https://data.humdata.org/dataset/lby_roads_streets>)
* Medical Facilities (<https://data.humdata.org/dataset/hotosm_lby_health_facilities>)
* School Facilities (<https://data.humdata.org/dataset/hotosm_lby_education_facilities>)

# SCOPE OF WORK

We utilised Open Source data and digital elevation model (DEM) to understand the flooding situation that happened in Derna. We assembled data mainly provided by Humanitarian Data Exchange and then look into the current accessibility of facilities for victims to safely evacuate to and/or seek medical attention using GIS Analysis toolbox.

# PROJECT TIMELINE

