

Flood Risk Zone Map of Karaikal, Puducherry

Introduction

The coastal district of Karaikal is a part of the Puducherry union territory. This region has a land span of about 161 sq. kms and is frequently affected by disasters like cyclones, flood and storm surge. During the 2004 Sumatra Earthquake Tsunami, this region was severely affected. So, disaster based mapping is essential to prevent the loss of life and properties. In addition, maps of infrastructure, land use pattern and flood zones are not available for the Karaikal region. So, to address this gap, an attempt is made to map the locations where flood risk is high.

Methodology

1. The shape file for the study area was prepared in BHUVAN website, with the help of polygon tool.
2. From the BHUVAN open data archive, CartoDEM data was collected.
3. All this data were imported into the QGIS with the help of vector and raster tool.
4. The raster data was merged and clipped with the shape file.
5. Using the raster calculate tool, the flood risk zone was analyzed for water levels of 1m and 2m.

Results and Discussion

Individual maps related to elevation, flood risk zones for a water level of 1m and 2m are given in the attachment. The discussions related to the maps are given below.

Digital Elevation Map

- The study area is located near the coast so the elevation difference is very less (-5m to 13m).
- In the map red and blue color represents the lower and higher elevation regions, respectively.
- The patch of higher elevation located near to the coast region represents the settlement.
- The region is predominantly covered by agricultural lands.

Flood Risk Map

- The dark blue pixels in the map represent the regions wherein the flood risk is high.
- Regions near the coast are more vulnerable to the flood.
- Specifically, the regions near to Arasalar River and Karaikal deep-sea port are the most affected.
- These regions can also be affected by storm surge.

Possible Solution

- Construction and proper maintenance of drainage system is essential.
- Land use pattern in the high risk zone has to be monitored regularly.