

**Flood vulnerable zones mapping using geospatial techniques:
Case study of Osogbo Metropolis, Nigeria**

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Abstract

Several Areas within Osogbo, the capital city of Osun State in Nigeria, have suffered severely from incessant flood occurrences, which necessitated flood vulnerability mapping. This research aimed to map out flood vulnerable areas within Osogbo Metropolis using geospatial techniques to facilitate fitting planning and proffer lasting solutions to the frequent damage that humans and their properties suffer from flooding within the city. Satellite data of Osogbo Metropolis were processed and analyzed in a GIS environment for flood vulnerable zones mapping. Eight (8) flood causative factors were combined in this study using Analytic Hierarchy Process (AHP). The factors are Stream Proximity (SP), Drainage Density (DD), Elevation, Slope, Stream Power Index (SPI), Topographic Wetness Index (TWI), Normalized Difference Vegetation Index (NDVI), and Land Use/Land Cover (LULC). Results revealed that approximately 24% of the total area of study falls within the high flood vulnerable zones, while 21% and 55% fall within the moderate and low flood vulnerable zones, respectively. A close agreement between the flood vulnerable zones and previous flood incidences across the study area established the accuracy of the methodology. This study's established flood vulnerable zones will guide the respective policymakers during discussions on preventing flood disasters within the Osogbo metropolis.

Keywords

Osogbo, Flooding, Vulnerability, Landsat, DEM, GIS-RS