Flood Vulnerability Mapping using Satellite Data. A Case Study of Mubi Town-Nigeria

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Key words: Remote sensing; Risk management; Keywords: Flood, Satellite data, Elevation model, Built-up area

SUMMARY

Flooding is one of the numerous natural disasters that affect lives and properties, it causes loss of lives, properties, and livestocks. Crops were also lost, and the condition of health for most of the population deteriorates due to uncontrolled waterborne diseases. Mubi in Adamawa State, Nigeria, is a town that is vulnerable to flooding due to the nature of its terrain, and the presences of large streams within the city. Different methods and materials were employed in studying flood mitigation mapping by many scholars. However, Mubi city in Adamawa state, Nigeria was not reported. This study uses use the Shuttle Radar Topography Mission (SRTM) and Sentinel 2 image to study and prepares a flood-vulnerable map of the city. Elevation model of the city was created from the SRTM. Built-up areas, road networks and streams were obtained from the Sentinel 2 image. Built-up areas, road networks and streams, were analysed with the elevation model using ArcGIS 10.3. Five classes were created according to the level of flood vulnerability. These were very high, high, moderate, low and very low flood vulnerable areas. Using the technology of Geographic Information System (GIS) and the satellite data, these areas were identified and mapped accordingly. The map obtained will be used as a decision-making process by the town planners and engineers for proper planning on flood mitigation. Hence, contributing towards the realization of Sustainable Development Goal (SDG) Target 13.1.3 Implementation of local disaster risk reduction strategies; and 11.1 Ensuring access for all to adequate, safe, and affordable housing and basic services, and upgrading slums.