

## ABSTRACT

In Assam, India, Urban flooding poses serious dangers to public health, infrastructure, and socioeconomic stability. This study uses cutting-edge geospatial technologies to thoroughly evaluate urban flood risks in Assamese areas that are prone to flooding. Through the combination of multiple Geographic Information System (GIS) maps, such as those for infrastructure, land use, flood hazards, and topography, the study assesses and illustrates flood risk in order to deliver practical insights. A strong spatial database is produced by combining satellite imagery, digital elevation models (DEMs), historical flood data, and through maps of urban infrastructure. In order to identify high-risk locations and evaluate the possible impact on urban infrastructure and people, the process involves overlying these data layers.

This research identifies at-risk vital infrastructure by highlighting areas with the highest flood susceptibility. Urban planners, legislators and emergency workers can obtain crucial information by visualizing flood scenarios and their effects. The results support the development of practical flood mitigation and management plans by suggesting changes to urban planning and infrastructure upgrades that will increase flood obstruction. Through an emphasis on safe zone identification and community-based flood preparedness strategies, this research aims to increase Assam urban resilience to future flood occurrences. The study intends to assist the development of safer, more resilient urban settings in Assam and emphasizes the significance of applying cutting-edge geospatial technologies for urban flood risk assessment.