

Introduction

The identification of flood prone areas is becoming a more challenging and pressing issue around the world. Obviously, both public decision-makers and private leaders are in need of the development of new tools and strategies not only for prompt risk identification but also for mapping over large regions. The flood susceptibility map is constructed based on twelve influencing parameters, i.e., elevation, slope, distance from drainage network, geomorphology, drainage density, flow accumulation, rainfall, land-use, geology, stream power index, topographic wetness index and curvature of the topography.

Study Area

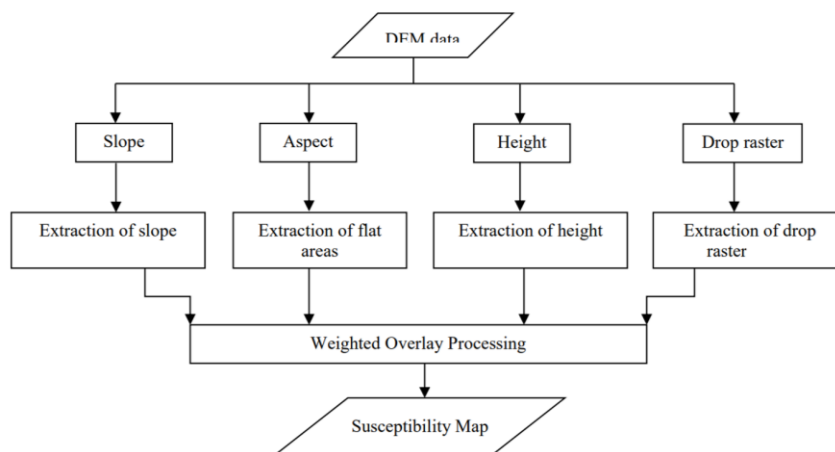
1. Alappuzha District, Kerala
2. Pathanamthitta District, Kerala
3. Ernakulam District, Kerala
4. Kozhicode District, Kerala

Data Used

1. CartoDEM Version-3 R1 (bhuvan-app3.nrsc.gov.in/data/download/index.php)
The Cartosat-1 Digital Elevation Model (CartoDEM) is a National DEM developed by the Indian Space Research Organization (ISRO). It is derived from the Cartosat-1 stereo payload launched in May 2005.
2. OpenStreetMap (openstreetmap.org) – for basemap
3. District Shapefiles - Provided

Methodology

The present work aims to extract morphologic properties that can play a role in influencing flash flood occurrences under certain triggering factors such as extreme precipitation events. We focus our attention to natural geomorphologic preparatory factors to flooding. From the DEM, slope gradient, drop raster, height level and aspect maps are derived. These allow to determine areas which relatively receive more quantities of water input than the surrounding environment during precipitation period in general and flood event in a particular. These areas likely to be affected by flooding are in flat surfaces. These potential causative factors are aggregated and weighted to derive the map of susceptibility to flash floods. This approach is summed up in the flowchart.



Potential Application of the Maps

1. Disaster Management : Risk identification
2. Insurance : This is used as an input data for parametric risk insurance
3. Health : Flooding also proliferates epidemics of waterborne diseases such as cholera or dysentery.
4. Town Planning : To identify flood plain location

Output

