

SRI LANKA

**The Effects of Flooding in Kaluwanchikudy DSD: An Analysis Using
GIS Application**

Mathanraj, S.^{1*} and Kaleel, MIM.²

¹*Department of Geography, Eastern University, Vantharumoolai, Sri Lanka*

²*Department of Geography, South Eastern University of Sri Lanka, Oluvil, Sri Lanka*

**E-mail: smathan02@gmail.com*

Water is the most precious resource to human life. Sometimes, this valuable resource change it form as flooding disaster. Flooding is severe water flow towards the low land which forming by continuous rainfall. It is one most common natural disaster in the study area. Flood is the most regularly occurring disaster in this area.

The Objectives of the study are to identify the flood severity zone in the study area, to create flooding map to the study area and to find the flooding effects of this area. It used the primary data are Direct personal observation in the flooded zone and face to face interview had been done with 02 Disaster Management officers, 08 Grama Niladhari, 30 People and secondary data obtained from Disaster Management center reports, Census reports of Sri Lanka, Rainfall and temperature data from Meteorological Department, images, and published research reports, SRTM image from Earth explorer. To examine the severity level of flooding in this area had been analyzed using SRTM image. Through this, severity zones were created to get the result. ArcGIS 10.4.1 software were utilized for preparing map.

Ironically, flood has now become a severe disaster in the study area. The natural factors are heavy rain fall, topography, sudden rainfall, monsoons, drainage facilities, low land, a lack of vegetation or woodland, little to slow the floodwater down and the manmade factors are block of drainage with wastage, improper drainage facilities, lack of drainage facilities, reduces of wet lands, damage of drainage, improper infrastructure, lack of wet lands by buildings and improper disposal of solid wastes.

The primary effects are damage the buildings and other structures including roadways and drainage, loss of drinking water treatment which may result in loss of drinking water or severe water contamination, damage houses, property and important possessions such as furniture, other electrical appliances, flood waters typically inundate farm land, making the land unworkable and preventing crops from being planted or harvested and affect

the livestock which can lead to shortage of food both for humans and farm animals, increasing people to move from their house to temporary area as a refuge, lack of hygiene foods and the secondary and long-term effects are psychological damage to those affected in particular where serious injuries and loss of property occur, small businesses never reopen their doors following a flooding disaster.

The severity zone was prepared into three categories as follow; highly affected area, moderately affected area, lowly affected area. Each area has the distance respectively 100m, 200m and 300m. 100m from the water bodies are highly risk zone, 200m from the water bodies are moderately risk zone and 300m from the water bodies are lowly risk zone.

Around 8.953003 Sq.km area below 100m locations affected during the flood season, 9.190781 Sq.km area between 100m to 200m and approximately 9.31039 Sq.km area affected between 200m to 300m in the study area (Source: Calculated by GIS 10.4.1, 2017).

The major causes for facing the flood disaster in this area is lack of drainage system 34% in some flooded area, low land 31%, and unclean drainages 23%, and ups and downs roads 12% (Field data, 2017).

Further, this area does not contain the proper drainage facilities and very rare maintenance of drainage because of developing region are mostly the reason for flooding. In addition, wet lands area nowadays changing as settlement land. Lots of mangrove plants destroyed by the flood events in past years.

According to the GIS analysis, highly affected area is around 8.953003Sq.km, moderately affected area is around 9.190781Sq.km and lowly affected area is approximately 9.31039Sq.km in the study area. Using this prepared map can be keep the people from this severity zone during the flood season or can be aided to settle them to the highland area.

In addition, the disaster management center of this area have to take necessary action to mitigate the flood effects and the prepared map was given them to identify the event zone of this area.