**FLOOD RISK ZONE MAPPING FOR IDUKKI DISTRICT**

**AIM:**

To identify the flood risk zone for Idukki district by considering the flood variables.

**Data collection:**

1. The Cartosat version 3 dataset distributed to general users was collected from bhuvan website
2. The geospatial vector data such as shapefile of India administration boundary were obtained
3. The AwiFS(Advanced wide field sensor) has been collected for preparing landuse/land cover maps

**METHODOLOGY AND STEPS**:

Digital Elevation Model

AwiFs

DRAINAGE DENSITY

LULC MAP

ELEVATION

SLOPE

ASSIGNING WEIGHTAGE AND RANK TO ALL THEMATIC LAYERS

WEIGHTED OVERLAY ANALYSIS

FLOOD RISK MAPPING

1. SLOPE: The slope layer has been generated from dem data using QGIS software. It has been reclassified by using ArcGIS and assigned proper weight and rank for parameter. The places having low slope means incursion of water will be high.
2. ELEVATION: DEM data has been reclassified and assigned with weightage and rank. Low elevation areas is considered as more likely to be risk zone.
3. DRAINAGE DENSITY: Drainage density has been generated by using cartosat dem. The places having higher drainage density is considered as more vulnerable to flood.
4. RAINFALL: Rainfall has been generated based on interpolation technique. In QGIS software, IDW or spline technique was used for generating rainfall and intensity.
5. LANDUSE/LANDCOVER: Classification is the process of sorting pixels into a finite number of individual classes or categories, of data based on their data file values. If a pixel satisfies a certain set of criteria, then the pixel is assigned to the class that corresponds to that criteria. In this study supervised classification is performed. It was classified into 5 classes. The agriculture land and settlement are more risk to flood.

WEIGHTED OVERLAY ANALYSIS:

After calculating the ranks and weights, the UNION operation is performed. The resulting layer is named as flood risk prone area map. The CSI field in that layer populated by using the following formula in field calculator

RIf= [(LUw)(LUr)+(ELw)(ELr)+(Sw)(Sr)+(RFw)(RFr)+(DDw)(DDr)]

Rif= Risk Index for flood LU=landuse and land cover EL=Elevation S=Slope RF=Rainfall DD=Drainage density

**NEEDS AND APPLICATION:**

1. Reduce the loss of human lives and loss of properties by the flood in Idukki district
2. It is very useful for municipal planning, emergency action plans, flood insurance rates and ecological studies.
3. It is used to determine the zoning, landuse, building standard, infrastructure, Transportation, flood warning, emergency management planning.
4. It can be useful for planners, decision makers and to take precautionary steps.

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