LANDSLIDES HAZARDS ZONATION MAPPING USING GEOSPATIAL TECHNOLOGY

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ABSTRACT: Soil erosion is caused by soil erosion in high humid mountainous terrain, caused by proper slope changes and overloading of the slope. In other words, if the slope is 30 the inclination may cause erosion. It is difficult to regions to obtain remote sensing data used to calculate available terrains, such as slope, aspect, height, line, geomorphology, land use, drainage and road. The result from remote interpretations of understanding has been confirmed by field investigations. In this study, we compile a geographical information system (GIS), remote sensing and obtain a map of the geographical appearance of the trend in the rugged areas of Kodaikanal, Iran. After necessary pre-data processing, the actual data set topology is created and the active error lines are broken down and pasted. Vector layers are transformed into raster and static formats based on a rational logic model. A map of the deductible hazard distribution is also proposed based on the distribution of historical data. The current discussion of the use of GIS technology in risk analysis in the Kodaikanal taluk in the Dindugal region should shed new light on future activities in this approach. A detailed risk analysis will be presented in our forthcoming papers. predict an earthquake and its shape with a standard survey and it takes a lot of time and human resources.It leads to a lot of damage to the shelter and the animals. It requires extra money and labour to recover. Over the past few years, methods have been developed to reduce the extent of land degradation in various

KEYWORDS: Map preparation, Earth coordinates, Geo-Spatial Technology, landslides study, Remote sensing.

I. INTRODUCTION

Earthquakes are one of the major environmental disasters affecting at least 15% of our country's area covering more than 0.49million sq.kms. Road-followed areas are common in the Himalayas and southern India, especially in the mountainous areas of the Nilgiris and Kodaikanal[1]. Many mountain areas are exposed to the risk of landslides, where most of the occurrences of earthquakes are soil erosion, debris flows and resulting in heavy and persistent rainfall. Around the world, 252 increased Kodaikanal taluk [2]. Of these 62 earthquakes occurred in the study area. These landslides are the result of slope or toe, deforestation, deforestation, improper drainage of settlements, the creation of excessive sewage or old movements that may be caused by traffic or heavy equipment. In areas of falling erosion, large factories are the availability of an overloaded cargo to plant on unstable slopes, caused by rain or earthquakes. In areas where stone collapse occurs the stress of fractures and the presence of moulded material[3]. Measurement methods agree; they reflect the levels found in descriptive terms and are based on expert opinion. The most common types of basic learning methods use soil modelling to identify sites of non-terrestrial and geomorphologic features attributed to failure. However, the parameters are determined from expert information on the subject and region. So the instruments we choose are personal and include some acknowledgement. Measurement methods are based on numerical simulations of the relationship between the controlling factors and the fracture surface [4]. There are two types of multiplication methods: deterministic and mathematical methods. Test methods are based on the studies of slash intensity, expressed in terms of the safety factor. Statistical methods analyse the historical link between local control and land distribution. Weight loss techniques can be used to lose weight and get involved in the weight loss process. Thus, true maps of the absence of transparency can be extracted from the objective measure. The study focused on soil erosion in parts of the Kodaikanal taluk, Dindigul district of Tamil Nadu[5]. Arunkumar.M, et al, 2018 existing research reveals that relationships between precipitations bylandslides are made. The details of the extinction were collected from the

IWS (Centre for Water Study) and were analysed in an annual and seasonal analysis from 2003 to 2012. The details of the renaming were compiled through geographical distribution methods in GIS and linked to existing along the line. The rainfall shows that most of the rainfall area is covered in a higher proportion of the Northeast Monsoon compared to other seasons. However, approximately equal rainfall was observed in the South West Monsoon. The above information was taken as GIS. Mayavan et al, 2012,Landslide are among the major environmental disasters affecting large parts of India, especially the Western Ghats and the Eastern Ghats[6]. This is a case study analyzing basic data and an integrated analytical method for other ring and land validation to determine the characteristics of spatial distribution in the study area [5]. C.Sivakami, 2014, Landslide is the most common natural hazard in mountainous areas due to factors such as drainage, weather, deforestation, earthquakes, severe injuries etc. some weight loss causes damage to land and buildings, and infrastructure, besides the loss of human life almost every year. The purpose of this study is to examine the weak areas of Landslide in the spatial part of Kodaikanal taluk, Dindigul District, Tamil Nadu using Remote sensing and GIS.

II. Study Area

The Palani Hills are located to the west of the western ghats at a length of 65 kilometres and the north to 43kms.total the Palani mountain range is about 2068sq.km Kodaikanal Taluk occupies a large part of the Palani hills with 1050sq.km. Latitude1 13 ° N, Longitude 77 ° 32'eE. Heights from 380m to 2502m and the inclination varies gently to cliffs. Geology includes mainly charnockits. The study area was made of large crystalline rocks of the Archean, Charnockite, and Gneisses ages. The greater part of the Kodaikanal taluk is exposed to Charnockite rock and is covered by approximately 90% of the taluk area. The population of Kodaikanal taluk is 100645 (2001). This region is a slippery valley - about 87% of the slopes have a gradient of less than 35. The altitude is high in the southern part of the cone and descends to the north and rises again to the north-east. Only a few notable peaks are the Mamumdi Malai Peak, 2195 m south of Perumalai Peak, 2337 m North [4] - North East. The drainage pattern is very dental and the underground drainage has a drainage depth of 4,688 km / km2.

2.1 Digitization

Data reset can be done by GIS to convert data into different formats. For example, GIS can be used to convert a satellite image map into a digital structure by generating lines around all cells in the same division, while determining cell spatial relationships, such as similarity or inclusion. This is a major improvement with the introduction of high-performance computations in digital accuracy and speed[7]. Contour map showing elevation above sea level and terrestrial features due to contour lines. A 10m Contour map was created using ASTER DEM data with the help of open-source GIS i.e. Quantum GIS as shown in figure 1.

2.2. Hill Shade Map And Digital Elevation Map

The shadow of the mountain specifies the light of each cell on the map. This light depends on how the cell is positioned relative to a single light source (e.g., the sun). So where you put this light source will have an impact on that light. There are two variables used to define the position of light - of altitude and azimuth[8]. The elevation is 0 to 90 degrees and is related to the angle when the light source travels from the horizon. Elevation Range helps to distinguish the local relief and obtain points of total height and minimum within the underground areas. To calculate the surface elevation of different relief zones, the aid map is divided into five elevation sections on a 0-500-m basis and the study area shows that the elevation from 0 to 2000m above means sea level as shown in figure 1.

2.3. Slope Map

A slope can be defined as the thickness or gradient of a geographical wing, which is usually measured as an angle in degrees or as a percentage. Location can be defined as the direction in which the position unit is facing. Vegetation cover also introduces some mechanical changes with soil stabilization and slope loading [9]. The increase in soil strength due to the stabilization of the roots has the greatest potential to reduce the rate of occurrence of erosion. Satellite degrees of materials directly affect the thickness of the slide. The proximity of the slopes to the dam structures is also an important factor in terms of durability. Streams can adversely affect the stability of the slopes or the filling of the lower part of the material until the water level increases as shown in figure 1.

III. Results and Discussion

Local technology using satellite and aviation sensors plays a major role in world map design and scientific exploration of terrestrial conditions. This technology is ideal for inaccessible mountain regions where large areas of erosion have been identified. The perceptual approach is based on the application of surface stability[10]. The analysis best describes areas that appear to be prone to erosion. It was noted that a few drops of rock occur on a slope that would not normally be considered as an impact on the slope. This means that the method failed to classify many of these sites as spatial default due to site-specific conditions and incorrect soil input parameters. The combination of several geographical data (points, lines, or polygons) creates new vector output data, which looks like placing a few maps in the same region [11]. Data extraction is a GIS process such as vector encryption, or it can be used to generate or evaluate raster data. Instead of combining the properties and features of both data sets, data extraction involves using a "clip" or "mask" to extract features of a single data set that fall within a specific data area. In raster data analysis, data overload is accomplished by a process known as "local operations on multiple rasters" or "algebra mapping," with a function that combines the values of each raster matrix. This function can measure more input than others by using a "model index" that indicates the influence of various factors on the geographic phenomenon.

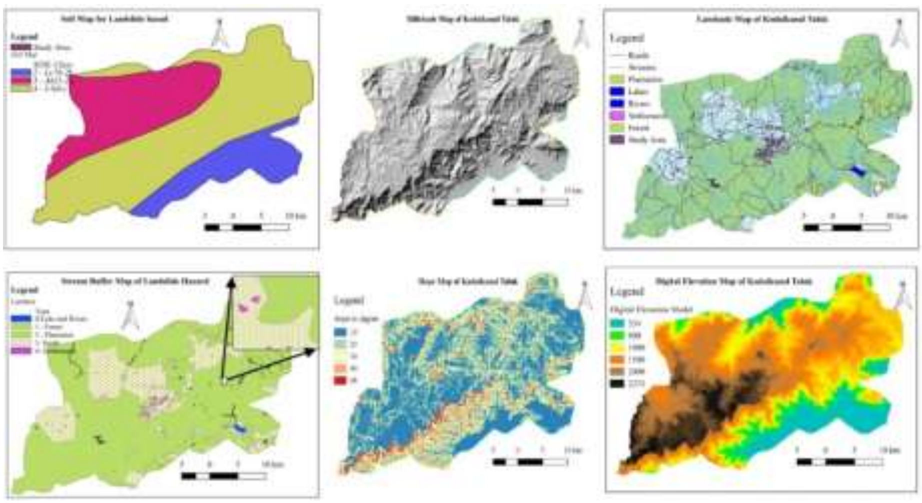

Figure 1: Landslide Map Of Kodaikanal Taluk And Digital Elevation Map Of Kodaikanal Taluk

Table 1: Landslide Prone Zone In Area M^2

	Score	An area in a square kilometre	Percentage
Very Least	2	326.604802.9	30.49824
Least	2.5	375.601600	35.07354
Moderate	3	261.572800	24.42558
High	4.5	107.118000	10.00264
	4.5	1070897203	100

IV. Conclusions

The study has shown that the material has had a strong impact on the occurrence of land in the study area. The method of probability analysis and the weight of evidence in combination with using GIS techniques that help indirectly evaluate various applications have been applied to the analysis of the risk of the researched area. A gravity map shows the highest indication of a landslide that occurred in the mountainous region of Dindugal. The higher the indication of a decrease in soil mass is the lack of universal stability. The map of the gravity index is divided into three popular zones from bottom to top. The results are useful for prediction of the risk of extinction, risk prevention and mitigation, land use planning, and future project development.

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