

DIGITAL ELEVATION MODEL (DEM) AND SLOPE ANALYSIS OF DODDAHALLA WATERSHED USING REMOTE SENSING AND GIS

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ABSTRACT

Digital Elevation Model (DEM) on of broad thought for portraying the floor features structures like Folds, Joints, and Lineaments and seepages are furthermore one of the surfaces comprises of by means of programming frameworks and assessment utilizing Arc-GIS 10.2 programming and plotting the waste depiction from DEM. The basic base guides for morphometric examination assisted through GIS Mapping using SOI Topographical Sheets of the territory. In the assessment domain of Doddahalla watershed, Chikmagalur District zone slope which created become Nearly Level (0-1%), Very Gentle Slope (1-3%), Gentle Slope (3-5%), Moderate Slope (5-10%), Strong slope (10-15%), Moderately Steep Slope (15-35%), Very steep slope (35 - 50%) so fabulous all out for 594.5 square kilometer been separated. The watershed slope is the absolute rise exchange of the fundamental channel that been drawn out to the watershed limit in which it has been partitioned via hydrologic length which reflects the overflowing force that decides the flood top. This is the connection between's the different Survey Of India Toposheet and Remote Sensing strategies of Digital Elevation Model Geographical Information.

Keywords: Remote Sensing, DEM , GIS, Doddahalla Watershed

INTRODUCTION

Information on the geomorphology and land use is basic for making arrangements, and the board exercises stressed with the floor of the earth. The hydrogeologist and help supervisors, organizers need interesting right and reliable realities on the area in which the best land and water sources and atmosphere attributes. The records ashore utilize potential and the protection needs can help in making arrangements for utilizes to have the option to keep up the top notch of the land. The utility of satellite television for detecting land use reviews and planning is acquiring criticalness generally because of its capacity to offer quick and trustworthy measurements inside a given time structure. Advancement bundles concerning the best utilization of normal sources are currently progressively more arranged with watershed as a basic unit. A watershed is a characteristic substance adjusting to the expanding homogeneity of the geomorphic molding way. Watershed infers sane usage of land and water hotspots for the best and supported assembling with the base danger to characteristic sources and the climate. It requires the assortment and assessment of an exceptional arrangement of data on the substantial seeking of hydrogeomorphology and plants, soil, water to land control to gain certain the financial and social ground of a watershed or a streaming bowl. The accomplishment of making

arrangements for formative exercises depends upon the pleasant and amount of realities to be had on every natural and financial resource. In this way, precise and reliable information base period and the board are incredibly essential for concocting ways for choicest arranging and the executives of watersheds.

Records on DEM is tremendous for arranging and the board sporting activities involved approximately the out of doors of the earth as well the hydrogeologist asset supervisors land and water belongings and ecosystem attributes. The facts make use of capability, and the safety needs can help in anticipating utilizes with the intention to keep up the character of the land. The use of satellite tv for pc far flung detecting for land use research and mapping is selecting up significance to an incredible quantity in light of its ability to present fast and strong statistics inner a given time shape. Improvement programs concerning the ideal use of everyday assets are present regularly organized with watersheds as a crucial unit. A watershed is a function detail becoming in with the expanding homogeneity of the geomorphic designing technique.

LOCATION OF THE STUDY AREA

The investigation area is spatially situated in Channagiri, Kadur, and Tarikere taluks of Davanagere and Chikmagalur regions of Karnataka State covering a flying the level of 594 sq. Km and geologically up among $13^{\circ} 36'$ to $13^{\circ} 55'$ North and $75^{\circ} 53'$ to $76^{\circ} 12'$ East , Lat Long called Doddahalla watershed.

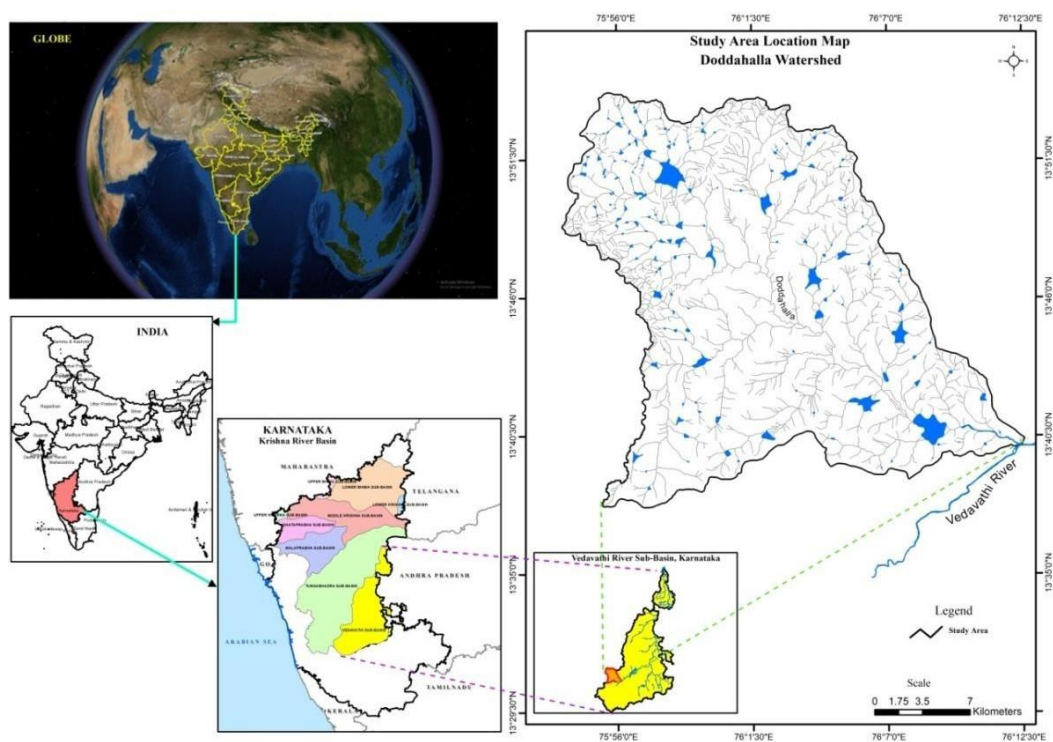


Figure 1 STUDY AREA

MATERIAL AND TECHNIQUES

Hydrological examination of more limited size watersheds is essential for a water property masterminding at an incredible scale. Space essentially based a commitment for decentralized organizing at unreasonable dreams DEM. Squander and an inclination depend on an enormous assignment in orchestrating and Digital Elevations Models (DEM) are typically being used for assessment of hydrologic boundaries which can be important as a commitment for hydrologic models. The evaluations move steadily with the fantasies and a kind of DEM. The assessment of bowl attributes from the morphometric boundaries helps in data the actual conduct of the catchments concerning floods. The stylish upgrades, for instance, detecting, and geographic measurements(GIS), had been applied for the extraction of waste organization structures utilizing the Digital Elevation Model (DEM) for the bit of Doddahalla watershed. The depiction is of the cycle is known as a watershed division, i.e., isolating the watershed into discrete land, and channel parts to see watershed lead. The robotized time of waste organization frameworks from Digital Elevation Model (DEMs) is an astonishing coherent ability in a geographic records system(GIS) and which additionally aid a slope of the watershed by means of Arc GIS programming program.

METHODOLOGY

Gauge watershed and seepage depiction from the geological guide utilizing travel geographical mapper virtual rise variant from an ArcGIS programming. A basic automated depiction transformed into performed at many sub-watershed of the waterway watershed in India. Results indicated that the utilization of a watershed includes in ArcGIS for watershed depiction inside the watershed can be chosen. The slope that is made the utilization of DEM as appeared as Toolboxes > Spatial Analyst Tools > Surface > Slope and afterward pick the yield of Topo to Raster apparatus as information raster at that point indicate the yield raster eventually yield size after that click ok so the guide of the slope is comprised of the DEM.

DISCUSSION AND CONCLUSION

In assessment between the watershed were given from the Digital Elevation Model using the device computations and watersheds advanced delineated from geological publications, an association was near (Jenson and Domingue, 1988). The exam of the catchment ascribes for floods the usage of the moving techniques of GIS famous the first rate procedure for the extraction of frameworks and assurance of morphometric barriers from DEM, and attempts of digitization. The morphometric obstacles got from the DEM allow incomprehension of the hydrological lead of the watershed.

The superior upward thrust model is an installation by way of digitizing the work together with the spot rises. From the rasterized factor and line map a joined raster map turned into arranged and shape addition is completed to produce a complicated rise map. The topical guide for the vicinity of city areas within the exam area is overlaid over the created computerized rise map. The DEM model is utilized to supply the slope charge map where the DEM and slope percent maps seem. The upward thrust above mean ocean degree the scope of 656 to 1061 and incline range is given.

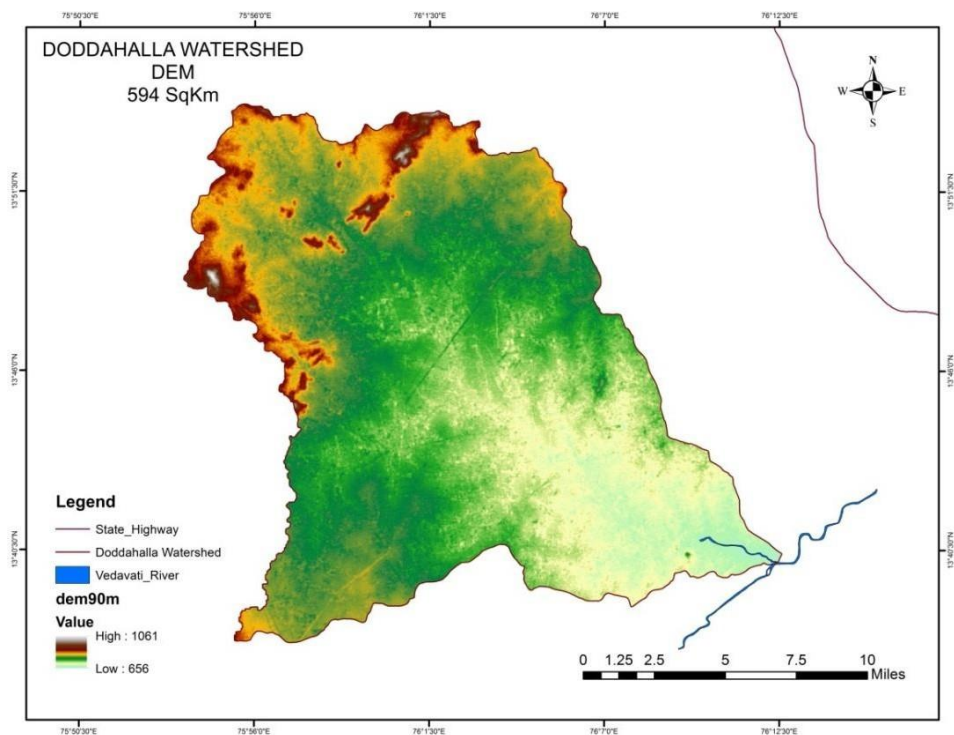
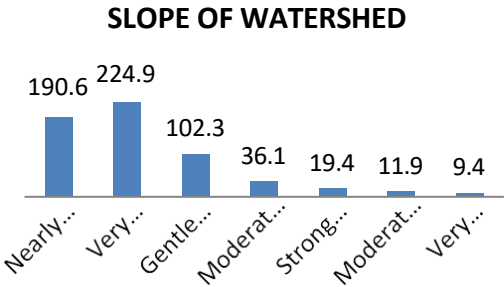


Figure 2 DIGITAL ELEVATION MODEL (DEM)

Table 1 SLOPE AREA IN SQ KM

Sum of SLOPE AREA in Sq.Km		
Row Labels	Grand Total	percent
Nearly Level	190.6	0-1%
Very Gentle Slope	224.9	1-3%
Gentle Slope	102.3	3-5%
Moderate Slope	36.1	5-10%
Strong Slope	19.4	10-15%
Moderately Steep Slope	11.9	15-35%
Very steep slope	9.4	35 - 50%
Grand Total	594	100%



GRAPH 1 SLOPE

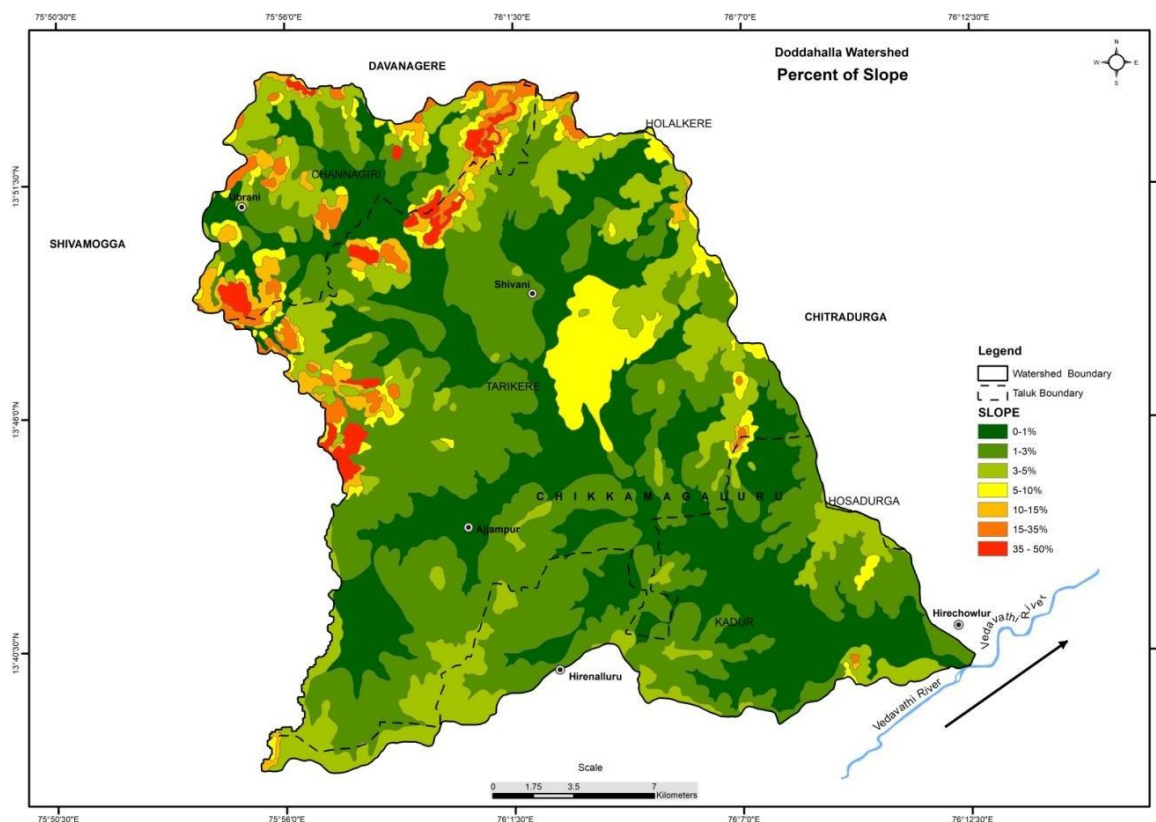


Figure 3 SLOPE OF WATERSHED

CONCLUSION

An automatic peak version and slope map are produced for research territory effects for the exam area show that the slope is sort of level to tenderly slanting. The accessibility of a DEM in a geological records framework (GIS) weather offers new open doors within the evaluation of spatial evapotranspiration. The DEMs can be utilized in the activity of groundwater surfaces besides the difference inside the groundwater-surface DEM and rasterized spring base results inside the soaked thickness of the spring. DEM may be applied for the age of circulation gathering and bearing lattice. As slope maps at the side of special guides can be utilized for the determination of appropriate water accumulating structures inside the investigation sector.

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