



RESEARCH PAPER

Morphometric analysis of shel dedumal watershed using remote sensing remote sensing and GIS

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Abstract : Morphometric analysis is the measurements and mathematical analysis of the land surface configuration, shape and dimension of the landforms. The efficiency of the drainage network is very important for understanding the processes of landform formation, soil physical properties and erosion characteristics. The present study is focused on the evaluation of morphometric parameters for conversation of soil and water on delineated in the basin. Furthermore, morphometric analysis of watershed using geospatial data and GIS techniques and slope analysis were also utilized to propose the suitable soil and water conservation measures in the basin. The results obtained in the analysis revealed that the Shel Dedumal basin tributaries is an 5th order drainage basin which describe that the texture is homogeneous or homogeneity still exist and lack of structural control in soil strata. The relief ratio (R_h), the elevation difference (R_h or H) and circularity ratio (R_c) was found to be 10.73, 222.0 and 0.42, respectively which represents the basin having moderate relief and gentle to moderately high slope. Some areas of the basin are characterized by variation in Lithology and topography. The mean values of bifurcation ratio (R_b) observed as 4.52 and circularity ratio (R_c) observed as 0.42 of the entire basins shows a moderate but not strong structural control or structural disturbances. An extreme high value of ruggedness number (R_n) observed as 11.83 which indicate the structural complexity of the terrain. The Moderate drainage density (D_d) and circularity ratio (R_c) was observed as 2.63 and 0.42, respectively which indicates the basin is highly permeable subsoil and vegetative cover. The form factor (F_f), the elongation ratio (R_e) and circularity ratio (R_c) was observed as 0.39, 0.71 and 0.42 respectively which is indicating elongated basin with lower / flatter peak flows of longer duration than the average and also the elongation ratio (R_e) values indicating moderate to slightly steep ground slope in basin which is indicating possibility for soil erosion and other soil and water conservation works.

Key Words : Morphometric analysis, Shel dedumal, Watershed using remote sensing, GIS

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