MORPHOLOGICAL PARAMETER ESTIMATION DERIVED FROM TOPOSHEETS AND ASTER–DEM – A STUDY ON WATERSHEDS OF DAKSHINA PINAKINI RIVER BASIN IN KARNATAKA, INDIA

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ABSTRACT

With the growing population and rapid industrialization, more thrust is inevitable on natural resources such as water and land. This has necessitated for the planning and management of water and land resources. Therefore, protection of groundwater has become a high priority management goal. In this paper, authors have carried out morphological study on 8 watersheds of Dakshina Pinakini River Basin. Each watershed has a number of distinct characteristics. However, the manual measurement of basin parameters is uneconomical and time consuming. Therefore, ASTER–DEM can be very useful data source for extracting complex morphometric parameters particularly of inaccessible mountainous watersheds. Morphological parameters of the basin have been estimated through DEM derived from ASTER in GIS environment along with establishing the relative importance of the parameters.

The morphometric analysis is carried out by using the three parameters viz., basic, derived and shape parameters. The drainage pattern of the watersheds varies from dendritic to sub-dendritic. Overall results of watersheds NW3, SEW, SW1, SW2, SW3 and EW reveal that they are composed of permeable subsurface material, vegetation cover and low relief when compared with the watersheds NW1 and NW2. This reflects that these watersheds have more infiltration capacity and are the good sites for groundwater recharge.

KEYWORDS: ASTER, DEM, Dakshina Pinakini, Elongation Ratio, GIS, Infiltration Number