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Morphometric Interpretation for Sub-Basin Management Planning and Practices in Hassan District, Karnataka India Using GIS and Remote Sensing

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Abstract

Classification and categorization of water basins is essential in sustainable growth, planning and management. Implementing the modern strategic techniques over a wider area needs huge resources and proper planning. Hence, morphometric analysis can be used as necessary tool for prioritizing sub-watersheds in the present study. The study area encompasses 265 sq. km, which is divided into nine sub-basins, specifically Bannur (W-1), Conimarur (W-2), Hampapura (W-3), Harohalli (W-4), Kaneyar (W-6), Konanuru (W-7), Saraguru (W-8), and Torenuru (W-9) ranging from 8 to 64 km^2. The Survey of Indian toposheets and Digital Terrain Model are utilized to explain the drainage characteristics. The study reveals dendritic stream arrangement of fourth to fifth order. The density of drainage ranged between 1.03 to 1.32 km/km^2, suggesting that the drainage texture was coarse to moderate, but low infiltration and high runoff. The change in stream length ratio over time implies that geomorphological progress is approaching its end. The bifurcation ratios range from 0.5 to 2.58, indicating that the region has good lithological control over the stream system and whole sub-watersheds are classified as "normal". The form factor and circulatory ratio suggest elongated to circular sub-watersheds. Thus, the results of this analysis would be useful for the basin management planning and groundwater development.

Keywords: Morphometry, Aerial Aspects, Linear aspects, Relief aspects, Hassan District

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