

MORPHOMETRIC ANALYSIS ON KURU GANGA DRAINAGE BASIN IN SRI LANKA

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Drainage basin studies are vital prevention of soil erosion, landslide disaster and flood management. The most suitable method that can be used for this purpose is the Morphometric Analysis. Tea, rubber and cinnamon have been recently cultivated on the steep slopes on both sides of the Kuru Ganga valley, hence, the resulted soil erosion by which the river system is greatly affected has also intensified. Therefore, the need for soil conservation is high hence the dynamics of drainage basin geology and geomorphology must be studied and well understood. Hence, the main objective of this study is to analyze the linear, aerial and relief morphometric features of the Kuru Ganga. The river network data obtained from the 1:50000 metric maps published by the Sri Lanka Survey Department has been analyzed using ArcMap 10.8 software. According to the results of this study, Kuru Ganga is a fifth order river. The ratio of bifurcation (Rb) between 4 and 5 stream orders is 6, which indicates that there are significant differences in topography in the areas where those river series are located. The drainage frequency (Fs) of 2.1 indicates a moderate risk of flooding. The risk of flooding is relatively high in relation to fifth order due to the change in topography, especially when the river reaches fourth order to fifth order. The drainage density (Dd) is 1.7. Thus the Kuru Ganga has a rough drainage density. The elongation ratio (Re) of 0.4 and the Gravelius Shape Index (KG) of 2.2 make the Kuru Ganga basin elongated in shape. The study concludes that the risk of soil erosion and landslides is high along the first, second, third and fourth orders of the river, and the risk of flooding is high along the fifth order of the river. The study important in watershed management, controlling soil erosion, land use management and finally flood disaster risk reduction in hydrological basins of the country.

Keywords: Drainage basin, Geomorphology, Kuru Ganga, Morphometric Analysis, soil erosion

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