

Morphometric Analysis of Kumbukkan Oya River Basin, Sri Lanka

Buddhika Sandaruwan¹, Pathmakumara Jayasingha²

Abstract

Morphometric analysis is a quantitative mathematical method which analyses different aspects of a drainage basin. Application of morphometric analysis for describing the hydrological characteristics of river basin is rarely observed in Sri Lankan context. In the present study, morphometric characteristics of the Kumbukkan Oya river basin were analyzed in order to explain the hydrological characteristics and presented for the first time in Sri Lanka. Some of the data gathered from metric maps (1:50,000) covering the study area were analyzed by GIS software (ArcMap 10.1). Different parameters of the linear, the areal and the relief aspects were included in the considered morphometric analysis. According to the results of the study, the stream texture of the Kumbukkan Oya river basin was identified as a subtle stream density with a dendritic drainage pattern. The Kumbukkan Oya river basin was consisted with 7 stream orders. Furthermore, according to the calculated values of morphometric parameters such as Bifurcation Ratio (Rb: 2 – 7.2), Drainage Texture (T:19.91), Circulatory Ratio (Rc: 0.00077), Elongation Ratio (Re: 0.45), Drainage density (Dd: 2.36 km), Drainage Intensity (Id: 1.67) and Stream frequency (Fs: 3.94), the river is recognized as a “flatter peak of direct runoff for a long duration”. Because of that, the management of flood conditions of a longitudinal river basin such as Kumbukkan Oya can be considered as relatively easy challenge compared with the circular river basins.

Keywords: Kumbukkan Oya, River basin, Morphometric analysis, Hydrological characteristics, Geographical Information System (GIS)

¹ *Department of Geography, Faculty of Arts, University of Colombo; bsadaruwan0329@gmail.com*

² *Department of Geography, Faculty of Arts, University of Colombo; jpathma@geo.cmb.ac.lk*