

Comparative Morphometric Analysis of Ambardi and Mangari Watersheds of Kadvi and Kasari River Sub-Basins in Kolhapur District, Maharashtra, India: Using Geographical Information System (GIS)

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Abstract : In the present study, an attempt is made to delineate the comparative morphometric analysis of Ambardi and Mangari watersheds of Kadvi and Kasari rivers sub-basins, Kolhapur District, Maharashtra India, using Geographical Information System (GIS) techniques. GIS is a computer assisted information method to store, analyze and display spatial data. Both the watersheds originate from Masai plateau of Jotiba- Panhala Hill range in Panhala Taluka of Kolhapur district. Ambardi watersheds cover 42.31 Sq. km. area and occur in northern hill slope, whereas Mangari watershed covers 54.63 Sq. km. area and occur on southern hill slope. Geologically, the entire study area is covered by Deccan Basaltic Province (DBP) of late Cretaceous to early Eocene age. Laterites belonging to late Pleistocene age also occur in the top of the hills. The objective of the present study is to carry out the morphometric parameters of watersheds, which occurs in differing slopes of the hill. Morphometric analysis of Ambardi watershed indicates it is of 4th order stream and Mangari watershed is of 5th order stream. Average bifurcation ratio of both watersheds is 5.4 and 4.0 showing that in both the watersheds streams flow from homogeneous nature of lithology and there is no structural controlled in development of the watersheds. Drainage density of Ambardi and Mangari watersheds is 3.45 km/km² and 3.81 km/km² respectively, and Stream Frequency is 4.51 streams/ km² and 5.97 streams/ km², it indicates that high drainage density and high stream frequency is governed by steep slope and low infiltration rate of the area for groundwater recharge. Textural ratio of both the watersheds is 6.6 km⁻¹ and 9.6 km⁻¹, which indicates that the drainage texture is fine to very fine. Form factor, circularity ratio and elongation ratios of the Ambardi and Mangari watersheds shows that both the watersheds are elongated in shape. The basin relief of Ambardi watershed is 447 m, while Mangari is 456 m. Relief ratio of Ambardi is 0.0428 and Mangari is 0.040. The ruggedness number of Ambardi is 1.542 and Mangari watershed is 1.737. The ruggedness number of both the watersheds is high which indicates the relief and drainage density is high.

Keywords : Ambardi, Deccan basalt, GIS, morphometry, Mangari, watershed

Conference Title : ICGG 2017 : International Conference on Geography and Geosciences

Conference Location : Mumbai, India

Conference Dates : February 07-08, 2017