

Comparison of Agree Method and Shortest Path Method for Determining the Flow Direction in Basin Morphometric Analysis: Case Study of Lower Tapi Basin, Western India

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Abstract : Digital Elevation Model (DEM) is elevation data of the virtual grid on the ground. DEM can be used in application in GIS such as hydrological modelling, flood forecasting, morphometrical analysis and surveying etc.. For morphometrical analysis the stream flow network plays a very important role. DEM lacks accuracy and cannot match field data as it should for accurate results of morphometrical analysis. The present study focuses on comparing the Agree method and the conventional Shortest path method for finding out morphometric parameters in the flat region of the Lower Tapi Basin which is located in the western India. For the present study, open source SRTM (Shuttle Radar Topography Mission with 1 arc resolution) and toposheets issued by Survey of India (SOI) were used to determine the morphometric linear aspect such as stream order, number of stream, stream length, bifurcation ratio, mean stream length, mean bifurcation ratio, stream length ratio, length of overland flow, constant of channel maintenance and aerial aspect such as drainage density, stream frequency, drainage texture, form factor, circularity ratio, elongation ratio, shape factor and relief aspect such as relief ratio, gradient ratio and basin relief for 53 catchments of Lower Tapi Basin. Stream network was digitized from the available toposheets. Agree DEM was created by using the SRTM and stream network from the toposheets. The results obtained were used to demonstrate a comparison between the two methods in the flat areas.

Keywords : agree method, morphometric analysis, lower Tapi basin, shortest path method

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