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Geospatial Analysis of T.G. Halli Catchment Using RS and GIS

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ABSTRACT

Catchment area development activities also called as watershed development were introduced in the drought prone areas of India in the 1970s. The satellite imageries provide truthful information about the catchment. This information can be used to create thematic maps which helps the hydrologist to make decision regarding sustainable development of catchment. The catchment selected for the present study was Thippagondana Halli (T.G. Halli) catchment, Karnataka state. T.G. Halli catchment has a geographical area of 1439.47 sq km and geographically stretches between 77° 12′ and 77° 42′ E longitude and 12° 50′ and 13° 24′ N latitude. The state capital Bangalore is located at the south eastern boundary of the catchment. The Chamarajasagar reservoir is constructed at the outlet of the catchment. Survey of India topomaps on 1:50, 000 scale was used to delineate the catchment area and watersheds based on the topography. IRS-ID LISS III data was used to prepare land use/land cover map, soil map and updation of drainage map by visual interpretation techniques. Thematic informations such as land use/land cover, hydrogeological soil group derived from soil map were integrated using Arc View GIS to obtain the curve number for AMC II to estimate runoff using SCS curve number method. Daily rainfall data was used for AMC classifications. Curve numbers CN I and CN III were calculated using CN II. All the three AMCs were used to estimate runoff from the watersheds to understand the hydrological process of the catchment at the watershed level. The estimated runoff were compared with the observed values at T.G. Halli reservoir and found that the runoff estimation is satisfactory.