

## Urban Runoff Modeling of Ungauged Volcanic Catchment in Madinah, Western Saudi Arabia

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**Abstract :** Runoff prediction of ungauged catchment is still a challenging task especially in arid regions with a unique land cover such as volcanic basalt rocks where geological weathering and fractures are highly significant. In this study, Bathan catchment in Madinah western Saudi Arabia was selected for analysis. The aim of this paper is to evaluate different rainfall loss methods; soil conservation Services curve number (SCS-CN), green-ampt and initial-constant rate. Different direct runoff methods were evaluated: soil conservation services dimensionless unit hydrograph (SCS-UH), Snyder unit hydrograph and Clark unit hydrograph. The study showed the superiority of SCS-CN loss method and Clark unit hydrograph method for ungauged catchment where there is no observed runoff data.

**Keywords :** urban runoff modelling, arid regions, ungauged catchments, volcanic rocks, Madinah, Saudi Arabia

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