

Incorporating GIS Technique and SCS-CN approach for runoff estimation in the ungauged watershed: A case study west desert of Iraq.

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Abstract

Estimation of runoff in an ungauged watershed is a significant part in the process of the water resources management. In the Iraqi western desert, the accessibility reliable surface runoff knowledge is scarce, that affects a critical difficulty for the hydrologic engineers. Estimation of surface runoff quantity in valleys of interrupted flow is significant to mobilize the deficiency water resources and manage valleys flow accurately. The incorporation of the Soil Conservation Service Curve Number (SCS-CN) approach with the geographic information system (GIS) was applied for estimating runoff volume of Wadi Hijlan, Fahamy, and Zgadan. The amount of runoff of the maximum storm were 7388700 m³ , 12750000 m³ and 9851590 m³ for Hijlan, Fahamy and Zgadan respectively. In addition, the results showed acquired via the SCS-CN technique, revealed that the runoff depth fluctuated from 12.5 mm to 20.3 mm for (48mm) the maximum storm of rainfall through 2018-2019. The present strategy can be used for planning and development other valleys in the western desert of Iraq.