

Estimation the Physical Variables of Rainwater Harvesting System Using Integrated GIS-Based Remote Sensing Approach

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Abstract

Geographic Information System (GIS) are an intelligence technique skilled to extract, store, manage and display the spatial information for various applications of water resources management. Practically, arid and semi-arid environments suffer from several restrictions (e.g., lack of socio-economic and physical data, limited precipitation, and poor rain water management). In this research, Remote Sensing (RS) approach was integrated with GIS conducted to estimate the physical variables of reservoir system (i.e., elevation-area volume curve). First and foremost, computing an accurate and reliable elevation-area-volume curve is a challenging task for the purpose of identifying the optimal depth, minimum surface area and maximum reservoir storage. Accordingly, a field study consisting of three constructed small earth dams were demonstrated the use of the geospatial approach in the western desert of Iraq, where the elevation-area-volume curve was extracted. The surface areas and the reservoir volumes that were obtained from field survey and spatial intelligence techniques were compared. A comprehensive analysis have been carried out for the evaluation purposes. The results indicate that the proposed approach efficiently applied with remarkable level of accuracy