Between the digital elevation model and traditional methods, study morphometric properties of Wadi al Barowd basin, Safajah

Abstract

This study aimed at building data base of the morphometric properties in the basin of Wadi Al Barwd , through analyzing the digital elevation model (DEM) by using a group of geographical data systems programs , which integrated together in order to result in a large number of morphometric variances & measurements.

The study depended on the data of the digital elevation model accurately 30 M. in addition to a group of maps & satellite images.

the Spatial Analyst tools in programs information systems (Selection - Select Attributes) were enabling the application of mathematical models and equations with various formulas for morphometric analysis of Wadi al Barowd basin for estimate of the runoff, depending on the morphometric elements in the databases to reach accurate indexed results.

By comparing the basin morphometric results obtained by traditional methods and GIS, revealed the accuracy of the GIS results, and the convergence of most of the calculated values for the basin variables and dimensions, where the standard deviation not exceeded ± 20.01 for the area, ± 6.69 for the perimeter, ± 0.75 for the length and ± 0.09 for width, which reflected on the results of the basin equations.

By analysis of the drainage network parameters using the manual method and other methods, it was found great variations especially at the level of the main stream orders, where by the manual method reaching the fifth order, while reaching the sixth order by application of digital method and geographic information systems.

Using of Wadi al Barowd basin geographic database result for production of many digital maps, through the possibilities offered by the GIS , which make these data available for new researches which give great chance for addition and deletion to this database saving the time and effort.