Investigating emperical equations of determining concentration time of flood in Karaj river basin

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Time parameters are used mostly in hydrologic and hydrolic models. The most often used time parameter in hydrology is concentration time. Concentration Time is the time required for a particle of water to travel from the hydrologically most distant point in the watershed to outlet or designing point. Concentration time is used for designing spillway, estimating flood volume, preparing flood hydrograph and many other hydrologic analysis. many methods (empirical equations) are available for estimating concentration time. the aim of this research is selecting the best method(s) for estimating concentration time in the studied basin. To achieve the said aim , a field method based on measurement of travel time by salt solution is used. In order to select the best method(s) for estimating concentration time in the basin, the defference between values obtained by using these methods and the field method are determined. Results of this research show that In steep area, SCS Lag method is the best for estimating concentration time. In this area Ventura, Gianduti, Passini, and Carter methods provide a fairly good estimate of concentration time. In flat area, Chow, Kirpich, Basoo, and California methods provide a fairly good estimate.