THESIS

COMPARISON OF RAINFALL EXCESS COMPUTATION TECHNIQUES

Submitted by:

Engr. Talat Farid Ahmed
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ABSTRACT

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The study presents a comparison of four excess rainfall methods namely, 1) Initial and uniform loss rate, 2) Exponential loss rate, 3) Holtan loss rate and 4) SCS curve number, using HEC-1 model. Study has been carried out on six catchments ranging in size from 56 to 1080 squire miles located in the vicinity of Tarbela Dam in Pakistan.

The comparative study of rainfall excess methods has been carried out in such a way that a method evaluated could be effective for local conditions. For this purpose, first for all parameters involved in the methods were optimized using default values as given in the HEC-1. Individual parameters for four different catchments were optimized using several rainfall-runoff events. Such optimized values were used on other storm events for respective catchments so that a comparison could be made. It has also been tested whether values optimized for one catchment are applicable to another similar catchments located in the same hydrological region.

It has been concluded that Exponential method of rainfall excess is suitable for local conditions for smaller catchments. For larger areas, a catchment should be divided into sub-catchments for effective results. For different catchments whether physically similar and located in a same hydrological region, different set of optimized parameters is required.

Engr. Talat Farid Ahmad