

Estimating the SCS runoff curve number in forest catchments of Korea

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To estimate flood runoff discharge is a very important work in design for many hydraulic structures in streams, rivers and lakes such as dams, bridges, culverts, and so on. So, many researchers have tried to develop better methods for estimating flood runoff discharge. The SCS runoff curve number is an empirical parameter determined by empirical analysis of runoff from small catchments and hillslope plots monitored by the USDA. This method is an efficient method for determining the approximate amount of runoff from a rainfall even in a particular area, and is very widely used all around the world. However, there is a quite difference between the conditions of Korea and USA in topography, geology and land use. Therefore, examinations in adaptability of the SCS runoff curve number need to raise the accuracy of runoff prediction using SCS runoff curve number method.

The purpose of this study is to find the SCS runoff curve number based on the analysis of observed data from several experimental forest catchments monitored by the National Institute of Forest Science (NIFOS), as a pilot study to modify SCS runoff curve number for forest lands in Korea.

Rainfall and runoff records observed in Gwangneung coniferous and broad leaves forests, Sinwol, Hwasoon, Gongju and Gyeongsan catchments were selected to analyze the variability of flood runoff coefficients during the last 5 years.

This study shows that runoff curve numbers of the experimental forest catchments range from 55 to 65. SCS Runoff Curve number method is a widely used method for estimating design discharge for small ungauged watersheds. Therefore, this study can be helpful technically to estimate the discharge for forest watersheds in Korea with more accuracy.