

Derivation of Runoff Susceptibility Map Using Slope-Adjusted SCS-CN in a Tropical River Basin

Authors : Abolghasem Akbari

Abstract : The Natural Resources Conservation Service Curve Number (NRCS-CN) method is widely used for predicting direct runoff from rainfall. It employs the hydrologic soil groups and land use information along with period soil moisture conditions to derive NRCS-CN. This method has been well documented and available in popular rainfall-runoff models such as HEC-HMS, SWAT, SWMM and much more. Despite all benefits and advantages of this well documented and easy-to-use method, it does not take into account the effect of terrain slope and drainage area. This study aimed to first investigate the effect of slope on CN and then slope-adjusted runoff potential map is generated for Kuantan River Basin, Malaysia. The Hanng method was used to adjust CN values provided in National Handbook of Engineering and The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Global Digital Elevation Model (GDEM) version 2 is used to derive slope map with the spatial resolution of 30 m for Kuantan River Basin (KRB). The study significantly enhanced the application of GIS tools and recent advances in earth observation technology to analyze the hydrological process.

Keywords : Kuantan, ASTER-GDEM, SCS-CN, runoff

Conference Title : ICSWRM 2016 : International Conference on Sustainable Water Resources Management

Conference Location : Stockholm, Sweden

Conference Dates : July 11-12, 2016