

SPIE. DIGITAL LIBRARY

Slope adjustment of runoff curve number (CN) using Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Global Digital Elevation Model (GDEM) for Kuantan River Basin

¹Abolghasem Akbari, ²Azizan Abu Samah

¹Faculty of Civil Engineering & Earth Resources, University Malaya Pahang /Malaysia

²Institute of Ocean and Earth Sciences (IOES), University of Malaya, Kuala Lumpur, Malaysia

Corresponding Author's E-mail: akbariinbox@yahoo.com

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 landuse 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 many more. The Sharply-Williams and Hank methods was used to adjust CN values provided in standard table of TR-55. The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Global Digital Elevation Model (GDEM) is used to derive slope map with spatial resolution of 30 m for Kuantan River Basin (KRB). The two investigated method stretches the conventional CN domain to the lower values. The study shows a successful application of remote sensing data and GIS tools in hydrological studies. The result of this work can be used for rainfall-runoff simulation and flood modeling in KRB.

Keywords: SCS-CN, ASTER-GDEM, Sharply-Williams, Hung, Slope