

Reduction of Topographic Effect for Curve Number Estimated from Remotely Sensed Imagery

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The Soil Conservation Service Curve Number (SCS-CN) method is commonly used in hydrology to estimate direct runoff volume. The CN is the empirical parameter which corresponding to land use/land cover, hydrologic soil group and antecedent soil moisture condition. In large watersheds with complex topography, satellite remote sensing is the appropriate approach to acquire the land use change information. However, the topographic effect have been usually found in the remotely sensed imageries and resulted in land use classification. This research selected summer and winter scenes of Landsat-5 TM during 2008 to classified land use in Chen-You-Lan Watershed, Taiwan. The b-correction, the empirical topographic correction method, was applied to Landsat-5 TM data. Land use were categorized using K-mean classification into 4 groups i.e. forest, grassland, agriculture and river. Accuracy assessment of image classification was performed with national land use map. The results showed that after topographic correction, the overall accuracy of classification was increased from 68.0% to 74.5%. The average CN estimated from remotely sensed imagery decreased from 48.69 to 45.35 where the average CN estimated from national LULC map was 44.11. Therefore, the topographic correction method was recommended to normalize the topographic effect from the satellite remote sensing data before estimating the CN.