Diffusive tank model application in rainfall-runoff analysis of upland fields in Taiwan

R.S. Chen*, L.C. Pi

Department of Civil Engineering, National Chung Hsing University, Taiwan 40227

*Corresponding author E-mail: rschen@dragon.nchu.edu.tw

Telephone/Fax: 886-4-22857197

Abstract

Drainage analyses were performed on catchments with a mixture of paddy and upland fields. In this study, the simulations adopt the diffusive tank model concept, which has been applied successfully for rainfall-runoff analyses in paddy fields. Considering the drainage characteristic discrepancy between the paddy and upland fields, a new outflow formula with corresponding model parameters based on a weir formula was proposed to reflect the flow behavior from the outlet of the upland fields. To evaluate the applicability of the proposed model, field measurements were carried out at two experimental catchments and the results were used to calibrate the model parameters and for verifications. Results show that the measured and simulated data are in a good agreement, indicating that the proposed model is applicable for rainfall-runoff analyses in local areas mixed with paddy and upland fields.

KEY WORDS   Surface Water Hydrology; Modeling; Rainfall-runoff Simulation; Diffusive Tank Model; Upland Field

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