



Spatio-temporal analysis of event runoff coefficients

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The ratio of event runoff and event rainfall is termed the runoff coefficient. It is a key parameter in hydrologic design and we argue that it is also a valuable diagnostic parameter for assessing the dynamics of catchments that can be used with benefit to improve the realism of catchment models. In the present study the event runoff coefficients of 50000 runoff events in 345 Austrian catchments over the past 20 years have been analysed. Data from 1100 daily raingauges and 160 recording raingauges were combined to estimate catchment rainfall at an hourly time scale. Snow melt was accounted for by using the output from a regional catchment model. Baseflow was separated by a digital filter from observed runoff and events were separated by a set of criteria. The ratio of runoff volume and the sum of rainfall and snow melt was then used as the runoff coefficient. The runoff coefficients so obtained were analysed in a number of ways to improve the understanding of runoff processes at the regional scale. The role of antecedent soil moisture appears to be dominant in the Austrian climate. Snow melt is instrumental in increasing antecedent soil moisture. The results were also compared to a number of empirical methods of estimating runoff coefficients in ungauged catchments.