



Process controls on event runoff coefficients in Austria

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In this paper we analyze the controls on the spatiotemporal variability of event runoff coefficients. A total of about 64,000 events in 459 Austrian catchments ranging from 5 to 10000 km² are analyzed. Event runoff coefficients vary in space, depending on the longterm controls such as climate and catchment formation. Event runoff coefficients also vary in time, depending on event characteristics such as antecedent soil moisture and event rainfall depth. Both types of controls are analyzed separately in the paper. The spatial variability is analyzed in terms of a correlation analysis of the statistical moments of the runoff coefficients and catchment attributes. Mean runoff coefficients are most strongly correlated to indicators representing climate such as mean annual precipitation and the long-term ratio of actual evaporation to precipitation through affecting long-term soil moisture. Land use, soil types, and geology do not seem to exert a major control on runoff coefficients of the catchments under study. The temporal variability is analyzed by comparing the deviation of the event runoff coefficients from their mean depending on event characteristics. The analysis indicates that antecedent soil moisture conditions control runoff coefficients to a higher degree than does event rainfall. The analysis also indicates that soil moisture derived from soil moisture accounting schemes has more predictive power for the temporal variability of runoff coefficients than antecedent rainfall.