

Public Abstract

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Department:Soil, Environmental & Atmospheric Sciences

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Title:Evaluating and Improving the Performance of Radar to Estimate Rainfall

Radar-derived estimates of rainfall were compared against ten rain gages located in the Goodwater Creek for eight high-intensity one-hour rainfall events. Radar-estimated rainfall underestimated the rainfall totals observed by the gages. A bias correction factor was calculated by comparing the rainfall total at a single gage to the radar-estimated rainfall and was applied to the radar-estimated rainfall over the entire catchment. Although the bias was eliminated, there were still large differences between radar-estimated rainfall and gage observations at individual gages.

An algorithm was devised to apply multiple Z-R relationships within a single domain, instead of applying only a single Z-R relationship to the entire domain. The algorithm did overestimate rainfall in many of the events. This demonstrates that a significantly different result can be obtained by estimating rainfall using more than one Z-R relationship. Rainfall tended to be overestimated during periods of light rain and underestimated during periods heavy rain. This suggests the need for using multiple Z-R relationships during a single rainfall event and the high variability of the suitable Z-R relationship even during a single event.