

Raingauge siting using the gamma test

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Abstract The quality of precipitation data can have a significant impact upon rainfall analysis and subsequent hydrological modelling. Many water resource projects are often derived from raingauge networks, but these are only able to measure rainfall at a point location. Although other technologies such as weather radar and weather satellites can tell us about the spatial nature of the rainfall field, many uncertainties remain regarding the reliability of the rainfall estimates they produce under various conditions. Judicious siting of raingauges provides a valuable contribution to spatial rainfall estimations as well as a means of calibration for apparatus which provide rainfall estimations through indirect means. In this paper, the gamma test is investigated as a means for obtaining the most relevant sites for raingauge locations. The gamma test is a nonlinear analysis tool, which can be used for feature selection; it is this characteristic of feature selection which is applied to precipitation data, obtained from a dense raingauge network (49 gauges) across the Brue catchment in southwest England, to single out the most influential raingauge sites. This paper assesses the effectiveness of this use of the gamma test, and considers the impact it has upon improving the quality of rainfall data used in hydrological models.

Key words gamma test; raingauge; feature selection; rainfall analysis