

Abstract

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An ArcGIS Application of Spatial Statistics to Precipitation Modeling

Track: Water Resources

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This paper presents an ArcGIS application of spatial statistics to precipitation modeling. Rainfall observed at weather stations is combined with environmental variables such as elevation (DEM), aspect, and location to produce a precipitation surface. This surface is generated using a spatial auto-regressive model, which employs maximum likelihood estimation. This method accounts for spatial autocorrelation of precipitation data and estimates unbiased and efficient parameters from relatively few rainfall observations. Hydrologic and environmental applications can benefit from this versatile approach which provides an accurate precipitation surface without the limitations of other regression or geostatistical methods.

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