
Multivariate spatiotemporal stochastic weather generator

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Résumé

Stochastic weather generators are tools used to generate synthetic weather data that have the same statistics as observed weather variables, such as mean, variance, spatio-temporal and inter-variable correlations. Existing weather generators are typically univariate or limited to single sites, highlighting the need for multivariate spatio-temporal generators. In this study, we propose a stochastic multivariate weather generator that makes use of recent developments in multivariate spatio-temporal covariance functions. The main idea is to use a multivariate space-time Gaussian random field with a parametric covariance structure, which will be estimated using observed data, and then transform this random field into meteorological variables (temperature, precipitation, wind, radiation and humidity) using non-linear functions such as the Box-Cox transformation.

Mots-Clés: Weather Generator, multivariate space, time covariance

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