EGU2020-20930
https://doi.org/10.5194/egusphere-egu2020-20930
EGU General Assembly 2020

Precipitation Imputation using Optimal Probability Space-Based Interpolation

Ramesh Teegavarapu
Florida Atlantic University, Clvil Environmental and Geomatics, United States of America (rteegava@fau.edu)

Deterministic and stochastic spatial interpolation methods are widely used for the imputation of precipitation data to obtain gap-free datasets. Conceptually simple deterministic approaches using weighting methods that use Euclidean distances in spatial interpolation. Uses of probability space-based measures which include a measure from forecast verification and distribution similarity hypothesis test statistic values are evaluated in this study as possible replacements for Euclidean distances in weighting methods. Nonlinear optimization formulations are solved to obtain the best parameter values of the spatial interpolation methods. Long-term daily precipitation datasets from two climatic regions are used to impute missing precipitation data and several error and performance measures are used to assess the proposed methods. The proposed surrogates for Euclidean distances provide conceptually simple yet superior deterministic interpolation methods for improved estimation of missing precipitation data. Local and global variants of interpolations are evaluated. Preliminary results confirm the superiority of probability space-based methods for imputation of missing precipitation data at multiple temporal scales.