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An estimation technique for a robust variogram

H. Lebrenz and A. Bárdossy
Universität Stuttgart, Institut für Wasser- und Umweltsystemmodellierung, Civil Engineering, Stuttgart, Germany

In geostatistics, the (semi-) variogram constitutes a widely applied tool for the description of spatial dependence of variables. Outliers within the sampled observations however lead to skewed marginal distributions and a subsequent poor estimate of the variogram. A new robust method to estimate the variogram was applied on monthly precipitation data in South Africa: Kendall's tau rank correlation coefficient τ(h) is calculated between all sampled observation pairs, which are separated by the distance h. Two randomly generated Gaussian distributions are further correlated by the Pearson correlation coefficient N(h) [= f(τ(h))] with a Cholesky decomposition. A final quantile-quantile transformation of the two generated distributions with the observed distribution yields the corrected covariance C(h).
The robustness of the new method was tested and compared with other conventional robust techniques (e.g. Cressie-Hawkins), displaying an improved robustness of the variogram against outliers.