

Robust Variogram Fitting Using Non-Linear Rank-Based Estimators

Authors : Hazem M. Al-Mofleh, John E. Daniels, Joseph W. McKean

Abstract : In this paper numerous robust fitting procedures are considered in estimating spatial variograms. In spatial statistics, the conventional variogram fitting procedure (non-linear weighted least squares) suffers from the same outlier problem that has plagued this method from its inception. Even a 3-parameter model, like the variogram, can be adversely affected by a single outlier. This paper uses the Hogg-Type adaptive procedures to select an optimal score function for a rank-based estimator for these non-linear models. Numeric examples and simulation studies will demonstrate the robustness, utility, efficiency, and validity of these estimates.

Keywords : asymptotic relative efficiency, non-linear rank-based, rank estimates, variogram

Conference Title : ICCSS 2015 : International Conference on Computational and Statistical Sciences

Conference Location : Istanbul, Turkey

Conference Dates : February 15-16, 2016