Nonlinear Locally Weighted Kriging Prediction for Spatio-Temporal Environmental Processes

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Abstract: In the paper, a non-linear predictor for the spatial prediction of an environmental process is proposed. The suggested predictor is based on the locally weighted scatterplot smoothing method of Cleveland (1979). This approach is more flexible as the linear predictor usually applied in environmental statistics. We apply the new predictor to a non-linear spatio-temporal process, which can be considered to be an extension of the general stationary spatio-temporal process suggested in Fassò and Cameletti (2007).

Keywords: Nonlinear predictor; LOESS method; Non-stationary spatio-temporal process; Environmental statistics; Kalman filter.