



Environmental Time Series Interpolation Based on Spartan Random Processes

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In many environmental applications, time series are either incomplete or irregularly spaced. We investigate the application of the Spartan random process to missing data prediction. We employ a novel modified method of moments (MMoM) for parameter inference. The CPU time of MMoM is shown to be much faster than that of maximum likelihood estimation and almost independent of the data size. We formulate an explicit Spartan interpolator for estimating missing data. The model validation is performed on both synthetic data and real time series of atmospheric aerosol concentrations. The prediction performance is shown to be comparable with that attained by the best linear unbiased (Kolmogorov-Wiener) predictor at reduced computational cost.

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