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Abstract

Title:

On nonparametric time series decomposition, with applications to climate data

Long time series often show trends and changing seasonal patterns. Occasionally, the observed changes may coincide with known events. Often however, the reasons are less obvious. We consider nonparametric estimation of an additive time series decomposition into a long-term trend, a smoothly changing seasonal component and stationary residuals. The asymptotic convergence rate of the estimated seasonal component is unaffected by the strength of dependence in the data, whereas this is not the case for the trend function. Therefore, different bandwidths for estimating the trend and the seasonal component respectively should be used. A data adaptive algorithm for optimal bandwidth choice is proposed. Data examples illustrate the results. This is joint work with Britta Steffens and Sucharita Ghosh.