Forecasting the Volatility of Geophysical Time Series with Stochastic Volatility Models

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Abstract : This work is devoted to the study of modeling geophysical time series. A stochastic technique with time-varying parameters is used to forecast the volatility of data arising in geophysics. In this study, the volatility is defined as a logarithmic first-order autoregressive process. We observe that the inclusion of log-volatility into the time-varying parameter estimation significantly improves forecasting which is facilitated via maximum likelihood estimation. This allows us to conclude that the estimation algorithm for the corresponding one-step-ahead suggested volatility (with ±2 standard prediction errors) is very feasible since it possesses good convergence properties.

Keywords : Augmented Dickey Fuller Test, geophysical time series, maximum likelihood estimation, stochastic volatility model
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