R Software for Parameter Estimation of Spatio-Temporal Model

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Abstract : In this paper, we propose the application package to estimate parameters of spatiotemporal model based on the multivariate time series analysis using the R open-source software. We build packages mainly to estimate the parameters of the Generalized Space Time Autoregressive (GSTAR) model. GSTAR is a combination of time series and spatial models that have parameters vary per location. We use the method of Ordinary Least Squares (OLS) and use the Mean Average Percentage Error (MAPE) to fit the model to spatiotemporal real phenomenon. For case study, we use oil production data from volcanic layer at Jatibarang Indonesia or climate data such as rainfall in Indonesia. Software R is very user-friendly and it is making calculation easier, processing the data is accurate and faster. Limitations R script for the estimation of model parameters spatiotemporal GSTAR built is still limited to a stationary time series model. Therefore, the R program under windows can be developed either for theoretical studies and application.

Keywords : GSTAR Model, MAPE, OLS method, oil production, R software

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