

ABSTRACT

THE STUDY OF SYNTHETIC DAILY RAINFALL MODELING IN TANGGAMUS REGENCY

by:

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This research conducted to study the characteristics of daily rainfall and model making of synthetic daily rainfall in Tanggamus regency using periodic model, stochastic model and periodic stochastic models. This research conducted using daily rainfall data with length of 1986-2013 from three rainfall stations, Air Naningan, Way Harong and Kunyir rainfall stations.

These models performed by using 512 days annual data. Using rainfall frequency obtained and applying the spectral method and the least squares method, it can be generated the daily rainfall periodic models. Rainfall stochastic model assumed as the difference between rainfall data with periodic rainfall models. Based on data from the series of stochastic, the component was calculated using the approach of autoregressive models. Stochastic model was presented by using the autoregressive model of order three. Periodic stochastic model obtained by merging periodic model and stochastic model. Model validation and data obtained by calculating the correlation coefficient and *Nash-Sutcliffe* Efficiency.

Based on these results, it can concluded that the synthetic daily rainfall can be obtained significantly and accurately with good value. The average value of the correlation coefficient periodic models is 0,9711, stochastic models correlation coefficient is 0,9981 and the periodic stochastic models is 0,9998. The average value of *Nash-Sutcliffe* Efficiency of periodic model is 94,27%, The Stochastic model is 99,61%. The periodic stochastic models is 99,97%

Keywords: *daily rainfall, autoregressive models, spectral method*