Preecha Ruangchaisiwawet 2011: Forecasting Monthly Rainfall of Lampang Province by Statistical Forecasting Techniques. Master of Science (Statistics), Major Field: Statistics, Department of Statistics. Thesis Advisor: Mrs. Ampai Thongteeraparp, Ph.D. 99 pages.

The purpose of this research was the comparison of four methods namely: Decomposition Method, Triple exponential smoothing : Winter's method, Box – Jenkins Method and one Combination forecasting method to fit with forecasting of monthly rainfall of Lampang Province. Data which gives the lowest Mean Absolute Deviation, Mean Square Error and Mean Absolute Percent Error represents the most suitable method.

Data used in this research was monthly rainfall series of Lampang collected from Thai Meteorological Department Ministry of Information Technology and communication.
Data was divided into two groups. first group consisted of data collected from January 1999 to May 2008,while data for June 2008 to May 2009 was kept to investigate the accuracy of forecast methods.

The results of the study of forecasting models shown that triple exponential smoothing : Winter's method was suitable for the four types of rainfall data when consider the lowest Mean Absolute Deviation, Mean Square Error and Mean Absolute Percent Error.
The predicted model of each method were

Model for Decomposition method was $Y_t = (132.432 + 0.364579t)\hat{S}_t$

Model for Winter method was $\hat{Y}_{t+m} = (a_t + b_t(m))\hat{S}_{t-12+m}$,

$a_t = 0.001\left(Y_t / \hat{S}_{t-12}\right) + 0.999[a_{t-1} + b_{t-1}]$ and $b_t = 0.01(a_t - a_{t-1}) + 0.99b_{t-1}$

Model for Box and Jenkins method was

$Y_t = Y_{t-12} - 0.5347Y_t + 0.5347Y_{t-24} - 0.2853Y_{t-24} + 0.2853Y_{t-36} + \varepsilon_t$

Model for Combination forecasting method was $\hat{Y}_{CF} = 0.057\hat{Y}^{(1)} + 0.54\hat{Y}^{(2)} + 0.403\hat{Y}^{(3)}$

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