



A Fuzzy Time Series based Model for Rainfall Prediction over Eastern India

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A forecasting model based on Fuzzy time series is proposed and then it is applied for the prediction of rainfall over the eastern parts of India. The method is illustrated using long term rainfall data over the region. Soft computing based techniques are being increasingly used for the analysis of climatic conditions in general, and for forecasting and prediction of specific attributes, in particular. The selected problem assumes particular importance considering the dependence of the economy of the specified region on agricultural output. Moreover, the recent increase in the number of incidences of natural disasters in various parts of the region and the country as a whole, including floods, drought and other adverse climatic phenomenon, make it all the more important to develop effective means for predicting such events as best as we can.

The proposed model is another such effort which is shown to be particularly effective in dealing with the uncertainty and noise present in the observed data. For improved accuracy, both K-means and Fuzzy c-means clustering techniques have been used in order to arrive at variable length intervals. This method is found to improve upon the accuracy obtained by using fixed length intervals. A comparative assessment shows the relative efficiency of our method when compared to other existing methods. A graphical sensitivity analysis of the model is performed to show the conditions for robustness of the output provided by the model in response to perturbations in the input values, and also the model parameters.

Keywords: Sensitivity analysis, Fuzzy logic, Rainfall, Eastern India, Predictive modelling