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Abstract

Severe thunderstorms frequently occur over the eastern and north-eastern states of India during the pre-monsoon season (March-May). Forecasting thunderstorm is one of the most difficult tasks in weather prediction, due to their rather small spatial and temporal extension and the inherent non-linearity of their dynamics and physics. In this paper, experiments are conducted on artificial neural network (ANN) model to predict severe thunderstorms that occurred over Kolkata on 3 May 2009, 11 May 2009 and 15 May 2009 using thunderstorm affected parameters and validated the model results with observation. The performance of ANN model in predicting hourly surface temperature during thunderstorm days using different learning algorithms are evaluated. A statistical analysis based on mean absolute error, root mean square error, correlation coefficient and percentage of correctness is performed to compare the predicted and observed data. The results show that the ANN model with Levenberg Marquardt algorithm predicted the thunderstorm activities well in terms of sudden fall of temperature and intensity as compared to other learning algorithms.

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Index Terms

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