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# ANN-based STATISTICAL DOWNSCALING OF CLIMATE VARIABLES FOR RAINFALL PREDICTION IN NEGERI SEMBILAN

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## Abstract

This study aims to forecast daily precipitation in Negeri Sembilan using the Artificial Neural Network (ANN). In addition to the above, this study also investigated the most accurate imputation methods for dealing with missing local data in order to be able to use statistical downscaling methods when dealing with missing local data as well as the methods for reducing dimensionality of data in order to use statistical downscaling methods. In the study, atmospheric data were used as predictors (predictors) and rainfall data as predictands (predictands) from 2008 to 2018. An imputation method was used in this study in order to handle missing data. In order to select predictors, Principal Component Analysis (PCA) was applied to the high-dimensional data after the issue of high-dimensional data was resolved. There had been a significant increase in the use of fusion method, combining ANN and PCA, in Negeri Sembilan as a technique for precise



and the highest NSE. According to the results of the PCA, the cut-off eigenvalues

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ANN models can produce reasonable daily rainfall predictions based on rainfall extremes and can support high rainfall extremes, making them ideal for predicting rainfall in the future. In this study, an ANN model was used to establish a predictive relationship between predictand variables and predictors.

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