

ABSTRACT

Air temperature on the surface of the earth is a crucial parameter for understanding the boundary layer climate of certain area, especially as an index of the thermal energy of the atmosphere. In estimating the air temperature in the area, the method used is empirical model with the second order polynomial regression. The observation effects 70% accuracy with 3° C deviation.

The artificial neural network developed for improving the accuracy from the observation before. The artificial neural network can estimate the air temperature on the area using Climatology data.

The architect of artificial neural network used for training and generating the network is Multiple-layer feed-forward with Back-propagation learning method which consists of input layer, output layer, and one hidden layer. The Levenberg-Marquardt optimization method will be used for arising the speed and performance of back-propagation. The input variable for the network are humidity, air pressure, rainfall, sunshine radiation, and the wind. Output expected is air temperature estimation on the nextday.

From the research, we can interpreted that the air estimation system can produce better result than polynomial regression method. Air estimation system with neural network method can produce 100% accuracy with 3° C deviation.

Keywords :

Artificial Neural Network, Back-Propagation, Levenberg-Marquardt, Air Estimation, Climatology.