AOGS 2006

Application of a Clustering Method to Improve the Typhoon Rainfall Forecasting

GWO-FONG LIN[1], MING-CHANG WU[1]

[1] *Department of Civil Engineering, National Taiwan University*

In this paper a strategy is proposed to increase the accuracy in forecasting the typhoon rainfall. First, the typhoon characteristics are used as the input data to a back-propagation neural network (BPN) with two hidden layers. Then, the influence of the spatial rainfall information provided by other rain gauges is taken into consideration. A hierarchical clustering method is used herein to group the rain gauges according to their rainfall properties. The rain gauges whose rainfall properties are similar can be classified into the same group. It is reasonable to think that a rain gauge can provide the spatial rainfall information for another rain gauge if they are in the same group. The rainfall information provided from other rain gauges will be also used as the input data to the BPN. Finally, with the typhoon characteristics and the spatial rainfall information as input to the BPN, the BPN model can generate the reasonable typhoon rainfall. The strategy is applied to actual typhoon and rainfall data in the Tanshui River Basin in northern Taiwan to forecast the typhoon rainfall. The results show that taking the spatial rainfall information into consideration can improve the accuracy in forecasting the typhoon rainfall. The strategy proposed in this paper is expected to be helpful for forecasting the typhoon rainfall.