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PREDICTION OF NO_2 AND O_3 CONCENTRATIONS IN AMBIENT AIR USING ARTIFICIAL NEURAL NETWORKS AND NEURO FUZZY FOR HYDERABAD

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ABSTRACT

In the present study an Artificial Neural Networks (ANNs) models are developed to predict NO_2 and O_3 concentrations for Hyderabad. The meteorological variables like wind speed, wind direction, temperature, relative humidity and atmospheric pressure are used as input variables. The best performing network was sought with respect to Coefficient of correlation. Fuzzy Inference system was proposed to predict the NO_2 and O_3 concentrations. A Mamdani-type fuzzy inference system (FIS) was developed in the IF-THEN rules format. The product (*prod*) and the centre of gravity (centroid) methods were performed as the inference operator and defuzzification methods, respectively, for the proposed FIS. The results obtained using Neuro-Fuzzy were compared with the outputs of an Artificial Neural Networks model. The correlation coefficient between observed and predicted concentrations are in the range of 0.966 to 0.985.The evaluation of models results shows that the degree of success in NO_2 and O_3 concentration are seems to be good.

KEYWORDS: Artificial Neural Networks and Neuro-Fuzzy