Improvement of PM-10 Forecast using ANFIS model with an integrated hotspots / Rati Wongsathan.

Rati Wongsathan, author

Abstrak

ABSTRAK

Due to the situation of increasingly severe PM-10 pollution that adverse affects on humans and environment across the globe, the purpose of this work is to implement the optimal PM-10 forecast model as a basis tool in process of planing/controlling air pollution and public awareness apply to Chiang Mai city and surrounding area, in Northern Thailand. Accurate and reliable forecasting model are our goal. Due to the fuzzy feature of PM-10 as well as the high correlated hotspot during open burning and forest fires season of this study area, the adaptive neuro-fuzzy inference system (ANFIS)-based forecasting model has been statistically implemented as tool for daily mean PM-10 concentration estimation. For achieving more efficient and realistic model, the hotspot count among other meteorological parameters is utilized as the exogenous variable through the design and optimization. The forecasting performance evaluated in terms of the tradeoff between accuracy with regard to RMSE and MAE, computational complexity with respect to the multiplications per an execution, and reliablity through Akaike criterion information (AIC) is used to assess the forecast models. As forecasting results, the proposed ANFIS model with an integrated hotspots outperforms the other existing models.