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Mathematical models used for the developing of the ROKIDAIR air pollution monitoring system

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Abstract: Forecasting and analysis of the Particulate Matter (PM) concentrations is a subject of high interest for the public health. PM contains the inhalable particles that penetrate the thoracic region of the respiratory system determining numerous negative health effects particularly for younger children (0-10 years). We developed an on-line monitoring system for $PM_{2.5}$ (fine particulates) which uses self-designed microstations with an integrated early warning mechanism. We used several methods of assessing the trends ofPM concentrations, based on feedforward neural networks (FANN) combined with a wavelet decomposition of the time series values using smoothing filters to adjust the PM model outputs. Algorithms for minimization of the exposure time to PM are also presented.