Monitoring strategy to assessment the air pollution level in Salamanca (México)

J.M. Barrón-Adame (1), M.G. Cortina-Januchs (1), D. Andina (2), and A. Vega-Corona (1)

(1) FIMEE, Universidad de Guanajuato, Salamanca, México, (badamem;januchs;tono@salamanca.ugto.mx), (2) ETSI Telecomunicaciones, Universidad Politécnica de Madrid, Madrid, España, (d.andina@upm.es)

Air pollution affects not only the quality of life and the health of the urban population but also forests and agriculture. Agricultural crops can be injured when exposed to high concentrations of various air pollutants. Air pollutants can generally be classed as either local or widespread. Local pollutants are those emitted from a specific stationary source and result in a well-defined zone of vegetation injury or contamination. Most common among the local pollutants are sulphur dioxide, fluorides, ammonia and particulate matter. The paper presents an air monitoring strategy based on data fusion and Artificial Neural Networks. The main objective is to classify automatically the air pollution level as a proposal to assessment the air pollution level affecting the agriculture in Salamanca (Mexico). Salamanca is catalogued as one of the most polluted cities in Mexico. Pollutant concentrations and meteorological variables have been consider in data fusion process in order to build a Representative Pollution Vector (RPV). Meteorological variables (Wind Direction and Wind Speed) are taken as a decision factor in the air pollutant concentration level. RPV is used to train an Artificial Neural Network in order to classify new pollutant events. In the experiments, real time series gathered from the Automatic Environmental Monitoring Network (AEMN) in Salamanca have been used.