INTEGRATION OF THE LOCAL INTELLIGENT MONITORING SYSTEM IN A REGIONAL NETWORK

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SUMMARY

In the conditions of global changing of the ecosystems, the environmental pollution is one of the most incriminated disturbing agents.

In this study a network to manage atmospheric pollution based on terrestrial pilot devices is presented, implemented at the regional level in the Dâmboviţa County. The intelligent regional monitoring system is part of the regional infrastructure that supports the environmental control and management using intelligent air-monitoring systems. It perform activities like continuous data collection and acquisition, elaboration of algorithms and integrate the neural network at regional level using informational support and methodology like artificial neural networks, wavelet methods, fuzzy logic and genetic algorithms, that provide a feasible way to deal with the non-linearities of the atmospheric processes. Its final goal is to elaborate prediction of pollution propagation and the best “user friendly” link to the pollution managing administration at local level (De Backer and Scheunders 2001).

In elaborating the network there were gathered air pollution monitoring devices, sensors for different pollutant, remote sensing techniques, data acquisition methods, mathematical methods, data analysis and prediction, environmental management, information transfer (Scheunders and De Backer 1999). There are performed on-line registration of the collected data, data stocking, statistical analyses, correlation between pollutants, correlation of the pollutants with other parameters, neural representation and interpolation of the data, prediction of the raw data and prediction of walking average of data (for different locations and time spans), and also neural prediction data average and neural prediction moving average (for different network architectures). The intelligent regional monitoring system will be an useful tool in the risk management by establishing trends and changes in the trends of evolution of the atmospheric parameters, detecting the influence of the regional pollution on the evolution of the regional atmospheric parameters, detecting the influence of the regional pollution on the global changes of the atmosphere, elaborating long-term and short-term predictions of the atmospheric parameters and climate changes. An operational air quality modeling system will function in an on-line and off-line mode. There is necessary designing, implementation and validation of the software system that can perform environmental metadata computing and environmental modeling.

BIBLIOGRAPHY