Sensitivity Studies of a Large-scale Air Pollution Model in Grid Environment

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Variance-based approaches for sensitivity analysis have been applied and analized to study the sensitivity of air pollutants concentrations according to variations of rates of chemical reactions.

The Unified Danish Eulerian Model (UNI-DEM) has been used as a mathematical model simulating a remote transport of air pollutants. Plain and adaptive Monte Carlo algorithms for numerical integration have been applied to compute Sobol' global sensitivity indices. A comparison with sensitivity approaches implemented in SIMLAB software tool for sensitivity analysis has been done. Grid implementations of the UNI-DEM and the algorithms under consideration have been carried out.

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