



Development of a reactive-dispersive plume model

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A reactive-dispersive plume model (RDPM) was developed in this study. The RDPM can consider two main components of large-scale point source plume: i) turbulent dispersion and ii) photochemical reactions. In order to evaluate the simulation performance of newly developed RDPM, the comparisons between the model-predicted and observed mixing ratios were made using the TexAQS II 2006 (Texas Air Quality Study II 2006) power-plant experiment data. Statistical analyses show good correlation ($0.61 \leq R \leq 0.92$), and good agreement with the Index of Agreement ($0.70 \leq R \leq 0.95$). The chemical NO_x lifetimes for two power-plant plumes (Monticello and Welsh power plants) were also estimated.