



Lagrangian stochastic modelling of the concentration PDF

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A Lagrangian stochastic (LS) probability density function (PDF) model has been developed to study statistics and PDF of concentration generated by continuous releases of passive substances from point and line sources in atmospheric flow. The model simulates the combined effect of turbulent mixing (macromixing) and molecular diffusivity (micromixing) on dispersion of tracers. Turbulent dispersion is modelled using an LS model; molecular diffusivity is simulated by an Interaction by Exchange with the Conditional Mean (IECM) model. A dynamical computational grid, which expands with time around the plume, has been developed to optimise computational time and memory requirements. The model has been tested with laboratory observations in neutral and convective boundary layer. Model concentration statistics including mean field, fluctuations and concentration PDF are reproduced.