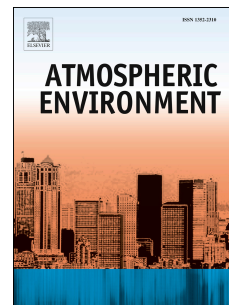


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Large-eddy simulation of dense gas dispersion over a simplified urban area

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Abstract

Dispersion of neutral and dense gas over a simplified urban area, comprising four cubes, has been investigated by the means of large-eddy simulations (LES). The results have been compared to wind tunnel experiments and both mean and fluctuating quantities of velocity and concentration are in very good agreement.

High-quality inflow profiles are necessary to achieve physically realistic LES results. In this study, profiles matching the atmospheric boundary layer flow in the wind tunnel, are generated by means of a separate precursor simulation.

Emission of dense gas dramatically alters the flow in the near source region and introduces an upstream dispersion. The resulting dispersion patterns of neutral and dense gas differ significantly, where the plume in the latter case is wider and shallower. The dense gas is highly affected by the cube array,

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