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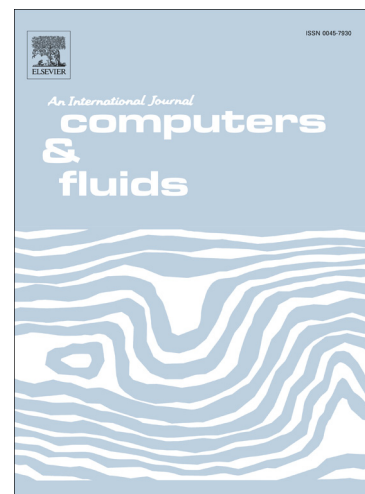
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Analysis of influencing factors

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Large-eddy Simulation of flow and dispersion around an isolated building: Analysis of influencing factors

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Abstract: CFD simulations are known to be very sensitive to many physical and numerical parameters. Many previous studies have analyzed the factors that influence RANS modeling, but few have considered how these factors affect LES modeling. This study investigates the factors that influence the LES modeling of flow and dispersion around an isolated building. The LES model is validated against two wind tunnel experimental datasets. The factors analyzed are upstream distance of computational domain, mesh resolution, length of sampling period, inflow fluctuating algorithm, subgrid-scale (SGS) Schmidt number, SGS model, and Smagorinsky constant. Based on the experimental data, the influences of these factors on the numerical results are discussed and appropriate selections are recommended. Specifically, this study finds that the fluctuating intensity of the velocity components provided by a Spectral synthesizer (an inflow fluctuating algorithm) is less than half of that provided by the Vortex method (an inflow fluctuating algorithm). In addition, the velocity field is less sensitive to some of the influencing

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