

Abstract Submitted
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Large-eddy Simulation of Turbulent Flows in an Urban Street Canyon JEONG-MIN HWANG, BYUNG-GU KIM, CHANGHOON LEE, Yonsei University — Turbulent flow inside an urban street canyon is studied by means of large-eddy simulation. The simulated site is the 'Teheran Street' in Gangnam district of Seoul in Korea, which is one of the representative street canyon in Korea. The Reynolds number, based on the height of the tallest building in the domain and mean velocity there, is around ten million, The domain size is 600m in each direction, and tested grid size varies from 2m to 12m while typical small buildings are of order of 20 m. A constant Smagorinsky coefficient subgrid-scale (SGS) model is used. Performance of the SGS model for various resolutions is assessed by investigating contribution by the SGS stresses to the total stresses. Also, the statistics of the flow and turbulence is investigated by changing wind direction. Many elements such as wind direction, height, shape, and distribution of buildings are found to be the key factors affecting flow field characteristics. Particularly, tall buildings near the street canyon predominantly generate turbulence, leading to homogenization of the mean flow inside the street canyon, Detailed simulation results will be presented in the conference.

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