

1.214 Large-Eddy-Simulation of Pollutant Dispersion: Comparison with Tracer Gas Field Campaign and Effect of Topography.

Early Career Scientist

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Abstract:

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Air pollutant becomes a serious issue for public health and also a political challenge in Taiwan in recent years. It is a tough challenge to derive the transport and dispersion paths of hazardous substances from the emission sources to suffering areas because of the complicated and interactive chemical mechanisms of air pollutants. This study applies a large-eddy-simulation model (PALM) to investigate the pollutant dispersion from three emission sources, Taichung coal-fired power plant, Mailiao coal-fired power plant, and downtown of Taichung, in central Taiwan. Two intensive PFC (perfluorocarbon) tracer experiments were proposed to collocate the computational study to clarify the dispersions of air pollutant in temporal and spatial scales of about 12 hours and 48*48 km². Hypothetical scenarios are implemented into PALM to investigate the influence of topography on transport of air pollutants.

Keywords: large eddy simulation, PALM, pollutant dispersion, topography, tracer gas