Research on Urban Land-Surface Process and Boundary Layer

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Abstract

Research on urban land-surface process and boundary layer structure was summarised. With exploring analysis, satellite remote sensing, and the numerical simulation, the characteristics of the urban land-surface have been learned. The mechanism of urban boundary layer was carried out by building the fine urban boundary layer model system with the reasonable urban effect parameterization. 1. The urban surface energy balance is very different from it on natural surface; The anthropogenic heat flux is indispensable. It is important to introduce it into the model system for accurately describing the urban surface energy balance; 2. The satellite data with high resolution is an important approach to investigate the characteristics of urban surface parameter;. 3. The multi-layer urban canopy model has been developed for considering the buildings effect on the dynamical and thermal field of atmospheric motion.; 4. The development of multi-scale urban boundary layer model system and the perfection of the urban effect parameterization in it made the simulation on local characteristic of urban boundary layer to be more reasonable. At present, with speedup of the urbanization, the urban area expansion and layout change for modeling and forecasting of weather/climate in urban area are very significant. One of the key points for improving the performance of numerical model is how to introduce the reasonable urban surface energy balance scheme. into the model system.