DEVELOPMENT OF THE CONCEPT OF TOWN-PLANNING REGULATION AND URBAN ARCHITECTURAL-DESIGN DECISIONS WITH USE OF TELESCOPIZED NUMERICAL MODELS

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Numerical models help to solve issues concerning studying microclimatic urban peculiarities, and contamination of the urban regions;in this way evaluating the town forming tendencies.
Because of the planning structure of modern town is complex and diverse,since theorganization of the basic functional zones (such as the residential territory, industrial zones, recreation zones,green-belt zones,transportation , and warehouse zones) is corrected with application of mathematical modeling.
A series of 3-D numerical models is described, with which detailed calculations have been made of turbulence and wind characteristics in the urban ABL (Atmospheric Boundary Layer) as well as longwave and solar radiation fluxes and flux divergences, and atmosphere-surface exchange.
The system of equations includes the equations for the thermally and orographically inhomogeneous ABL, equations of radiation transport, hydrodynamics and microphysics of clouds and fogs, transport of heat in soils, and equations that describe the transport and sedimentation of aerosols in the turbulent flow.
By use of telescopized numerical models. some factors conditioned the urban microclimate, and airflow dynamics peculiarities have been studied :
1. meteorological processes and microclimatic trends; 2. influence of local orography; 3. urban heat island parameters; 4. urban building zone effect.
The use of a 3-D numerical telescopized models made it possible to optimise the plan structure of a city with taking maximum account of natural and anthropogenic factors. The URBS-ECO models have been used in developing of the ecological section of master-plan of the MIBC Project (Moscow Internazional Business City Project).

References

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