

Flow and Dispersion in the Atmospheric Boundary Layer Investigation by Physical Modelling

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The method of physical modelling belongs to the power tool for environmental and wind engineering tasks. The principle of physical modelling consists in analogy between a boundary layer formed over the floor of a wind-tunnel working section and the Atmospheric Boundary Layer. The method has been adopted and a new environmental wind tunnel was designed at the Institute of Thermomechanics AS CR. To investigate flow and dispersion characteristics in aerodynamic wind tunnel, it was necessary to develop some methods of measurement. First of all, there was demand for flow visualisation for flow and dispersion qualitative assessment. The turbulence characteristics of the flow field were measured by LDA system and the slow FID is used for mean concentrations measurements. Some examples of results are demonstrated: air pollution due to traffic inside a street-canyon, plum of smoke spreading over complex terrain, the surface mean concentrations of lead from point source assessment.

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