EMS Annual Meeting Abstracts,
Vol. 6, EMS2009-518-1, 2009
9th EMS / 9th ECAM

9th EMS Annual Meeting
9TH EUROPEAN CONFERENCE ON Applications of Meteorology
High resolution meteorology
- applications and services

Parameterisation of pollution diffusion in presence of forest canopy

B. Lalic and D.T. Mihailovic

Faculty of Agriculture, Department for Field & Vegetable Crops, Novi Sad, Serbia (branka@polj.ns.ac.yu, +381 21 6350 552)

A forest is an important source and sink of atmospheric gases and particles (CO_2, O_2, dust, pollen, spores etc.). The parameterisation of diffusion in a forest canopy is a usual procedure for calculation of the efficiency with which the canopy can remove pollution from the atmosphere. There are two commonly used approaches in calculation of concentration in presence of the forest. The first approach is based on the equation of dispersion for turbulent air ?ow with some closure scheme used for parameterisation of $\overline{u_{jc}}$ fluctuation correlation. The second one is based on calculation of the deposition velocity, V_d. The main goal of this approach is to simply parameterise deposition velocity without deeper catching in physical nature of process. However, in both cases, the validity of approaches strongly depends on physical realism of turbulence parameterisation.

In this paper a new approach for turbulent transfer parameterisation in presence of the forest and its impact on calculation of concentration in both cases, will be presented. Since dispersion is more pronounced vertically then horisontaly, validation of the obtained results will be done by comparison the calculated and observed vertical pro?les of concentrations within and above the forest. The main goal of this study is to improve parameterisation of atmospheric dry deposition in presence of the forest in order to improve the quality of soil-vegetation-atmosphere transfer (SVAT) schemes.