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DETAILED CALCULATION OF OZONE FLUXES OVER HUNGARY

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An Eulerian photochemical dispersion model and a detailed ozone dry deposition model have been coupled to investigate ozone fluxes over Hungary. Reaction-diffusion-advection equations were solved on an unstructured triangular grid using the SPRINT2D code. The sophisticated dry deposition model estimated the dry deposition velocity of ozone by calculating the aerodynamic, the quasi-laminar boundary layer, and the canopy resistance. The meteorological data utilised were produced by the mesoscale weather prediction model ALADIN used by the Hungarian Meteorological Service. The ozone fluxes were simulated for wet, moderate and dry soil wetness states. The fluxes obtained showed high spatial variations depending on the soil wetness, the ozone concentration and the land use. At night-time, the deposition velocity was found to be low and the ozone fluxes were mainly governed by the concentration of ozone. The impact of soil wetness on the ozone flux via stomatal regulation is negligible at night-time, because deposition through the stomata is obstructed. However, during the daytime period, when ozone is mainly transferred through the stomata, the deposition velocity and the ozone fluxes are strongly dependent on the soil water content. Due to stronger turbulent motions in the surface layer, the deposition velocity at daytime is one order of magnitude greater than during the night-time period, unless insufficient soil water content blocks the deposition. Spatial variability of deposition velocity and ozone flux is greater at higher soil wetness conditions.