Effect of soil drought on evapotranspiration of maize field

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A b s t r a c t : Daily courses of the evapotranspiration from a maize field were determined for 12 clear days from the vegetation period of the year 2000 using an experimentally verified SVAT model. The calculated values of the actual evapotranspiration and its components were compared with results of model simulations carried out with real atmospheric inputs, however, soil moisture was kept at the level of 35 % of the volume that corresponds to a sufficiently wet soil. The obtained results led to conclusions, that the dry soil caused the reduction of the actual evapotranspiration up to 51.6 % in comparison with the case of the wet soil. However, the effect of drying of the soil was compensated by high evaporative demands of the atmosphere in the analysed period, so that the daily totals of the evapotranspiration remained sufficiently high. Thus the high values of global radiation and vapour pressure deficit in the air had a positive effect on the water regime of the maize stand during the dry period.

Key words: surface fluxes, soil moisture, energy budget, microclimate, water regime, mathematical modelling.

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