

Examination of water exchange of a cool temperate deciduous broad-leaved forest using multi-layered canopy model

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The Many land surface models that predict the water budget of land surface have many parameters about physiology or canopy structure which is left indefinite. These uncertainties may produce the errors of water budget, which potentially influence long time water and energy budget.

In this study, we did numerical experiment in order to examine the influence of physiological parameters on water flux from land and vegetation. We use the one dimensional multilayer canopy model 'MINCER'(Watanabe et. al., 2006). First, the model is driven with full data sets from observations (control). Next, we change model parameter one by one. In case A, the under story is removed. The integration period in all cases is one year (January to December, in 2003).

In change A, daily mean latent heat flux is not so different to that of control, but during late fall, that value is slight larger, respectively. As a result, the total energy flux from the canopy top in control has similar trend to observation data than change cases. Under storys we used in this study are not used in many of land surface model, but our results suggest that the slight difference of these parameters produces the remarkable error of sensible flux from canopy model.