

Evapotranspiration and heat fluxes over a small forest – a study using modelling and measurements

ANDREY SOGACHEV¹, EBBA DELLWIK¹ & EVA BOEGH²

1 Wind Energy Department, Technical University of Denmark, Roskilde, Denmark

2 Department of Environmental, Social and Spatial Change, Roskilde University, Denmark

anso@dtu.dk, ebde@dtu.dk

Abstract Some forests in Europe are too small to fulfil the strict fetch requirements associated with idealized flux observations. As a consequence of limited fetch, the flux measured above the canopy will often deviate from the source strength underlying the measurements. Because such flux measurements are very often used for calibration of forest parameters or model constants, further use of these parameters without a proper interpretation in mesoscale or global circulation models can result in serious bias of estimates of modelled evapotranspiration or heat fluxes from the given area. In the present work, we apply the atmospheric boundary layer (ABL) model SCADIS with enhanced turbulence closure including buoyancy for investigation of the spatial distribution of latent and sensible heat vertical fluxes over patchy forested terrain in Denmark during selected days in the summer period. The approach used can be utilized in interpretation of already existing experimental data and in the planning of future experiments.

Key words latent flux; heat flux; atmospheric boundary layer; modelling; heterogeneous surface