

Interactive comment on “Some aspects of the energy balance closure problem” by T. Foken et al.

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The comments of the anonymous referee #1 are very helpful, because they underlined some weak parts of the paper which should be re-formulated or indicated as an aim of further research. We agree with the referee that the extension of the averaging period is not the only reason for the unclosed energy balance. A discussion of all possible reasons was recently given by Foken et al. (2006). It was found that for the whole period of the LITFASS-2003 experiment from May 22 to June 17, 2003, the residual of the energy balance closure was reduced due to the ogive calculations by 5-10 %. This is probably not a very significant part, but as significant as the other contributions. We will include these recent results into the paper. This effect in the order of approximately 10% for the Golden Days is also visible in Figure 4. We also agree that Figure 3 is not easy to interpret and needs some more clarification in the text. In the case of a good convergence of the ogives (case 1 and $R_g=0$), all values of the relative residual are possible, including the case that the relative residual is zero

(the energy balance equation is fully closed). But on the other hand, the case of a closed energy balance does not occur if R_g is lower or larger than? zero. This gives the typical V-shaped distribution of the points but not an exact dependence of R_g and the relative residual. The case of an extreme value of the ogive function for averaging time periods shorter than 30 minutes (case 2, Figure 2b) occurs only in the transition time or in periods with low fluxes. This can be seen from the comparison of the values of the ogive function in Figures 2a and 2b. Therefore, this case is not very easy to investigate, because of its infrequent occurrence. It seems, especially for the sensible heat flux, that different eddy sizes have different signs of the flux as well. We are very grateful for the comments and will include all remarks into the final version of the paper. Reference: Foken, T; Mauder, M; Liebethal, C; Wimmer, F; Beyrich, F; Raasch, S; DeBruin, H; Meijninger, WML; Bange, J: Attempt to close the energy balance for the LITFASS-2003 experiment. 27th Conference on Agricultural and Forest Meteorology, San Diego, CA, U.S.A.: 22.05. - 25.05.2006, paper 1.11

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