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***Interactive comment on “Uncertainty analysis of computational methods for deriving sensible heat flux values from scintillometer measurements” by P. A. Solignac et al.***

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Thanks for your remarks

The classical method is not that confusing, and it is almost right to take  $\beta$  from Eddy covariance and  $u^*$  from LAS. According to Asanuma et al. (2007), page 1389, line 15, using  $u^*$  from Eddy Covariance to calculate H integrated flux by scintillometry, can lead to major error. Then, it is preferable to calculate  $u^*$  by iterations. I agree that a classical Bowen ratio system would have been preferable for the calculation of  $\beta$ , but not available. Moreover, Eddy Covariance results for  $\beta$  are good and the uncertainty on the measurement is given (pp. 1395, line 13).

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The consequences of the correction term in energy balance equation are not pointed out but a brief remark is done at pp. 1390, line 20, explaining that the lack of closure of energy budget is redistributed across both fluxes. I apologise but I do not clearly understand the meaning of the sentences “It would be innovative....scalar similarity”. Would it be possible to have further explanations, to perform better corrections.

Actually,  $\beta$  used for the “classical method” is calculated by the sensible to latent heat flux ratio ( $H/LvE$ , both calculated by Eddy Covariance), and is not corrected for the lack of closure in energy balance. In the “ $\beta$ -closure method”, the expression for  $\beta$  is  $H/(RN-G-S-H)$ , with  $H$  calculated by iteration with the LAS. Then, all values of  $\beta$  displayed in this paper comes from  $H/LvE$ , and maybe, I could mention it

A footprint analysis has been performed for the three periods according to the footprint model of Meijninger et al. (2006). Even if some wind directions are from the east, the low height of the LAS above the vegetation results in a low fetch that does not include the forest (at the east). Then all LAS footprints are at 95% inside the field.

Calculations have been made over 30 minutes for both EC measurements and LAS ones (pp. 1392, line 27). To my mind, the part of the paper concerning the bowen ratio averaged over 5 to 7 days can have its importance. It gives an idea of the errors and uncertainties made on  $H$  flux when using an approximated  $\beta$  (Meijninger and de Bruin, 2000).

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