Atmos. Meas. Tech. Discuss., 8, C1604–C1605, 2015
www.atmos-meas-tech-discuss.net/8/C1604/2015/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Schneefernerhaus as a mountain research station for clouds and turbulence – Part 2: Cloud microphysics and fine-scale turbulence" *by* H. Siebert et al.

H. Siebert et al.

siebert@tropos.de

Received and published: 18 June 2015

Dear reviewers, dear editor,

First of all we would like to express our acknowledgement to all of you for your valuable comments on our manuscript. We followed your suggestions and will respond to your comments in detail below.

Our response is below the original comment.

The paper is well written - it is if good quality and I recommend the publication. I am no expect in droplet thus I can not comment much on this issue. The turbulence analysis

is fine.

Thanks for this encouraging general comment.

There is one point which should be discussed with some care - I am not convinces that the spectrum ÂËŸa(fig 4) drops off at 100Hz due to dissipation. As is understood this is about 100 eta, what is quite high. I guess this is more likely due to some measurement resolution. Here (at page 575) I would prefer a more careful argumentation.

This is a good point and we added some more discussion about this issue (including the same effect on 2nd-order structure functions). No low-pass filtering was applied to the hot-wire measurements, which also could have explained the drop-off, but we are still convinced that energy dissipation effects are the reason and follow the arguments given in the classic text of Monin & Yaglom. We have included the following short paragraph after the introduction of the structure functions:

"The wavenumber k at which dissipation effects become obvious in the power spectrum is around k = (2πf)/U = 1/(8η) (Monin and Yaglom, 2007). With a mean flow velocity of U = 4ms$-$1 and η = 0.4 mm we find f $\approx$ 50 Hz which agrees well with the observed power spectrum in Fig. 4. For the second-order structure function the same authors suggest that for r = 50η dissipation effects become significant which agrees with our observation in Fig. 5."

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 569, 2015.