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Atmospheric Measurement Techniques Discussions

Interactive comment on "Can turbulence within the field of view cause significant biases in radiative transfer modelling at the 183 GHz band?" *by* Xavier Calbet et al.

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Many thanks for the comments about the paper.

I totally agree with your comments. I will address here the major points you have raised. The minor details will be addressed when the next version of the paper is uploaded. Regarding your major comments:

#1. Radiosonde Sample Size. I totally agree with you. The sample size of radiosondes should be clearly stated. Thanks for picking this up.

#2. Full Taylor Expansion. As explained in the answer to Stefan Buehler, this will be

addressed in the next version of the paper.

#3. Only One Profile for Calculations. The main objective of the paper is to see whether the turbulence effect can be big enough to have some impact. That is why calculations are only performed for one profile and for one scan angle. The paper is not meant as a final proof that turbulence effects are the major cause of the observed biases. For this, another paper with a more extensive study would be needed.

#4. Scan Angle Effects. The effect at other scan angles (not shown in the paper) are also significant. Again, a "final proof" would need a more extensive study.

#5. Cal/Val Recommendations. I am more and more inclined to include turbulence terms in the error budgets when comparing measurements. Also, doublets of sondes are mandatory if you want a good match between measurements. This has been shown in previous paper by Tobin et al, and by Calbet et al. If turbulence is as important as it seems, either an error budget including this term or a double launch is needed for Cal/Val. I will change the conclusions including this, Thanks for the comment.

Many thanks again for all the comments.

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