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Atmospheric Measurement Techniques Discussions

# *Interactive comment on* "Distributed observations of wind direction using microstructures attached to actively heated fiber-optic cables" *by* Karl Lapo et al.

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The manuscript provides a very nice overview of the proof-of-concept of the wind direction measurement using DTS. It serves as a good basis for further studies and future application of this method in the field. I only have a few small questions/comments for clarification, mostly related to the DTS device/method.

General comments:

Was a longer time average of the DTS data used, or only the 1s resolution for the analysis? I did not see this clearly mentioned in section 2.2. It does come back in section



3.3, but perhaps it could be expanded upon earlier, to make the relation between time-averaging and uncertainty more clear for the reader (i.e., measurement uncertainty which decreases with the square root of the amount of samples).

Is an estimate available for the response time of the FO cables (with the attached cones) used in this study? If the response time is (much) slower than the 1 second averaging time, it could be more logical to average over a longer time.

Specific comments:

Page 5, line 25; Why does the DTS device have a temperature resolution of 0.01 K? The data resolution of the Stokes/anti-Stokes data (6 significant figures) results in a resolution of 0.001 K. It might be more clear to state the expected noise level of the device at a certain integration time.

Page 5, line 26; The spatial resolution of Silixa's Ultima devices is 30-35 cm, sampled at an interval of 12.7 cm.

Page 5, line 28; I assume that a single-ended calibration is used?

Page 6, line 1; The RMSE of the bath is mentioned, but not the bias. I assume the mean bias in your reference bath is really low, so it could be good to make a distinction between the measurement noise/uncertainty and bias.

Page 11, figure 4; the unlabelled y-axis of figure 4d is not aligned with figure fc

Page 16, line 20; Coenders-Gerrits is with capital G.

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