

**Manuscript title:** Automated precipitation monitoring with the Thies disdrometer: Biases and ways for improvement

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The manuscript describes the capabilities of Thies disdrometer in both quantifying the amount and identifying the type of precipitation. To this end, OTT pluviometer and 2DVD are used as reference, respectively. The results show an underestimation of the precipitation amount, while a good capabilities in identifying the precipitation type. The analysis about the precipitation detection in terms of categorical scores (i.e. hits, false alarm, miss, etc.) has to be improved since it is not too clear and a number of questions arise: in particular, the analysis about ROC and the use or not of a minimum precipitation threshold. On the other hand, the comparison with 2DVD is clearer and useful.

The paper is useful since it shows how much reliable is the Thies disdrometer in measuring the precipitation, but before to be accepted for publication the authors have to address the following comments.

- Figure 2 has to be improved. The size of 2DVD picture may be reduced.
- Page 3, line 27: please, modify the sentence because the 2DVD is not based on a similar principle than Thies.
- Page 4, lines 29-30: it is not clear if the Eq. 1-5 are applied in the Thies precipitation classification algorithm or if different relationship are applied. Please, clarify this.
- Page 6, lines 16-20: in my opinion, the correlation coefficient is not one of the best indicators for this type of analysis (the Table 4 confirm this, showing high CC values before and after the Thies correction). Figure 7 shows that the data are distributed along a straight line, but this is not close to the one-to-one line (as should be). A more indicative indicator to associate to the bias could be the root mean square error.
- Page 6, lines 27-28: what does it mean “...with respect to precipitation detection...”? Is it a minimum precipitation threshold or what? And, is it referred to the OTT pluviometer or to the Thies? It is almost impossible to understand by reading the text.
- Page 7, lines 1-3: by looking at Figure 4, the combination of hits and false alarm can exceed or not 100%. Obviously, when the sum is lower than 100% it is because of miss and/or correct negative, but what about when the sum exceed 100? Is it always because they are calculated with respect to precipitation detection? This reviewer (and this could be true for a reader) is not familiar with ROC, but the text should allow to understand the methodology.
- Page 7, lines 8-9: I am always skeptic when an instrument like a disdrometer or pluviometer is considered to be able to detected so weak precipitation.
- Figure 5: a logarithmic scale on the y-axis could be better.

- Page 8, line 8: or “...described above. Whereas...” or “...described above: whereas...”
- Page 8, line 11: the mean ratio of what?
- Page 8, lines 15-16: the PSD shown in Figure 8 are obtained by averaging all the 1-minute PSDs collected during the two years?
- Page 8, lines 34-35: I basically agree that the impact of both correction methods are comparable, but the “2DVD correction” gives higher bias than “OTT pluviometer correction”. This could indicate a slight overestimation of the precipitation by 2DVD if compared to the OTT pluviometer.
- Page 9, lines 13-14: the sample size information should not be reported here but at the beginning of Section 2.3.
- Page 10, lines 18-21: to state that the correction method proposed by you and the one proposed in Raupach and Berne (2015) are consistent you should apply their method to your data (only because Thies and OTT Parsivel are based on the principle).
- Conclusions: the first part of the Conclusions (i.e. page 11, lines 21-32) is a summary of Section 4. I suggest merging the two sections in only one that could be titled “Discussion and Conclusions”.