

We would like to thank reviewer for his/her time carefully reading and re-reading the manuscript.

In reply to reviewers' comments the manuscript was modified as follows:

1. Figure 7 needs a careful pass. The same curve is given three different dates: 18/08/2019 in the caption (I assume 2019 is intended), 18/09/2019 in the legend, and the fit is labeled 18/07/2019. Comparing against Figures 4b and 5, the two measurement dates also appear to have been swapped, since 04/07/2019 is the cloud free day and 18/07/2019 is the partly cloudy one, but the legend has them the other way around. The caption additionally labels the three curves (a), (b) and (c) as though they were separate panels, and two different sets of standard deviations are printed on the same plot (8.09/4.9/49.25 in the legend versus 8.5/4.8/49.02 to the right of it) with no explanation of how they differ.

Answer: Figure 7 and figure's captions were modified. In particular, two sets of the standard deviations are the same. Also, dates for cloud free and cloudy days were changed.

New Figure 7 captions: "Figure 7. Distributions of FD calculated from CCS measurements at DEWA AERONET site: 04/07/2019 (cloud free conditions), Figure 4b (red line), polynomial fit to these measurements Figure 4b (blue line), 18/08/2019 (partial cloudy day), Figure 5."

2. "Mathews" is still used in the abstract (ln 40) and in the Figure 23 caption, although it is correct elsewhere in the text.

Answer: corrected.

3. "zenobo.org" was corrected in the body text but remains in the Yang et al. entry of the reference list

Answer: corrected.

4. The response agrees that Figure 2b is plotted against case number rather than cloud fraction, but both the text (ln 143) and the figure caption still describe it as a function of cloud fraction.

Answer: on lines 144-145 the following changes are added "as a function of a case number with each case corresponding to the different cirrus cloud fraction."

Figure 2 captions were changed to: "Figure 2. Dependence of the curvature slope on the cloud fraction for the three mixtures of urban industrial aerosol with cirrus clouds, (cirrus clouds/aerosols): 10/90, 20/80, and 50/50 (a), dependence of the first point of the curvature on case number, each case corresponding to the different cloud fraction for the mixture of urban-industrial aerosols with cirrus clouds (b)"

5. The response states that the Aqua MODIS satellite track was added to the caption of what is now Figure 20, but I do not see any mention of it there.

Answer: the captions to Figure 21 were changed: "Figure 21. MODIS images of the area in vicinity of the Capo Verde AERONET site on November 16, 2022: Terra (a), Aqua (b), time series of AE, red and blue lines depict V3 and V3 after application of the FD algorithm respectively. **On the Aqua image, blue line shows the Aqua MODIS satellite track.**"

6. Ln 380 of the revised manuscript still says "above" when it should say "below". This was noted by Lorraine, not me, in first round of review but I think the change did not make it into the revised text and I worry the typo could significantly confuse readers.

Answer: corrected.

7. Finally, two smaller points, on which any changes I leave to the authors discretion. On my earlier comment about mean centering, my concern was not the mean over the full day, which I agree will sit close to zero by symmetry, but rather that the FD should be offset locally, and in opposite directions in the morning and the evening. A near zero daily mean is consistent with that rather than evidence against it. Separately, I am not following how the standard deviations in Figure 7 support the conclusion that TRS already accounts for the natural FD variability in cloud free conditions. The polynomial fit is smooth by construction, yet its FD standard deviation is given as 4.9, and that of the cloud free measurements as 8.09, both of which sit above the threshold value of 3.0. I may be misreading what these numbers represent and I raise it only in case it is useful. The authors are in a far better position than I am to judge whether it matters.

Answer: Regarding the first comment we agree that FD could be offset locally, however we also think that it is less important because FD standard deviation is calculated for the entire day for which the mean is not biased. This was the rationale in answering your original comment.

Regarding the second comment, the discussion of Figure 7 was to show that the standard deviation in cloud free conditions is a non-zero number due to the curvature caused by SZA dependence. Also, it showed that clouds' presence results in an increase in this number. However, we agree that readers might be confused by threshold value which is smaller than in example of Figure 7. The point is that we cannot account for the difference between threshold value and actual values in every particular case. It mentioned in discussion that threshold value of 3 accounts for the intrinsic curvature on **average** meaning that some large values could be above the threshold. At line 240 we added "**at least partially**", to emphasize the issue.