Atmospheric Measurement Techniques Discussions

Atmos. Meas. Tech. Discuss., author comment AC3
https://doi.org/10.5194/amt-2022-181-AC3, 2022

Reply on RC2

Angelos Karanikolas et al.

Author comment on "Sensitivity of aerosol optical depth trends using long-term measurements of different sun photometers" by Angelos Karanikolas et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2022-181-AC3, 2022

Author's response to referee #2

The authors would like to thank the referee for providing helpful and constructive comments. You can find our response below each comment.

Explain in the text, for who is not of this field, the level of AOD aeronet downloaded data

Added the part below as explanation at the end of section 2.1.2.

'The CIMEL AOD data are publicly available at 3 levels. Level 1.0 are near real-time data without cloud screening, the final calibration and quality assurance. The cloud screening produces the level 1.5 data also near real-time. After the application of the final calibration and quality assurance the level 2.0 data are produced, which we use in this study.'

Line 145, in this part of the text it is not clear what the PFRhf dataset is used for, even if explained clearly later.

Added a clarification in the sentence. The sentence now is the following with the added part in italics: 'The second one, PFR_{hf}, is a much larger dataset that represents the PFR measurement frequency (1 min) *and its comparison with PFR_{syn} can show the effect of the measurement frequency on AOD differences and trends*.'

Line 207: any reason for the larger deviation in 2019?

This is a case where it looks visually like there is a larger deviation of AOD differences compared to the other years, but this is not true. 2019 is the year with the most measurements. The larger amount of data outside WMO limits are not a larger fraction of the data compared to all other years or a big departure from the traceability criterion (94.68% of the year's data are within the limits at 500 nm). In terms of data percentage within the limits, standard deviation of differences and 95th percentile-5th percentile

difference, it is similar with other years.