

Interactive comment on “Water Vapor Retrieval using the Precision Solar Spectroradiometer” by Panagiotis-Ioannis Raptis et al.

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Authors would like to thank all reviewers for their time and their useful comments which enhanced the quality of the manuscript. Above answers to all the specifics comments can be found.

P3, l. 15: Actually, AERONET has more than four hundred sites around the world.

The sentence has been restated

P3, l. 26: “Izaña Atmospheric Observatory, Tenerife, Spain” seems to be in different font type.

Fonts changed

C1

P4, l. 16: Add space after (MOL-RAO).

Added,

P5, l. 23: Cimel performs measurements at nine bandpass filters, and retrieves AOD at eight nominal wavelengths (340-1640nm with the exception of 940nm).

The sentence has been restated.

P5, l. 23: 1064nm>1640nm

Corrected.

P5, l.27: Please clarify what you mean by “retrieve it” in this sentence.

The sentence has been restated to be clear that it refers to IWV retrieval and not FWHM.

P6, l. 25: Add space after 2.4.

Added

P8, l. 3: quaiity>quality

Corrected

P8, l.19: Section 3.2.

Added

P10, l. 10: The authors stated they used mid-latitude atmosphere to model Tw. What season have you selected for your simulations? Do you expect a change in three wavelength dependent coefficients (a, b and c) as a result of the seasonal change in Tw, as was found by Campanelli et al. (2014) or Schmid et al. (1996)?

All the runs were made with summer mid latitude model. Ingold et al. (2000) showed that the most important parameter that significantly alter retrievals is altitude. Campanelli et al (2014) found an important seasonal variability of the coefficients (although

C2

retrieved without RTM) and in their newer (Campanelli et al, 2018) study they developed a method to recalculate them in daily basis almost in daily basis, using GPS reference. In our case of RTM calculations and the aim of having a stand-alone method, we considered the vertical profiles of the atmosphere, which alter the coefficients as unknown and just used one set of runs. As in Ingold et al. (2000) this choice adds an uncertainty of $\sim 0.05\%$ to the coefficients, which is insignificant in our uncertainty budget calculation in section 4 of the manuscript.

P18, l. 6: The reference Smirnov et al. (2000) should be used in the next sentence, where the AERONET cloud screening is presented.

Reference has been added to the appropriate sentence.

P19, l. 6: Figure 8>Figure 9

Figure numbers have been updated and corrected.

P20, l. 9: statics>statistics

Corrected

P20, l. 14: Is sigma defined as the standard deviation somewhere in the text?

Standard deviation is now defined in the beginning of the results section, alongside with a clarification of the differences calculated.

P21, l. 18: figure 11>Figure 11

Figure numbers have been updated and corrected.

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