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Atmospheric Measurement Techniques Discussions

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

Anonymous Referee #1

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Water vapor plays an important role in the climate as it is the main feedback variable associated with radiation effects and moisture dynamics. Therefore, accurate estimates of atmospheric water vapor content can improve the predictability of rainfall and our understanding of many feedback processes. The study utilized a 2-year dataset measured from the Precision Solar SpectroRadiometer to retrieve integrated Water vapor (IWV) using two different approaches and validated it by other instruments' retrievals inculuding GPS, MWP, RS, and CE318 photometer. Oveall, the manuscript is generally well-written. The topic is certainly suitable for AMT, the methods are appropriate, and the analysis and the results are generally reasonable and robust. This paper can be considered for publication after the following issues are addressed.

Specific comments:

Page 1, L23: The full name of AERONET in abstract should be provided when the word first appeared. What's more, Page 2, L18, the same change should be addressed in IWV.

Page 3, L7-L9, some references should be provided.

Page 4, L13, It is better to describe structure of this paper in the end of introduction.

Page 4, L19, It would be better if you could provide an in-situ figure about PSR, which would give the reader more information.

Page 4, L28, an > and

Page 5, L1-L6, some references should be provided.

Page 5, L8, sensors > sensor

Page 5, L11-L12, Is there any reference to the calibration of the instrument? If so, please provide.

Page 5, L16, what is the resolution of this instrument? How long is the interval between two consecutive observations?

Page 5, L32, eight bandpass should be nine bandpass

Page 5, L29, The two words (calculation in) are linked together

Page 6, L3, the author mentioned that the photometer changed two times during the two years of observations, and whether the different numbering instruments would have a certain effect on the real water vapor retrievals?

Page 7, L27, What version of MODTRAN used in the paper? The version number should be marked throughout the paper.

Page 8, L19, Section 3.2

Page 9, L12, The references should been provided about Beer-lambert law.

Page 9, L14, Get rid of this extra arrow

Page 10, L10, Why author selected the mid-latitude built?

Page 11, L15-L18, These sentences repeat with the previous text, please check

Page 13, L16,L19, Figure 4 > Figure 5

Page 14, L12, Figure 6, MW > MWP

Page 15,L19, comparing results > comparison results

Page 16, L3,L6, Equation (3) should be Equation (9)

Page 18, L17, 0.02cm > 0.01 cm? Please check

Page 18, L18, 0.16 > 0.17? Please check

Page 18, L19, 3cm > 3

Page 18, L32, some relevant statistical variables should been defined in table

Page 19, L6, Figure 8 > Figure 9

Page 19, L11-L12, Some explanations or references are needed.

Page 19, L17, below 2cm?

Page 20,22, Figure 9, Figure 11, numver > number.

Page 22, L1, redundant sentence, please remove it.

Page 23, L7, other instrumens (CIMEL, MWP, GPS, and radiosonde) have been ....

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