

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, l15: the number of current stations is much higher, please update the figure (currently over 500).

The sentence has been updated.

- p4: a slightly more in depth description of new PSR would be good, including a scheme or image. –

C1

An image of the instrument has been added and a sentence for the measuring/archiving routine. A more detailed publication for the technical characteristics of the instrument is being prepared from the authors.

p5, l29: "calculations in" –

corrected

p12, figure 3: figure could include not only the average for all the wavelengths but also the IWV for the reference wavelength 946nm. –

A reference line for retrievals at 946nm has been added and a sentence in the text to describe it.

p13, figure 4: the limits of the bands could be included for a better illustration

Since the aim of the study is PSR retrievals and PSR bands are continuous in the spectral region of 300-1020 we think that pointing that in the figure would not provide additional information. WMO recommendations are included in previous general plot. The aim of this figure is to point the potential of using a wider spectral range instead of single channels.

p15, figure 6: the minimum wavelength results 934nm but following the plot, other wavelengths such as 930-935 could be also possible. Please state the specific reason to select 934nm. Is it based on the absolute differences between the different techniques? As this plot is specific for the two year database analysed, perhaps channel 932 or 933nm could be more robust as it is situated on the center of the optimum region (however I acknowledge that little effect is expected). –

In the monochromatic approach 934 and 935nm channels statistics were almost as good as 946nm and 946nm band was selected for consistency with WMO recommendations and filter photometers. Following that we wanted the spectral approach to have windows that include all these bands. But still as shown in theoretical spectras the higher absorption is in the 944-946nm region, so windows not including that have

C2

serious drop in the quality of the final retrieval. That is the reason that we select to move only the lower limit of the window and always have this region included.

The most unexpected behaviour is that CIMEL has better agreement in a spectral region including a significant part outside its measuring band (at 932-946nm). Reason for selecting 934nm as the lower limit is that “average” better for all comparisons (CIMEL is better in the wider window, MWP and RADIOSONDE agreed best at 936-946nm and GPS is practically equal in any selection). So the selection of a different window would slightly alter accordingly the statistics of each comparison. The corresponding sentence in the manuscript has been restated to clarify the selection.

Tables: please include the units in all the correspondent columns.

Units are now stated in all columns.

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