

Interactive comments on “Precipitable water vapor content from ESR/SKYNET Sun-sky radiometers: validation against GNSS/GPS and AERONET over three different sites in Europe” by M. Campanelli et al.

This paper presents a validation of a method used for the retrieval of water vapor column from sun-sky radiometer measurements at 940 nm. This method has been already described and applied by the authors in previous works (Campanelli et al., 2010; 2014). In this study, the estimated water vapor column data for three sites characterized by different atmospheric conditions and pollution loadings are validated against GPS and CIMEL sun photometer datasets.

The paper is well written, the results are sufficiently presented and the comparison is of interest of the community. I recommend the publication after the suggested minor revisions.

Specific comments and technical corrections

Page 5, line 5: “Water vapour content in the troposphere affects GNSS signals by lowering their propagation velocities with respect to vacuum.” → Please, give a reference.

Page 5, lines 11-14: “Since many years,... in a routinely way.” → Please, provide reference(s).

Page 5, line 18: How is the ZTD (Zenith Total Delay) defined? Please, explain what ZTD refers to and give reference.

Page 5, line 31: Define the ARPA acronym.

Page 6, lines 3-4: Again, give a definition for Zenith Hydrostatic Delay (ZHD) and the Zenith Wet Delay (ZWD).

Page 6, line 12: The abbreviation PWV is not used/defined anywhere else in the manuscript. Consider changing it to W, which is used for precipitable water vapor throughout the text.

Page 8, line 20: Again, define the acronym RMSD.

Page 8, line 25: “...within 15 min before and after the sun-sky radiometer measurements...” → Do you mean within 15 minutes around the measurement or 15 minutes before and 15 minutes after the measurement, i.e. within 30 minutes?

Page 10, line 7: typo: lower W → lower W

Page 10, line 12: “...very close to the sea, from where humid airmasses are transported all over the day”; Page 10, line 15: “...due to the presence of a breeze circulation, advecting air from the sea”; Page 10, lines 23-24: “However, further analyses, as the correlation between the humidity and the wind, are necessary to confirm this point.” → Are there any data of wind speed and direction available for the three locations? It would be interesting to see the wind patterns and if there is any correlation with the water vapor content.

Page 10, line 17: typo: par → part

Page 10, lines 26-27: “...comparing measurements within 1 minute of difference” → It is not clear to me if you use the closest value within 1 min or you compare averages within 1 min.

Page 11, line 17: “...for measurements within 1 minute” → Again, do you mean averaged within 1 min?

Page 18, Fig. 2: In the bottom panel you should change the symbol for Aosta to open squares.

Page 20, Fig. 4: You should mention in the caption that the measurements presented here refer to summer season. Why not presenting the histograms for all seasons? At least consider including winter measurements. Also, mention in the figure caption that the frequency scales are different for the three histograms.

Pages 22-23, Fig. 6 and 7: Consider mentioning the site in the captions. Especially in Fig 7 where Valencia is not mentioned at all.

Page 27, Table IV: typo: Tab → Table. Again, consider mentioning the measurement site in the caption.