We thank the reviewer for the positive general comment on our work.
We answered point by point to his comments as shown below:

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

We added the following reference: Saastamoinen, 1973; Bevis et al., 1992

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

Bennitt and Jupp, 2012; Guerova et al., 2016 has been added.

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

The text has been changed (in red the changes):" Dry air and water vapour molecules in the troposphere affects GNSS signals by lowering their propagation velocities with respect to vacuum (Saastamoinen, 1973; Bevis et al., 1992). A diminished speed results in a time delay in the signal propagation along the satellite-receiver path, that multiplied by the vacuum speed of light adds an extra-distance to the satellite-receiver geometrical one. It is worth reminding here that the tropospheric delay (the word delay is usually referred to the extra distance and is expressed in meters) due to the dry air and water vapour molecules, is just one out of many other systematic errors affecting GNSS observations, which are to be accounted for in order to achieve sub-centimeter accuracy positions. During GNSS data processing, the contribution of dry air and water vapour to the total delay are separated and estimated in the zenith direction. This leads to the definition of three delay parameters: ZTD (Zenith Total Delay), ZHD (Zenith Hydrostatic Delay), and ZWD (Zenith Wet Delay), related by the ZTD=ZHD+ZWD (Bevis et al., 1992; Guenoca et al:, 2016)"

Page 5, line 31: Define the ARPA acronym.

Done

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

See the answer above

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.

done

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

done

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?

The sentence was changed as "The closest W_{GPS} retrievals within 30 minutes, 15 min before and after the sun-sky radiometer measurements were selected."

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

done

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.

We inserted information of wind direction and the correspondent transported W for all the sites. We modified the text as follows:

"Looking at Figure 4a, referred to summertime, it is worth highlighting that Valencia is the site where high *W* values (>30 mm) are more homogenously distributed over time, with a very slight increment in the afternoon due to breeze circulation. This is principally due to the location of this site, very close to the sea, from where humid air masses are transported all over the day. This kind of distribution of greater water vapor content is visible also in the other seasons, showing a sort of homogeneity of *W* distribution all over the year. In Figure 4b a bivariate polar plot with smoothing, obtained from openair package, is shown. W content, for the entire year, in polar coordinates is shown by wind speed (radius of the circles) and direction. Mean contents are calculated for wind speed-direction 'bins' (e.g. 0-1, 1-2 m/s,... and 0-10, 10-20 degrees etc). It is evident from this plot that the largest amount of W is brought from Easterly winds, being the seacoast 10km East from the site.

In Rome *W* values >35 mm are mostly recognizable during summer afternoons, from about 14 UTC, due to the presence of a breeze circulation, advecting air from the sea (Figure 4c). The importance of wind from SW (that is from the sea) in transporting *W* to the site, is highlighted in Figure 4d, whereas lower *W* content is mostly recorded when wind comes from N direction, having also the highest speed. In all seasons greater water vapor content is retrieved in the early morning and late afternoon showing, also for this site, a generally homogeneous *W* yearly distribution. A smaller number of measurements is available in Rome during the middle part of the day in all seasons. This is mostly due to the formation of convective clouds at around 12 UTC, favored by the urban heat island phenomenon, that didn't allow the photometer to operate.

In Aosta, as shown in Figure 4f, the greater amount of *W* comes from East direction, that is from the Po Valley, a humid region with higher atmospheric stability and weaker winds, and mostly during summer and autumn seasons; elevated values of *W* (>35 mm) during summer were retrieved more frequently in the morning, but this hourly distribution was found also in autumn for *W*>25 mm (Figure 4e). This behavior could be caused by the atmospheric stability; in the late morning, especially in summer and fall when the insolation is higher, valley-mountain flows develop mixing the humid air of the lower levels with the dried air above. Then, winds aloft could remove part of this humidity by advection, decreasing the water content of the air column. The other seasons conversely show more homogeneous *W* distribution during the day. Low W content associated to winds from W, is due to the Foehn. When wind comes from this side, air masses passed the Alps and arrived over Aosta drier."

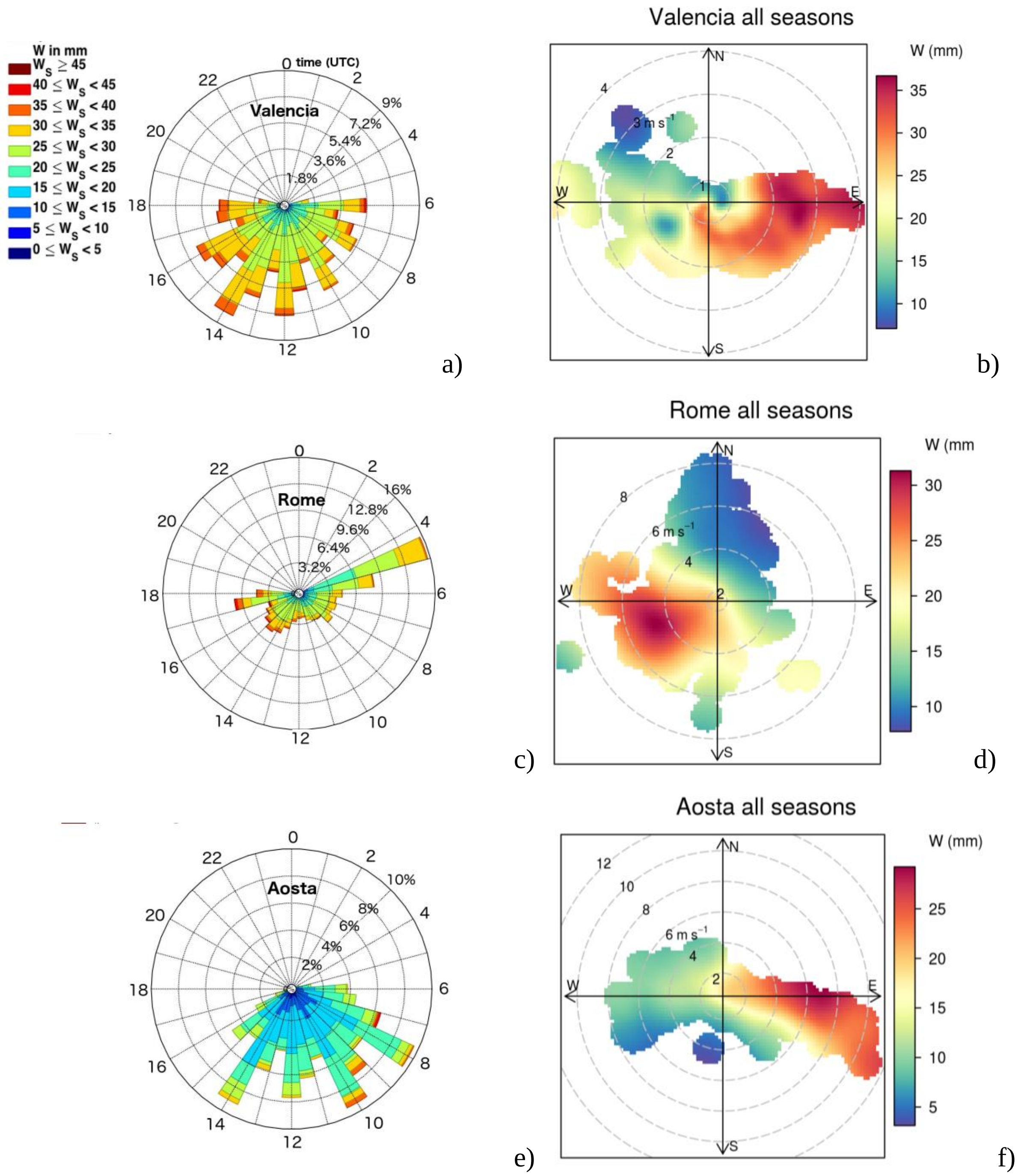


Figure 4: plots a, c, e, -polar plot showing the distribution of W values, during summer season, grouped according to their numeric range; the 24 quadrants are hours in UTC; the radius represents the frequency of events normalized to the number of point of the season. The frequency scales are different for the three histograms. Plots b, d, f,- bivariate polar plot with smoothing, showing the distribution of W content, for the entire year, by wind speed (radius of the circles) and direction.

Page 10, line 17: typo: par → part

Done

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.

The sentence has been changed "within 1 minute of difference (if more than one measurement of W_{GPS2} was found, their average was performed)"

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

The sentence has been changed "within 1 minute of difference (if more than one measurement of W_{AER} was found, their average was performed)"

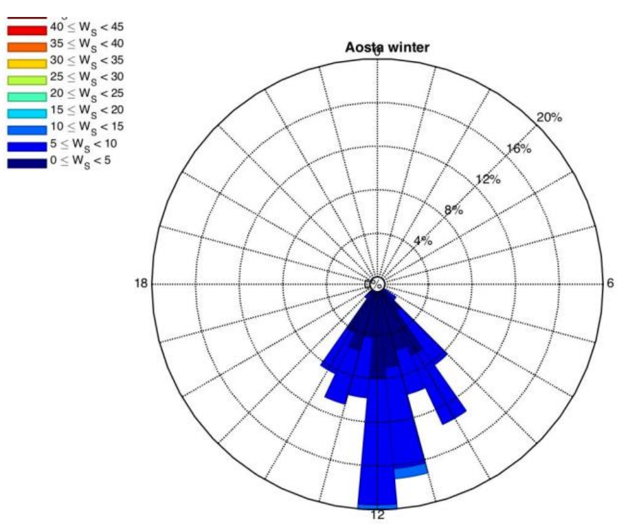
Page 18, Fig. 2: In the bottom panel you should change the symbol for Aosta to open squares.

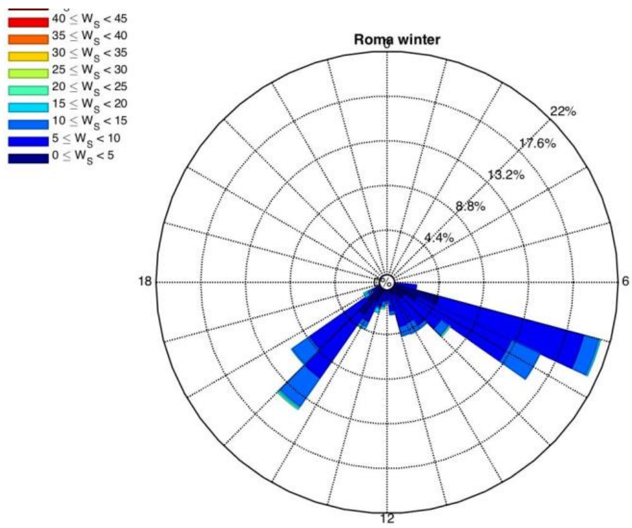
done

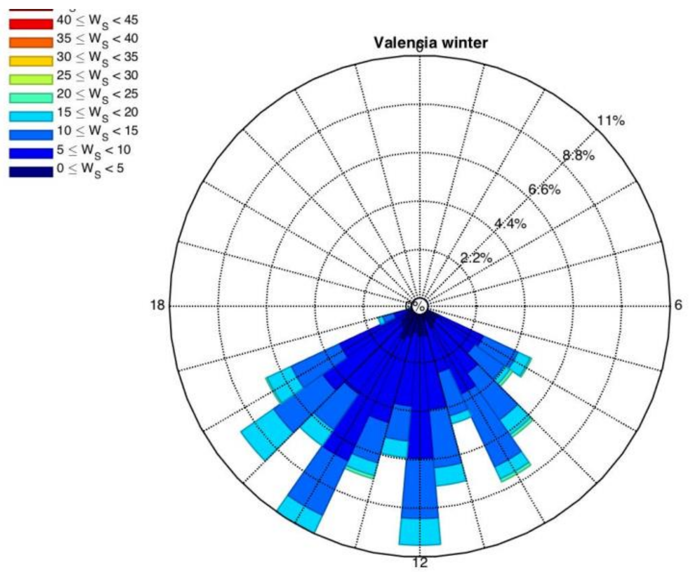
Page 20, Fig. 4: You should mention in the caption that the measurements presented here refer to summer season. Why not presenting the histograms for all seasons? At least consider including winter measurements. Also, mention in the figure caption that the frequency scales are different for the three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

The caption was changed as:" polar plot showing the distribution of W values, during summer season, grouped according to their numeric range; the 24 quadrants are hours in UTC; the radius represents the frequency of events normalized to the number of point of the season. The frequency scales are different for the three histograms. "

Comparing the histograms in the different seasons, we noticed that the information content provided by the winter is not very significant to highlight the main differences among the 3 sites. During this season a smaller number of measurements is available, mostly in Aosta (due also to the sun being behind the mountains) and in Rome (high clouds presence in the middle of the day). Moreover, the range of values assumed by W is not very wide (see below Figures). Spring and autumn are very similar to summer season, except for the values assumed by W. For these reason we considered not important adding more plots.







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.

done

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

done