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

General comments:
i) It is very interesting the approach of having the coefficients recalculated every second day. I think it would be extremely interesting to have some results presented on the day to day variations or stability of them or even some link to other atmospheric variables if possible. At the end, how much is the final W retrieval is affected if a more infrequent schedule is adopted. It would be really valuable to conclude some guidelines on the operational use of the method on this prospective.

We agree with the suggestion of the reviewer. A sensitivity study about the time frequency of external measurements (both daily and monthly but also inside a single day) is needed for building a guideline on the operational use of the method, maybe also delivering a software.
However, we believe that such study needs time and an accurate analysis, and it could take to an addition of more sections to this paper, already long.
Therefore, we retain this idea very good for further investigations and we explicitly mentioned it as a future prospect of the research.
We added the following sentence at the end of the conclusions:
Finally, a sensitivity study about the time frequency of the independent external measurements (both daily and monthly but also inside a single day) will be a future prospect of this research in order to build a guideline on the operational use of the methodology and delivering a software

ii) All the statistics of the biases among GPS and POM retrievals are presented in a relative approach in the text. Only in table 3 and 4 are presented absolute values of biases. It would be really useful to add some absolute values and corresponding statistics in the discussion. For example figure 5, suggests that the spread of differences should be almost in the same order at all 3 classes and probably lower at the very low W class. There the absolute values of the biases would add more to the interpretation of the intercomparison.

Absolute values of biases for each class of Figure 5 are already listed in table III. We commented the results in terms of absolute values as below (red are new comments):

"The comparison between W_P and W_{GPS2} for Rome and Valencia (Table III) when all W classes are analysed, shows high R^2, varying from 0.98 and 0.96; RMSD assumes values from 1.35 mm (6.43%) and 1.67 mm (8.09%), and the Bias is within
-0.01 mm (0.34%) and -0.20 mm (-0.05%), therefore within the estimated error ΔW_P. Investigating separately the 3 classes (divided using the thresholds on the W_{GPS2} dataset) the greatest difference was found for the first class in terms of %RMSD (9.17% - 14.51%) but for the same class it was the smallest in terms of absolute RMSD (0.75 mm – 1.13 mm); conversely for the same class the smallest difference was found in terms of Bias, both in percentage and absolute values, varying from
-0.03 mm (0.60%) and -0.17 mm (-0.52%). However, each class remained within the ΔW_P error.
The retrieval of W_P for Aosta was generally less performing than for the other sites. For the entire W classes, RMSD and Bias were found to be the highest values, being 13.57% (1.97

mm) and -3.45%, (-0.88 mm) respectively, while R^2 is the lowest among the three sites (0.95). Also for this site the greatest value of %RMSD (18.00%) and the smaller one of RMSD (1.29 mm) was found for the first class and the Bias (both percentage and absolute values) remained for each class within the ΔW_P error. The lower quality performance of the methodology in this site is discussed in section 4. "

Specific comments
p.1 line 30. RMSD is not a well know abbreviation. It should be written in full form here.

Done

Section 2. At the description of the 3 sites I would suggest to add some more info regarding important aspects of the sunphotometric methods, such as statistics about hours of sunlight or cloud coverage or expected SZA range throughout seasons. Also, it should be added that Rome and Aosta are in Italy, as not all readers are not familiar with south Europe.

The location of all the site is already declared at the beginning of the section 2, after the coordinates.
We added the following information at the end of each paragraph describing the sites :
Zenith angle for Rome varies within the interval [18.46° - 65.31°], and hours of sunlight recorded in 2010 were 2431.8 8 (provided by the Italian air Force)..
Zenith angle for Burijassot varies within the interval [16.07° - 62.91°] and hours of sunlight recorded in 2011 were 2678.7.
Zenith angle for Aosta varies within the interval [22.31° - 69.14°] and hours of sunlight recorded in 2011 were 2396.

p. 4 line 9 Are there any differences in the 940nm channel between POM 1 and POM 2? If yes, report them and also report which was used in each of the 3 datasets.

The 940 nm filters installed by PREDE in both the models is the same : Fujitok with 50%BW = 10 nm.

p.4 section GNSS/GPS. Since GPS receivers are located up to 7km from the sunphotometers, it would be really useful to have some reference on the spatial variability of W, and how much it could affect the validation.

Unfortunately there isn't any other historical measurement of W around the 3 sites, useful for analysing the spatial variability of W. However for Rome (2 km distant) and Aosta (0.5 km) the GPS is practically collocated. The only site where the antenna is 7 km far from the sun-photometers location is Valencia, but due to the orography of this site we retain W distribution homogeneous.

p.5 line18 ZTD some definition on ZTD is needed.

Done

p.5 line 30 NWP abbreviation is not explained anywhere in the text.

Done

p.6 line 23. And p.7 line 4
A little attention in explaining T. The formula written here is only the transmittance due to the presence of W in the atmosphere. The way it is written is seems that there is no dependence on aerosols and Rayleigh scattering in this bandpass. Restate this sentence so that this is clear.

We restated the sentence as below:

Precipitable water vapour content from ESR/PREDE-POM sun-sky radiometer (W_P) was calculated using the methodology described in Campanelli et al. (2014). For specific spectral regions in the near infrared, where absorption of dominant trace gases can be considered negligible, we can express the transmittance of the atmosphere (T_{atm}) as follows: $T_{atm} = e^{-m_0(\tau_R+\tau_a)} \cdot T$, where m_0 is the relative optical airmass (Kasten and Young, 1989), τ_a and τ_R are the extinction aerosol optical depth and the molecular Rayleigh scattering at 940 nm respectively, and T is the transmittance of the water vapour, $T = e^{-a(mW)^b}$ with m the water vapour optical airmass, calculated according to Kasten, 1966, and W the columnar water vapour content (Bruegge et al., 1992).

p.9 line 19-20. The uncertainty calculated here is just the relative deviation of GPS and POM retrievals. This is a statistical measure which shows very well how the biases are spread. But it is not the total uncertainty of the retrieval which should include instrumental uncertainties, errors introduced at different steps of the method and their spread, and any other systematic errors. It should be restated so that is clear that this is not the total uncertainty of W retrieval.

The following sentence has been added after formula 7:

It must be beard in mind that this uncertainty is a statistical measure but not the total uncertainty of W retrieval which should include instrumental uncertainties, errors introduced at different steps of the method and their spread, and any other systematic errors.

p10- line 16. Although it is not presented somewhere in the study, I assume that higher uncertainties are expected in sunphotometric methods at very high SZAs, which is usually the case in early morning and late afternoon. I suggest adding some information and discussion about that at this point.

We missed to write an information about the data selection in term of airmass value. We added the following sentence at the beginning of Section 4. In order to limit the influence of largest uncertainties at very high solar zenith angles, we selected the data having m<8.
However a sensitivity study about the uncertainty introduced for high SZA can be added to study about sensitivity to the time frequency of external independent measurements.

Figure 3. the caption is note descriptive enough. It should be restated to be clear what are the data points in this plot.

The caption has been changed as below:

Temporal behaviors of W_P retrieved with the presented methodology, for the years 2010 (Rome), 2011 (Valencia) and 2014 (Aosta).

Figure 7: It is not stated which station's dataset is used in these plots.
Done