We would like to thank the reviewer for their valuable time in reviewing the manuscript and providing suggestions for improvement. We appreciate his feedback and constructive criticism. We would also like to thank the editor for giving us the opportunity to improve the manuscript. Responses to the reviewer comments are specified below.

***General comments***

*1. The first comment is that more extensive explanation should be provided in which sense the manuscript makes progress and provides innovative contribution with respect to previous works developed for the same area. The introductory section does not present clearly the contribution of the manuscript.*

**Response** : As requested, we have added a long part in introduction:

There have been several projects from several organizations on the different continents of the world to derive tropospheric zenith delay measurements from ground-based GNSS, for operational meteorological applications. Examples of such projects in Europe include the **COST Action 716** (European Cooperation in the Field of Scientific, Technical Exploitation of Ground-Based GPS for Numerical Weather Prediction Application, 1998–2004) **[Van der Marel, 2004],** and **E-GVAP** (The EUMETNET GPS Water Vapor Programme, 2004) **[Bennitt and Jupp, 2012].** **E-GVAP** network consists of more than 1500 GNSS sites mainly in Europe; recently processing and distribution of global GNSS data have started, since many E-GVAP members run global NWP models. **In North America**, the **SuomiNet** (named to honor meteorological satellite pioneer Verner Suomi) network of receivers provides real-time estimates of water vapour for a global network of receivers from zenith water vapor measurements, which are mostly concentrated in the United States **[Ware et al, 2000]**

In Africa, the **AMMA** (African Monsoon Multidisciplinary Analysis Project, 1999–2005) [**Bock.O and Nuret.M, 2009; A. Walpersdorf et al ,2007]** worked on PWV estimation and analysis in the African monsoon region.

In **North Africa**, especially Algeria, this climate change has produced dry periods, which have caused a drop in flow and rainfall on the watersheds and water resources, and consequently the stored volumes are reduced. Atmospheric products GNSS (tropospheric delay (ZTD), water vapor) are paramount parameters for any climate study. These different sources of water show strong variability in time and space, and a downward trend in the Mediterranean; in Algeria **[Taibi et al. , 2013; Meddi et al., 2007]. The evaluation of radiosonde profiles in this region is very important to understand the local variability of water vapor.** Algeria is country with large area (more than few thousand km EW and NS). This means that the northern part has a Mediterranean climate, while mostly the rest of the country has a desert climate. However, between these two major types of climates, it exists transitional climates. This including the semi-arid climate with drought (only limited during the summer season. This corresponds to a Mediterranean climate season). In this context, the evaluation of water vapor with precision from different satellites data is very important as long as there is a lack of radiosonde stations (only 4 stations) in Algeria.

*2. The authors should access and include more references to make a more appropriate treatment of the issue to be discussed in the manuscript taking into account remotely sensed data and the use or radiossondes The few citations are not necessarily properly reported in the manuscript, once important information is not included in the text to better evaluate the cited references and the relationship with the manuscript. Much more work should be devoted to the literature review of the manuscript.*

Response: Several references was added in the text.

*3. It is also provide a more broad context of the region and information about the stations used. Mapping provided should be improved. Are they weather stations? Are they stations located in airports? Are there radiosondes been released from the three stations in two different times of the days. Be careful also on reporting UTC time and local time along the text. Do the authors just have access to the datasets by means of the University of Wyoming? In addition, why did the authors made simplified statistical analysis based on just three (3) statistical metrics?*

Response: The stations used was selected according to their data availability. All stations are meteorological stations near the airports. For the time, we homogenize and use the UTC reference on the entire document. The launch is proceeded at two different times of the day. The data archive was provided by the manager of the University of Wyoming.

About statistical analysis, we have used scatter plots, MBE RMSE, and correlation method because we have a lack of data available on the study area, and using other complex methods don’t permit significant conclusions.

*4. Why did the authors have used only three stations? Why did the author not have explored the profiles of both datasets to really make a more rigorous study on their performances? Why did the authors used the year 2012? Why did the authors have used the Modis daily product with 1 degree spatial resolution? There are many not adequately answered questions in the manuscript proposed.*

Response: There is only three stations with available data from the site of University of Wyoming with respect to our study area (Algeria).

We considered year 2012, as we want to compare our results with other data source. We implemented level 3 (of MODIS data) because we think this is a first step to see what it can bring to scientific benefit to the country (Algeria). We used Modis daily product with 1-degree spatial resolution, as it is more practical in term of use and download compared to level 2.

1. *Which is the representativeness of a radionsonde in terms of representing the stability conditions and precipitable water in a certain area? The authors have radiosondes being released from one geographical point in space and the comparisons are made with a MODIS pixel of 100- km spatial resolution, is that right? Do these scales match? Please, also notice that there are other MODIS products with higher spatial resolution (5 km-spatial resolution). Which is the representativess of the radiosonde for explaining the behavior of the atmosphere?*

Response : Radiosonde is in-situ observation for temperature, water vapor, and wind profiles corresponding to irreplaceable status among available data. An issue in radiosonde data is that sometimes these measurements failed to reach the tropopause height (about 16 km).

Then we removed these data in the estimates of integrated water vapor (IWV) column. We decide to provide the IWV for the first layer of the troposphere (0-5 km) and for the layer 0-16 km, that bring physical very different IWV estimates analysis. For the scales, as we want a comparison between the Integrated water vapor and (IWV) from radiosondes and Modis satellite, the results are in same scale if we need the integrated water precipitable.

Some text about the representativeness of radiosonde data has been added in the manuscript (Part 2.1 of radiosondes data.)

1. *On final comment is that the authors explored precipitable water (PW) just for the year 2012. They could have developed further extended analysis encompassing other years. In this sense, further analysis could have been developed in the manuscript to identify cycles and trends based in the dataset involved to complement the choices made for developing the manuscript. Additional statistical analysis could have been developed along this guideline.*

Response: The authors agree with these comments and very interesting recommendations of the reviewer with respect to the analysis methods of the variability of this (PW) parameter. We are aware that we need a longer time-series and other source data to obtain better results. We do our best with what we have. At this moment, we are limited for this period and the few set of data available on the area, would probably not provide significant results as we use several other “robust” methods.

Thank you again for your review, which clearly improve our manuscript.