

## ***Interactive comment on “Validating HY-2A CMR Precipitable Water Vapor Using Ground-based and Shipborne GNSS Observations” by Zhilu Wu et al.***

### **Anonymous Referee #3**

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This research uses satellite, ground based, and ship borne PMV for validation comparison. The author tried to extract the clean points for satellite PMV validation but was not discussed in detailed how. The unclear scientific discussion makes the understanding this research frustrating. There are unfinished sentences and grammar mistakes. I can only recommend this manuscript accepted after a major revision. The scientific questions should be clarified, and the experiment design needs major improvement.

Major comments: 1. The author needs to read the guidelines for acronyms. Where should you use them and where should you define them in manuscript is a basic background knowledge for scientific writing. I stopped mentioning acronym problems at line 30, but much more corrections are needed in this manuscript about acronyms. 2. The result section is largely based on the separation of clean and contaminated pixels.

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But I don't see a clear validation and explanation of how the author did this. 3. The separation from 200km, 150km, until 50km is nice, but the data points are too little. Overall 600+ points is quite small for this kind of comparison. Since you already have the automatically methods for running this analysis, I would highly suggest to extend the running to at least one full year. Minor Comments: 1. Line 12, please provide the full name of acronym PMV. 2. Line 14, I understand HY-2A is Haiyang-2A, but you need to add this to the end of Haiyang-2A for clarification. 3. Line 15, what is IGS stations? Acronym again. 4. Line 15, coastline along China or India? Before you submit a paper, it is always a good practice to get a second opinion. You are familiar with all the acronyms and station set ups, but not the readers. 5. Line 18, what is RMS? 6. Line 25, reference is needed here. 7. Line 25-27, the whole sentence needs to be rewritten. Grammar mistake. 8. Line 30, Acronyms MODIS, FY-2C? SSM/I, TMI? If you will not mention these acronyms later simply write them in full name here. 9. Line 51, over the sea and over the land. 10. Line 71, delete the first and. The full sentence from line 71-72 needs to be rewritten. Grammar mistake. 11. Line 74, ECMWF is a large dataset, what exactly did you based on here? 12. Lin 123-127, more detailed coefficients calculation used here is needed. If you are using any standard lookup table, the reference should be provided. 13. Line 139-141, you named all the potential problem, what is you solution? Just say be careful is not enough. 14. Line 158-159, what is clean points? On both side how? How did you get the clear points? 15. Figure 2. Still what defines a clean point? Contaminated points? The better way is to first describe how the points are classified (more figures), then show a scatter plot of the PMV point's correction result. The current figure is very confusing. 16. Line 176-179, consider delete this paragraph, the sentences are useless and contain several gramma mistakes. 17. Line 184, the word complicated will raise concerns. Please elaborate on the advantage and disadvantages of the processing algorithm or packages. 18. Line 193, mislabeling Figure 3. Check the rest of figure labeling, most of them needs up-dates. 19. Line 203, how did you come up with the criteria of 200km and 2 hours, any histograms to show the overlapping points so that these criteria can be trusted?

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