

Atmos. Chem. Phys. Discuss., referee comment RC1
<https://doi.org/10.5194/acp-2021-697-RC1>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on acp-2021-697

Anonymous Referee #1

Referee comment on "A vertical transport window of water vapor in the troposphere over the Tibetan Plateau with implications for global climate change" by Xiangde Xu et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-697-RC1>, 2021

The manuscript revealed the forcing mechanism forming the vertical transport window of water vapor in the troposphere on the TP. It characterizes a window of water vapor vertical transport within the troposphere over the TP and the implication for global change. This work is very meaningful and the paper has been well-written. I therefore recommend this paper resubmitted after minor revisions. My comments are listed as follows:

1. Figure 1b is about the frequency of the correlation coefficients passing the level of 90% confidence between summertime TP's low cloud cover and the water vapor at different vertical levels. How do authors get the frequency? Please give the specific introduction of it.
2. Figures 2b and 2c are the spatial distributions of lag correlation coefficients. From the caption and related analysis, I didn't get the meaning of lag correlation coefficients. In the result section, there is no any analysis and discussion about the Figures 2b and 2c. Please add more illustration and discussion.
3. As seen from Figure 4, it contains lots of information, but the related analysis is too simply. Please add more analysis and discussions.
4. L70, troposphere-> troposphere
5. L88, 100hpa--> 100 hPa

6. L307, 60oE - 180oE--> 60oE - 180oE

7. L142, the Asian water tower (AWT) --> AWT

8. L149, Figure 3c should be Figure 3b

9. L150, Figure 3d should be Figure 3c.

10. P17, what does the shading mean in Figures 3b,c and d? What's the difference between Figure 3d and Figures 3b and c? The correlation in Figures 3b and c are based on the period of 1979-2016, aren't they? And why the correlation based on the period of 2014-2016 are given in particular?

11. P18, the caption makes reader confused. All the contours in these four figures represent the vertical motion, not just in (a). Please rewrite the description of these four subgraphs.