

Atmos. Meas. Tech. Discuss., referee comment RC1
<https://doi.org/10.5194/amt-2021-55-RC1>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on amt-2021-55

Anonymous Referee #2

Referee comment on "Atmospheric Optical Turbulence Profile Measurement and Model Improvement over Arid and Semi-arid regions" by Hao Yang et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2021-55-RC1>, 2021

General comments:

Based on the observation experiments of atmospheric optical turbulence at three sites on the Qinghai-Tibet Plateau and the Hexi Corridor in northwestern China, the authors obtained the distribution characteristics of atmospheric optical turbulence under different seasons over different underlying surfaces. In particular, they found that the distribution characteristics of atmospheric optical turbulence under the influence of penetrating convection and subtropical jet are different. Based on the HMNSP99 model, an improved local model is proposed. While there are some issues should be addressed. As you mentioned, much work has been carried out by researchers on the parameterization and model forecasting of atmospheric optical turbulence, please reorganize and summarize the lines of 43-54 in introduction section, while not list one by one. Particularly, you should compare their advantage or disadvantage or differences with your present results, and then make an in-depth discussion and give your implications in a discussion section. In addition, the results can not be clearly derived in figure 2, due to busy sub figures, please reorganize figure 2 for readerships. Generally speaking, the manuscript is scientific sound and well written and organized. I recommend to accept it after minor revision.

Specific comments

- lines 56–57: '...Northwestern China has a typical arid and semi-arid climate...' should be more appropriate
- line 62: Lots of 'carried out' has been used. Should be 'conducted'.
- line 93: fronts in figure1c are too small to be seen clearly, please reorganize figure1
- line 138: Please change it to '... h is the height above...'

- line 151: What is the unit of A?
- line 162: Please change it to ' ... by different outer-scale models show... '.
- line 166: Please change it to ' ... observational results at the three sites, 56 radiosonde's data with good signal... '.
- lines 169–70: This sentence is incorrect, please change it to 'Inserting the improved model into equation 4, we can obtain the estimated '.
- lines 174,201,204: Please change ' observation data' to ' observational data ''.
- The abbreviation of the average value of the meteorological parameters in Figure 2 should be described in the figure title.
- line 240: Please be consistent and change ' (Figures 2p–r).' to ' (Figs. 2p–r)'.