

Atmos. Chem. Phys. Discuss., referee comment RC3
<https://doi.org/10.5194/acp-2021-143-RC3>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on acp-2021-143

Anonymous Referee #3

Referee comment on "The spatiotemporal relationship between PM_{2.5} and aerosol optical depth in China: influencing factors and implications for satellite PM_{2.5} estimations using MAIAC aerosol optical depth" by Qingqing He et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-143-RC3>, 2021

The authors investigated the spatiotemporal relationship between ground-level PM_{2.5} measurements and satellite derived AOD data over China for the year of 2019. Compared with previous research with similar topic, this study used high-spatial-resolution AOD data with combination of AERONET data which provide high-temporal-resolution aerosol data, which is important for understanding the relationship of PM_{2.5}-AOD and useful for ground-level PM_{2.5} estimation, especially when deriving PM_{2.5} from satellite remote sensing data is becomes more popular. The findings of this study are worth of publication in the journal after minor revision as followings:

- My major concern is the way that you matched PM_{2.5} and AOD in space, that is $\frac{1}{4}$ □ what is the radius of buffer zone around the site for AOD average? please clarify it in detail.
- Line 39-44: A long sentence. Please rewrite it.
- Line 108: It seems no Fig. A1 in supporting document. May be Fig. S1?
- Line 125-128: Please clarify which level of AERONET data were used in this study.
- 1 and 2: Please explicitly describe the two equations. What is the meaning for each variable?
- Line 344: "pollutant acumination"? May be "accumulation".
- Table 1: Why there is no value for NTS in winter?
- Figure 2: the text of "hour" legend is a little small.
- In figure 5, suggest that the count is replaced by frequency, which can be easily compared among different regions, due to their different samples.
- Figure 6: The text for latitude and longitude is a little small. Please replot it.
- Figure S9: it should be "elevation"?