Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC2
https://doi.org/10.5194/acp-2022-248-RC2, 2022

Comment on acp-2022-248

Anonymous Referee #2

Referee comment on "Predicting gridded winter $PM_{2.5}$ concentration in the east of China" by Zhicong Yin et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2022-248-RC2, 2022

This study by Yin et al. developed a model to predict gridded winter PM2.5 concentrations in east of China from a climatological perspective. They integrated both emission and climate variability predictors to train the model, which could capture the trends driven by emission changes and the interannual variations contributed by climate variability. The model has good performance and such method could support air pollution control in the future. I recommend publication after the following issues are addressed.

- Line 253-255: A plot similar to Figure 2 but for SP-EC will help the readers to understand the better performance of SP-EC more reasonably.
- Line 282-283: Figure 8f is for the year 2019, before the COVID-19 quarantine starts. This could hardly be the reason to explain the model biases in this time.
- I suggest the authors to briefly discuss the uncertainties in this method.
- The authors mentioned in the Abstract that the accurate PM2.5 prediction had the potential to support air pollution control on regional and city scales. This worth more discussion in the last section.

Some typos:

- Line 166: 'SP-CE' should be 'SP-EC'
- Line 271: 'pointes' should be 'points'