

Atmos. Chem. Phys. Discuss., referee comment RC2  
<https://doi.org/10.5194/acp-2021-619-RC2>, 2021  
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## **Comment on acp-2021-619**

Anonymous Referee #2

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Referee comment on "Land use and anthropogenic heat modulate ozone by meteorology: a perspective from the Yangtze River Delta region" by Chenchao Zhan and Min Xie, Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-619-RC2>, 2021

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## **Comments on "Land-surface forcing and anthropogenic heat modulate ozone by meteorology: A perspective from the Yangtze River Delta region"**

This paper describes the general characteristics of regional O<sub>3</sub> pollution in the Yangtze River Delta (YRD) region, a highly urbanized place with complex geography. The impacts of land-surface forcing and anthropogenic heat (AH) on meteorological factors, local circulations and O<sub>3</sub> are investigated by using the WRF-Chem model. This is an interesting topic to diagnose the changes in local circulations affected by land-surface forcing/AH and their effects on O<sub>3</sub> because these elements are usually at different scales. From this paper, the interactions of these multi-scale local circulations seem to play an important role in O<sub>3</sub> pollution, and this may be an important supplement to current research on related topics. Thus, the manuscript can be considered to be published in ACP after making revisions as follows:

### **General comments**

- I suggest replacing the "land-surface forcing" in the title as well as the corresponding place in the text with "land use".
- Section 3.2.1, since the subsequent results are based on this case, I believe that a more detailed description is needed to make sure the case is in a calm weather. This is an important prerequisite for the formation of local circulations. In fact, plenty of

materials, like the time series of meteorological factors, have been given in the section of model evaluation, but should be condensed here.

### **Specific comments**

- Lines 359-361. The titration of NO does not terminate, and surface O<sub>3</sub> seems to be lowest in the early morning (Figure 6).
- Lines 395-397. "... the sea-breeze front lifted the boundary layer ...", the development of the boundary layer mainly depends on solar radiation, although some factors do affect the boundary layer height.
- Figure 7 and 9. O<sub>3</sub> concentration on the lake is higher than that in the city during the day. Why? Will this affect the lakeside cities?
- Section 3.4.2. Only the sea breeze was discussed in this section. However, both the offshore and onshore flows should be considered when we discuss circulations.
- Wind arrows in Figure 11 and 14 are too small to identify. Please improve the figure presentations with better quality.

### **Technical corrections**

- "MODIS\_withAH" and "MODIS\_AH" should be the same, please choose any one of them.
- Line 258, "is" -> "are".
- Line 277, "provide" -> "provides".
- A few typos, grammatical and syntactic mistakes need to be corrected.

Please also note the supplement to this comment:

<https://acp.copernicus.org/preprints/acp-2021-619/acp-2021-619-RC2-supplement.pdf>