Comment on acp-2022-493
Anonymous Referee #1

Referee comment on "Examining the implications of photochemical indicators on the O3-NOx-VOC sensitivity and control strategies: A case study in the Yangtze River Delta (YRD), China" by Xun Li et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2022-493-RC1, 2022

The values of photochemical indicators are widely used to determine the O3-NOx-VOC sensitivity with measurements, which has important policy implications. This work examined the effectiveness of four indicators such as PH2O2/PHNO3, and surface HCHO/NO2 with air quality models. It can provide decision-makers with some useful information when they use the photochemical indicators to make control strategies. The manuscript is well written and fits the scope of ACP, which is worthy of publication. However, there are a few questions as follows that need to be addressed to further improve the manuscript.

Major comments/questions:

- What are the influences of regional transport on the results?
- How will NH3 and inorganic aerosols such as sulfate, nitrate, and ammonium affect the HCHO/NOy and NOy?
Some minor issues:

Page 2 line 45: “the O3 to nitric acid ratios (O3/HNO3), and NOy)“

Figure 1. The letters are skewed.

Page 6 lines 138-140: Why are the 95\textsuperscript{th} percentile for the VOC-limited grids and the 5\textsuperscript{th} percentile for the NOx-limited grids chosen as the boundaries of the transition interval?

Page 11 lines 240-242: I suggest moving this part to the methodology section.

Page 14 lines 295-296: This seems to conflict with your argument that the emission had no significant influence on the thresholds of PH2O2/PHNO3.

The first row of Table 4 was incomplete.

Lines 450, 491, 521: The format of journal names should be consistent.