

Dear Editor,

We sincerely thank you for the thorough reading of our manuscript entitled "Impact of northward tropical cyclones on ozone in Southeastern China" (Manuscript ID: EGUSPHERE-2025-5765) and for the helpful suggestions. We have carefully revised the entire manuscript accordingly. In particular, we have thoroughly proofread the manuscript for typographical and grammatical errors, reduced and clarified acronym usage, revised the figure captions to define all symbols clearly, and added methodological details where needed. Listed below are our point-by-point responses to all comments and suggestions (Editor's points in black, our responses in blue).

Both reviewers are now satisfied with the revised version of the manuscript. However, in my assessment, the manuscript still needs some minor revisions before it can be published. In particular, the following issues need to be addressed:

1. A good proofread for typographical errors and English grammar issues is needed.
2. Acronym usage is excessive. Please reduce your usage of acronyms in the paper to terms that are used frequently (not just once or twice), and when acronyms are needed, please clearly define what the acronyms mean.
3. All symbols used in the figures must be clearly defined in the figure captions.
4. Make sure all methods used in the paper are adequately described.

I've provided some specific suggestions below on how to deal with these issues.

Response:

We appreciate the helpful comments and suggestions and have addressed all four points in the revised manuscript.

(1) Lines 18, 263, 300, 433, 449, 463: Subsidence is a more correct term than downdraft.

Response:

Thank you for pointing this out. We have replaced “downdraft” with “subsidence” at all the specified locations in the revised manuscript (lines 18, 288, 327, 462, 479, and 493).

(2) Lines 18, 263, 285, 463: I would say “fewer clouds” ... lower cloud implies clouds with a lower cloud top altitude rather than a reduction in the number of clouds.

Response:

Thank you for this helpful suggestion. We have revised “lower cloud” to “fewer clouds” in the revised manuscript (lines 18, 289, 312, and 493).

(3) Line 41: Grammar error: influence, not influences

Response:

Thank you for pointing out this grammatical error. We have corrected it at line 41 in the revised manuscript.

(4) Line 44: Grammar error (missing verb): when the intensity is of at least a tropical storm grade

Response:

Thank you. We have corrected it in line 44 of the revised manuscript.

(5) Line 108: Given that this is a central part of this paper, the authors should provide details in this manuscript of how the TCs are classified into westward, landfalling, and northward, rather than referring readers to another paper.

Response:

Thank you for this important suggestion. We agree that how TCs are classified is a central part of this study and should be explicitly described in the manuscript rather than referred readers to another paper. We have added the corresponding classification details in Section 2.2 of the revised manuscript (page 4, lines 111 to 117).

(6) Line 115: PRD ... acronym needs to be defined

Response:

Thanks for pointing out our negligence. We have added the definition of the Pearl River Delta (PRD) at line 124 of the revised manuscript. In addition, to improve readability, we have reduced acronym usage throughout the manuscript, and most meteorological variables are described with words in the revised manuscript.

(7) Line 160: The wind is from the north (southward) on the west side of the tropical cyclone.

Response:

Thank you for the careful reading and for pointing out this issue. We have corrected the wind direction description accordingly in the revised manuscript (line 179).

(8) Lines 175-177: The colored lines described in this sentence do not match what is shown in Figure 3a.

Response:

Thanks for pointing out our negligence. We have checked the color descriptions and corrected them in the revised manuscript (line 194).

(9) Lines 223-232: Some greater explanation needs to be provided for why the 120–130°E and 20–30°N region is chosen. The two northern regions have a greater ozone enhancement in Figure 3d, but a smaller sample size. Is this why?

Response:

We appreciate this helpful suggestion. We agree that the original manuscript did not clearly explain why the 120–130°E and 20–30°N subregion was selected. Our intention was not to choose the region with the highest ozone enhancement alone, but rather to identify the subregion with the strongest combined influence of northward

TCs in terms of both ozone level and sample size. Although the two northern subregions show greater ozone enhancement in Fig. 3d, their sample sizes are much smaller. By contrast, the 120–130°E and 20–30°N subregion has both the largest number of TC influence days (64 days) with a relatively high mean ozone concentration (55 ppb). We therefore selected this region as the key subregion for the subsequent analysis. We have clarified this point in the revised manuscript (page 10, lines 242 to 245).

(10) Line 226: $n = 64$ (not 65) in Figure 3d ... please reconcile this difference

Response:

Thanks. We have corrected accordingly in the revised manuscript (line 244).

(11) Line 228: Figure 4c

Response:

Thanks. We have corrected it in the revised manuscript.

(12) Figure 4: More details need to be provided in the caption to explain the various symbols in the box plots. What are the orange horizontal lines, black dots, unfilled dots? What are the percentile ranges indicated by the boxes and whiskers?

Response:

Thank you for this helpful comment. We have revised the caption of Fig. 4 to clearly explain all symbols in the box plots, including the orange horizontal lines, black dots, unfilled dots, and the percentile ranges indicated by the boxes and whiskers (page 11, line 253 to 255).

(13) Lines 245-254: There are a very small number of events in each of these categories ($n = 5-7$). The authors should remind readers that the fluctuations discussed here may simply be sampling variability and not robust physical fluctuations due to

variations in TC intensity.

Response:

We appreciate this insightful comment. We agree that the sample sizes for these weaker intensity categories are small because TCs usually continue to develop and intensify before reaching this key subregion. We have therefore added a statement in the revised manuscript to clarify that the fluctuations discussed for these categories may partly reflect sampling variability rather than robust physical differences associated with TC intensity (page 12, lines 266 to 268).

(14) Lines 247-249, Figures 6–7: How are the boundaries of the west Pacific subtropical high defined? A particular sea-level pressure threshold? You need to specify in your methodology how the WPSH is defined.

Response:

Thanks for pointing out our negligence. We have now explicitly defined the WPSH in Section 2.1 of the revised manuscript. Specifically, following the definition of the National Climate Center, the WPSH is represented by the area enclosed by the 5880 gpm contour on the 500 hPa geopotential height field (page 3, lines 94 to 97).

(15) Figure 5: As in Figure 4, you need to define the various symbols in the boxplot.

Response:

Thank you for pointing this out. As in Fig. 4, we have revised the caption of Fig. 5 to clearly explain all boxplot symbols (page 13, lines 304 to 306).

(16) Line 300: Grammar error: a persistent WPSH influenced southern China

Response:

Thanks. We have corrected accordingly in the revised manuscript (page 15, line 326).

(17) Line 334: Grammar error (missing subject): We then categorized them

Response:

Thanks. We have corrected accordingly in the revised manuscript (page 17, line 361).

(18) Section 3.2.4/Table 2: You need to provide a discussion of the methodology used to partition the chemical vs. transport contributions to the ozone concentrations. How is done?

Response:

Thanks for pointing out our negligence. We have added the corresponding description in Section 2.3 of the revised manuscript, including the use of the CMAQ Integrated Process Rate module and the partitioning of chemical and transport contributions to ozone (page 5, lines 132 to 139).

(19) Line 416: Table 2 (not Table 3)

Response:

Thanks. We have corrected it in the revised manuscript.

(20) Line 465: Grammar error: meteorological conditions conducive to ozone

Response:

Thanks. We have corrected it in the revised manuscript.

(21) Line 469: SEC, causing -> SEC caused

Response:

Thanks. We have corrected it in the revised manuscript.