Comments from Review 2:

The manuscript presents a modeling (WRF-Chem) analysis of the present and future effects of extreme weather events on ozone air quality in the US, China, and Europe, with a focus on the compound effect of the simultaneous occurrence of heat waves and atmospheric stagnation. The main conclusion is that the compound event has a larger effect on ozone than a single event and that the frequency of the compound event is projected to increase in the future climate (RCP8.5). This would require further reduction of anthropogenic emissions in the future in order to reduce high ozone episodes associated with increasing compound events. The analysis is thorough and discussions are adequate. The manuscript has innovative findings in that it focuses on compound events and uses the multi-model ensemble to project changes toward the end of the century. The manuscript is well organized and well written in most part. My main comments below mostly concern with the clarity of the figures.

We thank the reviewer for the positive and constructive comments to help us further improve the manuscript. Please see the detailed responses below.

Main comments:

1) Figure 4 and Figure 5 show the main findings of the manuscript, but the two figures are too compact and the use of multiple panels decreases the clarity. I would suggest removal of the US map from both figures, as the definition of the regions is shown clearly in Figure 1. This should provide more spaces to highlight the data itself.

Response:
Thank you for the suggestion to improve the clarity of figures, which we have followed to remove the US map and make the plots clearer.

2) Figure 5 shows the frequency distribution of ozone for the event days and non-event days. Here the non-event days were defined separately with respect to each type of event; that is, there are three types of non-event days: no heatwave, no stagnation, and no compound event. By definition, the event days are only a small portion of the data sample, and thus the three types of non-event days largely overlap with each other. Indeed, I can hardly see the difference between the ozone distribution curves associated with each type of the non-event days. To reduce redundancy and improve the visual clarity, I would suggest combining the different non-event days into one type; that is the days without heatwave, stagnation, and compound events. This simplified definition could reduce the number of lines in Figure 5 and should also be a better definition of the contrast to the event days.

Response:
We thank the reviewer for the suggestions. Right, the difference among the three kinds of non-event days is quite small and using one type of non-event days can indeed help

to improve the quality of figures, facilitating easier comparison of the influence of each type of extreme weather event. We have revised Fig. 5 as suggested.

Technical comments:

Line 428: change “on compound event days” to “during compound event days”

Response: This has been revised.