I appreciate the work that the authors have put into revising the manuscript and responding to my previous comments. I think the paper has greatly improved as a result of the additional figures that show now the previously only hinted at connections between the boundary-layer height or the surface temperature and the changes in pollutant concentrations. I think it is also great that the authors decided to show only two time steps in the main figures and instead increased the size of the subfigures.

When reading through the paper, I noticed a few additional, but very minor, points, which the authors may want to address before final publication. The line numbers in my comments refer to the revised version without track changes.

Specific comments

- 1) You mentioned in response to one of my previous comments that you cut the anthropogenic emission data from the MEIC inventory by about 20%. I think this is important information that should also be included in the paper.
- 2) line 24: 95% CI is not defined in the abstract.
- 3) Line 26ff: "The results show that urban land use led to an increase ... compared to cropland, which was conducive ..."
- 4) line 113: I would say you are investigating "the impacts of urbanization on air pollutant concentrations" rather than "on air pollutants" themselves. Similar on line 116.
- 5) line 135: You may want to say "the urban hourly pollutant concentrations reported in this paper" to make it clear that this is not some standard parameter.
- 6) Line 141: "10-m wind direction"
- 7) Table 3: I am still confused about the units of β. In Table 3, the units are given as %, but the text says that it is "the percent change of mortality per 10 µg m⁻³ increase ...", i.e., the units would be "% (10 µg m⁻³)⁻¹.
- 8) Fig 3 caption: Please add the subfigure labels to the caption: "attributable to (a) PM2.5 and (b) O3"
- 9) Line 266: Do you mean "dispersion" instead of "elimination"?
- 10) Line 268: I guess you mean "inversion layer" instead of "inverse layer"? The temperature observations, however, do not show a temperature inversion if I connect the dots, i.e., the temperature is not increasing with height. This may be a result of the really coarse vertical resolution with only 6 data points. When I looked up the soundings at weather.uwya.edu, I noticed that the soundings contain actually more data points. Why did you not use the full resolution? If it is because of the computation of the monthly mean, you could first interpolate the soundings to a common vertical grid and then average. I think the comparison of the model with the soundings would really profit from a better vertical resolution. Coming back to the term "inversion" layer, which really means an increase in temperature with height and not just a stable layer, even the mean model profile shows only a more or less isothermal layer, but not a proper inversion.
- 11) Fig. 4: I would suggest to remove the black dots if they have no meaning, because they cause only confusion otherwise.
- 12) Line 285: Do you mean Figure 6b instead of 5b?
- 13) Figure 6: I really appreciate the authors' attempt to include wind direction in the figure following my previous comment. However, I am afraid the solution with wind barbs is sub-optimal as it is almost impossible to see the individual barbs. It might be better to simple plot time series of both wind speed and direction.
- 14) Section 3.3.2 and Fig. 6: Just a comment: One point that may also affect the comparison between the model and the observations (negatively) is the height difference. The model results are from the first model level, whereas the temperature observations are at 2 m above ground.

- 15) Lines 332 and 333: I would suggest to either say "boundary layer depth" instead of "height" or add "above ground" to the heights.
- 16) Lines 339ff: I don't understand the argument. The northeasterly flow would transport PM2.5 away from the slope, i.e., down the eastern slope (and not lift the air up along the slope), which then leads to the described large downstream spread.
- 17) Figs. 7 and 8: Subfigure (a) does not have an x axis label (Time).
- 18) Figs. 7 and 8 caption: I think it would be helpful to add the line types to the description of (a), e.g., "... cross sections of PM2.5 (color shading), potential temperature (purple contour lines), and boundary layer height (thick black contour line) ...". Also, how is the boundary layer height determined? Is it the output from the PBL scheme or did you determine it directly from the model 3D fields?
- 19) Line 366: Do you mean "... carry O₃-rich air eastward"?
- 20) Line 404: I would suggest to add "compared to cropland" after "induced by urban land use".
- 21) Line 411: Do you mean "... with the monthly average value increasing by 5.4 ..."?
- 22) Line 464: "with the existence of Chengdu" I assume you are referring to the urban land use compared to cropland? The text is a bit unclear because anthropogenic emissions are also related to the existence of Chengdu.
- 23) Fig. 13: I find it somewhat confusing that the legend entries contain the same set of symbols, but with different labels. You could maybe use different colors for the left and right side of the figure.
- 24) Fig. 13 caption: Please explain in the caption what the dots (average?) and the whiskers (95% CI?) are.
- 25) Line 506: Are you again referring to monthly averages, i.e., "monthly averaged surface PM_{2.5} concentrations"?

Typos

- 1) Line 22: "the 7-year annual averages"
- 2) Throughout the document, ranges are given with a ~ instead of a (e.g., line 24: 6542~11726)
- 3) Line 28: "could decrease" You observed this decrease in your simulations, so you don't need to say "could", simply say "decreased". Similar on lines 30 and 34.
- 4) Line 93: "During daytime" instead of "During daydurtime"
- 5) Line 153: Maybe better say "The height of the lowest model level" instead of "The size of the lowest vertical grid"
- 6) Line 220: "and for O_3 it is" instead of "and it for O_3 is"
- 7) Line 224: "PM_{2.5} pollution has improved ... O₃ pollution has not" or "PM_{2.5} pollution improved ... O₃ pollution did not"
- 8) Line 226: "that is" instead of "that was"
- 9) Fig 3 caption: "ANAC" instead of "ANA".
- 10) Line 301: "troposphere" instead of "tropospheric atmosphere"
- 11) Line 308: Remove (0.44) and (0.77) from the sentence, since these numbers are already contained in the main sentence.
- 12) Line 355: I guess you mean "downward" instead of "downstream".
- 13) Lines 465, 498, and 501: "While" is usually used to start a sub-clause, but not a main clause without a sub-clause. You probably mean something like "however" or "on the other hand", e.g., "On the other hand, anthropogenic emissions ...".