We thank the reviewer for the comments. We have responded to all the points raised in the review.

General comments:

Comment: The Abstract is a bit too long. I encourage the authors to shorten their abstract to make it concise and informative. In addition, the authors should be more careful about the units. Many units in the tables and figures are missing or unclear and should be added.

Response: The abstract is now shortened, however more details are added based on comments from the other reviewers.

Comment: Although the description of the methods is comprehensive, additional description is needed. As the ensemble-contributing members as well as the gridded population density data have different spatial resolutions(see Table 1), the combining methods for those data should be added. Also, what is the spatial resolution of the multi-model ensemble mean (MMm) and the optimal reduced ensemble mean (MMopt) (Fig. 4)?

Response: We have now extended the section (Lines 288-294). All modeling groups interpolate their model outputs on a common 0.25°×0.25° resolution AQMEII grid predefined for Europe (30°W - 60°E, 25°N - 70°N) and North America (130°W - 59.5°W, 23.5°N - 58.5°N). All the analyses performed in the present study use the pollutant concentrations on these final grids. Health impacts are first calculated for each individual model and then the ensemble mean, median and standard deviation are calculated for each health impact. In order to be able to estimate an uncertainty in the health impacts calculations, none of the models were removed from the ensemble.

Specific comments:

Comment: Line 72: "North American emissions foreign emissions"-delete "foreign emissions".

Response: We have corrected the sentence.

Comment: Line 224-225: "a number of emission perturbation scenarios have been simulated (Table 1)"–there is noEAS emission perturbation scenario for the European domain, and no EUR emission perturbation scenario for the North American domain. Please explain the design of the perturbation scenarios.

Response: We have now extended the section for emission perturbation scenarios (Lines 265-286).

Comment: Line 351: Some text discussions should be added for the median values as they are part of Tables 3-5, Figures 2-3.

Response: We have now added results on the median values in the manuscript (Lines 482-484; 511-515; 547-550; 611-614).

Comment: Line 342: "AsDE1 and US3 use the same SMOKE emissions and CTM"-but they appear to use different CTMs (i.e., COSMO-CLM/CMAQfor DE1, WRF/CAMxfor US3)?

Response: US3 also uses the CMAQ model. This is now corrected in the text and tables.

Comment: Table 2: There are four exposure-response coefficients for RAD in the table. How were they used in this study?

Response: The ERF for RAD is actually calculated as an equation. The first term of the equation is the global ERF, and the subsequent three components represent deductions of RADs as related to the three hospitalizations (to avoid double counting of the days involved). The second term represents the respiratory admission due to PM, the fourth term represents cerebrovascular admissions due to PM and the third term is calculated only for the adults above 65.

Comment: Table 4: Definition of "PD" is missing. Units should be added, as they differ across different health impacts. The same applies to TablesS2-S4. Also, please check the units for BUC and BUA in Table 2.

Response: Definition of PD is now added to the captions. All units for health impacts are provided in Table as either number of cases or number of days.

Comment: Figure 1: Units should be added.

Response: The unit is added in the figure caption.

Comment: Figure 2: "Days" should be replaced by "Months"."O3", "SO2", "PM2.5"–please use lower case for the number.

Response: We have corrected the figure caption.

Comment: Figure 4: Units should be added in Figures 4A and 4B. It is not clear what was shown in Figures4C and 4D.This needs to be explained in the figure caption.

Response: We have modified the figure caption.