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Interactive comment on "**A modeling study of the nonlinear response of fine particles to air pollutant emissions in the Beijing-Tianjin-Hebei region**" *by* **Bin Zhao et al.**

Anonymous Referee #3

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This paper used an Extended Response Surface Modeling (ERSM) technique to assess the source contributions of various chemical precursors, emission sectors, source regions, and their combinations to the PM2.5 concentrations over the BTH area. It extended the previous conventional RSM model and pursued more than 1000 simulation scenarios. It is informative and valuable to the air pollution controls over the heavily polluted BTH area. I would suggest this paper to be published after minor revision. (1) In the abstract, page 2, line 6, "primary inorganic PM2.5 is the single pollutant which makes the largest contribution (24-36%) to PM2.5 concentrations." What is the exact mean of the word "single"? (2) In the Table S4, "Statistical results for the comparison of monthly PM2.5 concentrations", the variable calculated in the statistics is hourly PM2.5

concentrations, right? (3) In Table S4 and S5, please add the number of data pairs, especially in S5. (4) I would suggest the authors add a discussion on the limitations or uncertainties of this study at the end of the conclusion section.