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Atmospheric Chemistry and Physics Discussions

Interactive comment on "A modeling analysis of a heavy air pollution episode occurred in Beijing" *by* X. An et al.

X. An et al.

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Thanks for your contribution to this paper. Your concern helps us to think about the inconsistency between the observations and model simulation. Eventually we found the mean method used in the manuscript to calculate the contribution of the non-Beijing Emission (NBS) has problem. We just simply averaged them in the geophysical Beijing domain. We fully agreed with your analysis that all the observational data indicate this episode is largely due to local sources in Beijing, from the evidence of high air pollution index, the IAP tower measurement and AOD plot. As shown in the satellite map and modeling horizontal distribution, the high concentrations of pollutants are distributed in the urban Beijing, which is located in the center of Beijing Domain. The percentages of NBS over the borders are much higher than the urban Beijing. However, in the table/figure to show the mean percentage of NBS, we just used a simply mean method

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to average them over full Beijing Domain. Obviously, this distribution pattern made the used simply mean method sharply overestimated the modeling results of NBS PM (percentage). With this wrong average method, we got an average contribution of 40% of PM10 in Beijing from regional sources. In the revised version, we accept a weighted mean method to calculate the percentage contribution of NBS, showing a reasonable consistency between the observation and model simulation with much lower NBS PM percentage. In addition, we will address the impacts of underestimation of local sources for PM in the inventory on the contribution of NBS with some sensitivity runs.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 8215, 2006.