

Editor's comments for Version 4 revision of acpd\_2009\_0150

### General Comments

I note that your recent revision (version 4) dealt adequately with the concerns of Referee 1. Unfortunately, the comments of Referee 2 were not posted properly and hence you were not given an opportunity to respond to them and improve your manuscript accordingly. I have read your revised manuscript with the comments of Referee 2 in mind and provide the following feedback, which is a combination of suggestions from that reviewer and my own critical reading of the manuscript. The comments below are mainly focused on making the manuscript easier for the reader to understand. One more fundamental question that I share with referee 2 is whether by averaging all six sites together and then looking at the trends in the average concentrations, you are losing important information that exists in the differences between the sites. I would encourage you to examine whether your conclusions hold for all the individual sites and if not, perhaps explore the reasons (e.g. higher vs lower local NO<sub>x</sub>).

### Specific Comments

Section 2.3 and Fig 4 – this information needs to be described more clearly. What do the 7 sets of symbols in 4a refer to? Where is Beijing on Fig 4b? What were the criteria for breaking up the 7 types into 'local' and 'regional'? The symbols don't refer to pollutant concentrations, they depict some sort of average 'recent upwind position of airmass' which you choose to categorize as having largely local or regional influence.

Section 3.1 - The manuscript states "The potential for surface ozone production in the troposphere and at the boundary layer was found to be roughly equivalent across all of the 6 sites in downtown Beijing." How was this potential assessed and how are you differentiating between the troposphere and boundary layer? The discussion in the paragraph after Table 1 could be more simply summarized by stating that O<sub>x</sub> levels are much more similar between the sites than O<sub>3</sub> levels, showing that the level of nearby vehicle traffic is driving much of the variability in O<sub>3</sub>.

Section 3.2 and Fig 5b – If you're going to calculate O<sub>3\_max</sub>, should you also calculate O<sub>x\_max</sub>?

Section 3.4 Wakamatsu et al. are not the first or latest to identify increased ozone production as a result of decreasing NO<sub>x</sub>. See e.g. Seinfeld and Pandis 2<sup>nd</sup> edition, p 235-241, for an overview.

Section 3.4.3. Again, I think 'interannual variability' is more appropriate than 'two year cycle'. Is there any reason to think that in the future this variability will continue to occur exactly on alternate years?

### Technical Comments

Please follow conventions for citations: e.g. name both authors when there are two, and use et al. when there are more than two.

Table 2 is cited before Table 1.

Charles, 2006 is missing from the reference list or should be Chou, 2006?

Wu reference is out of alphabetical order Where is US EPA reference cited in the text?

Zhang et al., 2006 should include all of the authors in the reference list.