Atmos. Chem. Phys. Discuss., 13, C2156–C2158, 2013
www.atmos-chem-phys-discuss.net/13/C2156/2013/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Impacts of seasonal and regional variability in biogenic VOC emissions on surface ozone in the Pearl River Delta region, China" *by* S. Situ et al.

S. Situ et al.

sitshp2012@gmail.com

Received and published: 8 May 2013

The authors would like to thank Referee #2 for an overall positive comment on this manuscript and for detailed specific and technical comments. We give response to each comment, and the manuscript will be modified accordingly.

Specific comments 1: Page 6741, line 12. As pointed out by the authors, isoprene emissions are significantly overestimated by MEGAN model. Meanwhile, the manuscript is focused on evaluating of impact of biogenic emissions on regional ozone formation, in which isoprene plays a major role. There should be some discussion on

how the overestimation of isoprene might affect the results and conclusions.

Response: Thanks. We have designed a sensitivity test on the overestimation (underestimation) of BVOCs emissions by a factor of 3, and the results have been descripted in Section 4.6.2. The results indicate the impacts on daytime ozone peak change between 0.5 ppb and 2.6 ppb over the PRD region.

Specific comments 2: Page 6735-6737, Section 2.2 and Section 2.3. Anthropogenic and biogenic emissions are described. However, the amount of these emissions is unclear. A table showing the summary of these emissions would be helpful in terms of model inputs.

Response: Thanks. Details about the anthropogenic emissions have been explained by Zheng et al.(2009). So, we haven't shown the summary of the anthropogenic emissions on this manuscript. We will add one table to explain the BVOC emissions.

Specific comments 3: Page 6742, Line 10. Measured isoprene concentration is at the lower end of model predicted values. However, it is concluded by the author that model agrees well with measured concentrations. This is confusing. It would be more clear if details could be provided for measurements and model predictions (e.g. 90, 50, 10 precentile values).

Response: Thanks. We will modify the conclusion as followed: The result shows that isoprene concentrations based on MEGAN emission rates range between 0.1 to 1.3 ppb for mid-day average in autumn, and it tends to be higher than the measurement ($\sim$0.1 ppb) in 2008 at Dinghu Mountain.

Technical corections: (1) Page 6730, Line 13. Missing period at the end of sentence "Surface ozone mixing ratios . . .. . ."

Response: Period will be added at the end of sentence "Surface ozone mixing ratios . . ...."

(2) Page 6742, Line 9. What is the applied OH concentration?

ACPD
13, C2156–C2158, 2013

Response: We applied the daily maximum OH concentration valued 26E6 cm-3 (Lu et al., 2012) to convert the modeled MEGAN isoprene emission flux to mixed layer concentration. We will add this value on this manuscript.

(3) Page 6748, Line 19. Figure 4a doesn't seem to be right one to refer to.

Response: Thank you very much. The figure should be Figure 5a.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 6729, 2013.