Atmos. Chem. Phys. Discuss., 9, C5729–C5730, 2009
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Atmospheric Chemistry and Physics Discussions

# *Interactive comment on* "Atmospheric OH reactivities in the Pearl River Delta – China in summer 2006: measurement and model results" *by* S. Lou et al.

**Anonymous Referee #3**

Received and published: 8 October 2009

The authors measured OH reactivity in the Pearl River Delta (China) using a state of the art instrument, during an intensive field campaign. The authors compared the measured OH reactivity to: (1) the calculated OH reactivity from the reaction of OH with CO, NOx and all the measured VOCs and (2) OH reactivity calculated using a box model initialized by measured species. The results indicate a difference between measured and calculated OH reactivity, whereas the box model reproduces well observed OH reactivity during daytime. The authors argued that these results suggest that the missing OH reactivity is mainly due unmeasured secondary chemistry products.

Direct measurement of OH reactivity is a valuable tool to understand the tropospheric



ozone and secondary organic aerosols production as well as the oxidative capacity of the atmosphere. I would like to see this paper published because of the importance of the data.

Comments: Pag 17036, lines 12-14. It is a bit surprising that the discrepancy between measured and calculated OH reactivity during daytime is very similar (around a factor of 2) to the nighttime differences even if in the first case the emission are mainly anthropogenic whereas during nighttime they are mainly biogenic. Pag. 17044, lines 5-10. The ozone (up to 50 ppb ) introduced in the reactor to produce OH when ambient ozone concentration is low, could react with the atmospheric sample and modify the atmospheric composition under observation? Pag. 17048, lines 3-6 Usually the emissions of NOx and CO have a diurnal cycle, why the contribution at the OH reactivity of CO and NOx is flat during the day?

Minor points:

Pag. 17040, line 14. ". . .if all atmospheric Oh reactants are completely measured." and if the relative reaction rate ki are correctly measured. Pag. 17046, line 10. Why is 1900 ppb and not 1770 ppb, used as mean CH4 concentration?

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 17035, 2009.