Review of "Hotspot of Glyoxal Over the Pearl River Delta Seen from the OMI Satellite Instrument: Implication for Emissions of Aromatic Hydrocarbons"

Chan Miller et al., ACP (2016)

Summary

This study investigates the large source of glyoxal (GLY) in China's Pearl River Delta (PRD) as observed by the Ozone Monitoring Instrument (OMI). The authors show that aromatics are the dominant GLY source in this region, and they use a 1-D plume model to further demonstrate that OMI GLY is consistent with current VOC emission inventories and aromatic chemistry. This is in contrast to previous studies using older, less reliable GLY retrievals from SCIAMACHY.

This paper is short and to the point. It is well written and appropriate for ACP. My comments are minor.

General Comments

There is no Conclusions section. Admittedly the paper is short and perhaps this is not vital, but it makes the manuscript feel unbalanced (to me, at least). Perhaps the last paragraph could be put under a Conclusions header. Also, perhaps the authors could expound upon which aromatics or products deserve the most attention for improving yield estimates.

Specific Comments

P. 2, L.7: Presumably GLY is one such aerosol source; might be worth mentioning this link.

Figure 4 and text: the model does OK overall, but there is clearly over-prediction of HCHO and under-prediction of CHOCHO at the peak, as well as over-prediction of CHOCHO at longer timescales. Is this a consequence of the model setup (e.g. using constant yields), or is it indicative of some actual issues in the chemistry (related to different generations, etc.)? It might be worth adding a brief discussion on this to help identify where future work might be done.

Technical Comments

P.1, L.18: "in the PRD and their"

P. 3, L.1: Zhu et al. (2016)

P.3, L.20: Since this deals largely with aromatics, you might also cite Bloss et al., ACP (2005), doi: 10.5194/acp-5-641-2005

P. 5, L.3: "of CHOCHO"