

Interactive comment on “Modeling of HCHO and CHOCHO at a semi-rural site in southern China during the PRIDE-PRD2006 campaign” by X. Li et al.

Anonymous Referee #2

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The paper deals with a modeling study on HCHO and CHOCHO at a semi-rural site in southern China during the PRIDE-PRD2006 campaign. It presents some valuable data and interpretations which should be published eventually. However, the paper as it contains a major deficiency which needs to be corrected before publication.

The major deficiency lies in the assumption of a box model with a well-mixed boundary layer height of about 1 km, and the model calculations being constrained to measurements of OH, NO, NO₂, HONO, O₃, CO, CH₄, C₃ – C₁₂ NMHCs. The assumption of a well-mixed boundary layer for long-lived species is appropriate, but not for short-lived (shorter than a few hours) species such as OH, NO, NO₂, isoprene and some

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other NMHCs. In fact, some of the findings in the paper are obviously the result of this assumption, for instance the high concentrations of modeled HCHO, and the large contribution from isoprene (reaction with OH) to the production of HCHO. It is well known that isoprene concentration decreases rapidly with height because of its fast reaction with OH, observed surface concentrations of isoprene should not be used to represent the concentration of isoprene in the entire boundary layer. Same argument applies to other short-lived species such as OH. I would suggest that the authors use a simple 1-dimensional model with enough resolution for evaluation of the vertical distribution of isoprene.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 33013, 2013.

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