

Interactive comment on “Evaluations of NO_x and highly reactive VOC emission inventories in Texas and their implications for ozone plume simulations during the Texas Air Quality Study 2006” by S.-W. Kim et al.

Anonymous Referee #1

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This study uses a regional chemical transport model to simulate the atmospheric chemistry in Houston. With an analysis of the observations and the model results, this study identifies important gaps in our understanding of emissions. The approach and findings are thoroughly considered, and the description is clear and insightful. I recommend this manuscript for publication pending only two minor comments.

Figures 5, 6 and 10: The error bars here are the standard deviation. But this is not a measure of uncertainty; rather it is a measure of the variability of the dataset. To display the uncertainty in the mean, calculate the population standard deviation and

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divide by the square root of the number of samples. The figure or caption should also state the number of observations and/or model results that are compared.

On page 21228, line 26, the authors point out that the model underestimates the regional ozone. While the updated emission inventories improve the plume ozone, outside of these plumes, the improvements in ozone are small. The same is true of formaldehyde. A potentially substantial source of missing formaldehyde is biogenic emissions of formaldehyde precursors. During the field experiment described in this paper, there are also measurements of methyl vinyl ketone plus methacrolein. These are good indicators of isoprene oxidation and would help identify missing biogenic emissions. I recommend the authors compare these measurements to their model results to determine if the missing regional ozone and formaldehyde can be in part attributed to missing biogenic emissions.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 21201, 2011.