

Interactive comment on “Impact of updated traffic emissions on HONO mixing ratios simulated for urban site in Houston, Texas” by B. H. Czader et al.

Anonymous Referee #2

Received and published: 22 September 2014

General comments

The authors estimated HONO emissions using a newly reported HONO emissions speciation factor, applied the CMAQ model for simulating air quality in Houston, and compared model predictions to the observed data. Since HONO also depends on NO_x, they also revised and improved the NO_x emissions inventory. They suggest that the use of the new HONO speciation factor enhances and improves morning HONO predictions compared to the observed data.

Specific comments

Abstract

C7323

Please check the word “sheds”. Should it be “shed”?

Section 2 – Methodology

Indeed several studies, mentioned in the article, have suggested that 2005-2008 NEI over-estimates NO_x emissions in Houston. The authors simulated air quality for 2013 using the revised 2008 NEI. In theory, the revision of the 2008 NEI accounts for the NO_x emissions reduction that occurred between 2008 and 2013. Since the base 2008 NEI contains higher NO_x estimates, the revised NEI for 2013 that the authors used in the study still likely to over-estimate NO_x emissions in Houston. Thus, some discussions are needed to indicate such possibility and relate to the over-predictions of NO_x mixing ratios shown in Table 2 and Figure 2-3.

Section 2.1 – Adjusting NO_x and HONO emissions

The authors used a newly reported HONO speciation factor. Should the new speciation factor be used for all urban areas or be limited only to Houston? Some discussion will be helpful to air quality modelers.

Section 3.2 – HONO Modeling

What is average increase in morning OH for the entire simulation? Similarly, what is its impact on average morning ozone for the entire simulation period?

Section 4 - Summary

OH predictions have not been compared to any observed data. Thus, it cannot be concluded that model under-predicts OH.

Need to clarify that total NO_x emissions are not used for speciating HONO emissions; only mobile source NO_x emissions have been used.

Table 1 and 2

Units are not included in the tables.

C7324

Table 3

It shows "Sim. H"; it will probably be "Sim. NH".

Figure 4

Need to specify date and local time in the figure caption.

Figure 5

Need to specify date and local time in the figure caption. Figure caption states base HONO emissions but parenthesis shows (N).

Figure 7

Need to specify date and local time in the figure caption. Figure caption states differences between the base and increased HONO emissions case. I think case N is used, not the base case.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 21315, 2014.