

The revised paper has been greatly improved and the comments of the reviewers and the editor have been adequately answered. Before the paper can be published, some minor changes are needed for clarification.

Minor changes

- The abstract should be more specific and mention which chemical mechanisms have been tested and which version has given the best agreement with the interference corrected OH data. A quantitative statement should be made how much the modeled OH is increased by the LIM1 chemistry. Important boundary conditions (temperature, isoprene and NO concentrations) should be stated.
- Section 2.4: the difference between the two used isoprene mechanisms should be more precisely explained. The implementation in RACM2 as described in Tan et al. (2017) does not include the explicit LIM1 mechanism, but uses bulk reaction rates for the isoprene RO2 isomerization via 1,6-H shift derived as parametrizations from LIM1 by Peters et al. (2014). Contrary, MCM v3.3.1 contains the full LIM1 mechanism with a description of the equilibrium between different isoprene RO2 isomers and isomerization by H shift reactions of specific isomers (Jenkin et al., 2015). Following a reviewer recommendation by Peeters et al. (2015), Jenkin et al. (2015) adjusted the rate coefficients for equilibration and H shift reactions to match preliminary experimental results by Crouse et al. (2014). Compared to the original LIM1, these changes mean a reduction of the effective bulk rate coefficient for the 1,6-H shift by about a factor of 5.
- Page 12, line 22-23. Please quantify the difference between the model runs with and without LIM1 chemistry. The corresponding levels of NO from 9 to 17 EDT should be mentioned in this context.
- Page 12, line 22-26. The comparison between the measured and modeled OH concentrations (Figure 5, upper right panel) needs to be done more careful. The statement "... with the RACM2-LIM1 results within 30% of the measured concentrations during the day (9:00-17:00 EDT)" is not true at 14h, where the RACM-LIM1 model and the measurements are numerically different by a factor of 1.8. Probably, this discrepancy is explainable by the total uncertainty of the measured data point (OH calibration error of 18%, plus statistical error bar, plus additional uncertainty from the interference correction mentioned on the same page) and the model uncertainty of 30%.
- Page 12, line 27-29. The comparison with results by Novelli et al. is only meaningful, if the NO concentrations are comparable. To which NO concentration does the factor of 1.4 refer? The description of the improved mechanism in Novelli et al. is not entirely correct. The improvement is obtained by using the fast rate coefficients for the RO2 equilibrium from MCM v3.3.1 and the fast 1,6-H-shift rate coefficients from the Caltech mechanism (Wennberg et al., 2018). This combination causes a faster production of HPALD and di-HPCARP-RO2, both of which are likely important for the OH regeneration. The overall mechanism has a bulk rate coefficient for the 1,6-H shift which is close to the value in the original LIM1.
- Figure 6 and 8: which measurement days are averaged in the diurnal profiles?
- Figure 9: what is the meaning of a median diurnal average for a single day?
- Figure 10 and 11: which components are meant by the label 'others' in the legends. Please give a short explanation in the figure captions.