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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Improved simulation of isoprene oxidation chemistry with the ECHAM5/MESSy chemistry-climate model: lessons from the GABRIEL airborne field campaign" *by* T. M. Butler et al.

T. M. Butler et al.

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We thank the Anonymous Referee for his positive review of our manuscript. Here we address his suggestions, queries, and comments.

- We agree that a reference to Thornton et al. (2002) would be a useful addition to our introductory section. Their work is an excellent example of previously noted model / measurement discrepancy in the HO_x budget under low NO_x conditions in the presence of isoprene.
- According to the Master Chemical Mechanism (MCM), CH_3CHO is in fact a minor

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product of isoprene oxidation, being produced from the ozonolysis of methyl vinyl ketone, and all degradation pathways of propene (itself an intermediate product of isoprene oxidation). Previous simplified chemical mechanisms (such as our MIMvK mechanism) have neglected much of the complexity inherent in the atmospheric oxidation of isoprene. Our MIM2 mechanism retains more of the complexity present in the MCM, including these minor product channels.

- We will replace the indicated text with:

  Similarly, the OH concentration is increased over previously isoprene-emitting regions and decreased elsewhere.

- Yes. In order to clarify this ambiguity, we will rewrite the appropriate text in the following way:

  For PROPHET98 and PMTACS-NY, we correctly simulate the existence of low- NO_x environments.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 6273, 2008.