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Interactive comment on "Comparisons of observed and modeled OH and HO_2 concentrations during the ambient measurement period of the HO_xComp field campaign" *by* Y. Kanaya et al.

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Following a suggestion by the editor, we explain our model approach in some more detail as follows.

The measurement site was located on the campus of Forschungszentrum Jülich, which lies in a mixed deciduous forest. The extension of the forest around the campus is about 1-2km in all geographic directions. On the three days of ambient measurements, the wind speed (2.6$\pm$0.7 m/s) and direction (355$\pm$17 degrees) were fairly stable for the

midday (09:00-15:00 UTC) periods. In upwind direction, outside the forest, the air had passed for more than 20km over agricultural land (growing mostly wheat, corn, sugar beets), outskirts of Jülich and a few small villages, before reaching the forest at the Forschungszentrum. The diurnal variation of the air composition at the measurement site was modeled for each day separately in a 2-step approach assuming that isoprene was emitted only by the forest and affected shortly (12 min) before the advected air arrived at the measurement site. In the first step, the model was constrained to the observations, but with isoprene, MACR and MVK set to zero. The time 00:00UTC was regarded as the initial time on each day, and integration over 24 h was conducted by 10-min binning of the data. The integration was conducted five times in series to stabilize the concentrations of unconstrained species (e.g., unmeasured carbonyl and peroxide species). Thus, after a spin-up time of four days, the last 24h determined the diurnal variation of the modeled species in the absence of isoprene chemistry. In the second step, the air composition at each time of the day was recalculated in a follow-up run of 12 min duration. Here, the calculated output from modeling step 1 was used for initialization and observations including the measured concentrations of isoprene, MACR and MVK were used as constraints. As a result, step 2 simulates HOx concentrations after the air has been exposed to fresh isoprene emissions for a short oxidation time of 12 min only.

The oxidation time period of 12 min was determined in a model pre-run as described in our paper on page 28860, lines 21ff.

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