Author's Response

1. Comments from Referees 1

(1) L204-209: There are discussion xylene/ ethylbenzene. It would be better to show reaction rate constant of xylene and ethylbenzene with OH somewhere (1.9E-11 cm3/molecules/s, 0.7E-11 cm3/molecules/s).
Author's Response: The suggestion is highly accepted, the reaction rate constant of xylene and ethylbenzene with OH (K_{OH}) were replenished in the manuscript. In addition, the reaction rate constant of toluene and benzene with OH (K_{OH}) were replenished (line 197-199 in new version).

(2) L208: "X/B" -> "X/E"
Author's Response: corrected in the new version (line 206 in new version).

(3) L267,268: Unit of reaction rate constant is "cm3/molecule/s"
Author's Response: corrected in the new version (line 270 in new version, and line 197-199)

(4) L270-271: "morning rush hours 07:00-10:00) (Figure 4)". In Figure4, [trans-2-butene]/[cis-2-butene] is not high during 07:00-10:00 (on Nov.11). Relatively high t/c ratio was observed around 10:00-14:00 on Nov. 11.
Author's Response: the diurnal variation of [trans-2-butene]/[cis-2-butene] ratio in Nov. 11 was different from other sampling days, and the [trans-2-butene]/[cis-2-butene] ratio increased from 9:00, and reached peak at 12:00. And Nov. 11 was Saturday, and the morning rush hours might be postponed in the weekend. And in our previous study (Li et al. 2017, Atmospheric Environment, doi.org/10.1016/j.atmosenv.2017.04.029), peak of TVOCs were sometime found in the noon due to higher vehicle number and higher evaporation of fuel.

(5) L311: "Cl-1" -> "C-"
Author's Response:corrected in the new version.

(6) L325: Remove extra "()"
Author's Response:corrected in the new version.

(7) Fig.5 and Fig.6 Y-axis: "percent (%)" -> "proportion of concentration (%)" or "fraction (%)" etc.
Author's Response: corrected in figure 5 and figure 6 (page 24, page 25).

(8) Figure S1: It is better change X and Y axis of cis-2-butene vs trans-2-butene plot. (in the main text, the ratio indicated as [trans-2-butene]/[cis-2-butene].) The slope of [trans-2-butene]/[cis-2-butene] = 1.19 (1/0.84).
Author's Response: corrected in figure S1.

(9) Figure S5 x-axis: There are two Nov.11 (right "Nov. 11" -> "Nov.12").
Author's Response: corrected in figure S5.

(10) ---- simple calculation -----There is no explanation about concentration of trans-2-butene and cis-2-butene during the dust period, but just roughly estimate 0.72ppb and 0.6ppb at fresh pollution period (from 1-3-butadiene in Figure S5, Figure S1, and trans-2-butene/cis-2-butene ratio. 1-3-butadiene will similar source (car exhaust) and removal reaction by OH (k = 6.7E-11 cm3/molecule/s) as trans and cis-2-butenes). 1-3-butadiene was 0.2 ppb at 20:00-24:00 on Nov.9 and decrease 0.05ppb at 20:00-24:00 on Nov.10 (decrease 1/4). In the simple calculation, when original fresh polluted air (0.72ppb t-2-butene and 0.6ppb cis-2-butene) decrease to 0.15 ppb (about 1/4), the butene ratio ([trans-2-butene]/[cis-2-butene]) decrease from 1.2 to 1.0. It seems to be difficult to explain the observed butene ratio decrease (from 1.2 to 0.7).
Author's Response: it is a interesting calculation, and this maybe helpful for further understanding of the photochemical reactions of ambient VOCs. And the composition of ambient VOCs is also impacted by the variation of source strength, and it was found that [1-3-butadiene]/[butene] ratio varies significantly among the sources of biomass burning, gasoline exhaust and diesel exhaust (Liu et al. 2008, Atmospheric Environment, doi:10.1016/j.atmosenv.2008.01.070). And biomass burning and traffic emission were important sources of ambient VOCs in the sampling period, hence the variation of emission strength might cause the inconsistency between the calculation result and the observed result.