

Interactive comment on “Characteristics of wintertime VOCs in suburban and urban Beijing: concentrations, emission ratios, and festival effects” by Kun Li et al.

Anonymous Referee #2

Received and published: 28 March 2019

General Comments:

This manuscript reports the VOC measurements using an Ionicon Q-PTR-MS at both urban and suburban sites of Beijing, China during the wintertime of 2014-2015. Emission ratios (ER) of major VOC species with respect to CO were evaluated and the Chinese New Year effects has been investigated in this study. Wintertime is a typical haze season in China due to the adverse atmospheric dynamic conditions and increasing demands for domestic heating. Therefore, air pollution abatement can be extremely difficult, especially for the Megacities, hosting millions of residents that are vulnerable to air pollutants. VOC have been well recognized to be responsible for the swift devel-

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opment of air pollution events. However, the speciation and emission strength of these VOC have been demonstrated to be hard to acquire due to the fact that VOC can be emitted from a diversity of domestic and industrial activities. Therefore, field measurements of VOC emissions are critically needed in China. This work can be a significant contribution to the atmospheric research community. The methodology (PTR-MS) of this work is well established and the experiments were well conducted. The unit mass resolution of the Q-PTR-MS is the only drawback of this work and I am glad to see that the author has realized this fact and has taken this into account in the data analyses. Overall, the manuscript is fairly well written and I would recommend the manuscript for publication after minor revisions.

Specific Comments:

- 1) P4, L4: The author may want to specify the operating mode of the PTR-MS, i.e., continue scanning mode or single ion monitor mode.
- 2) P4, L9: m/z 47 also could be ethanol since most gasoline may contain 10% ethanol in China and it can be emitted into the air from automobile gas tanks. Since no gas-stations were around the observation sites, ethanol emission may be not that important though.
- 3) P4, L11: “Supelco” background check may not the best option for PTR-MS operation. However, it may be OK for the particular dry conditions encountered during wintertime of Beijing.
- 4) L5, L11: “. . .the urban site is 3.8 times of that at the suburban site. . .”
- 5) P7, L22: “interference of ethanol” very likely.
- 6) P8, L23-24: “These high. . .strong photochemical process during the day at the urban site. . .”. The author is most likely right about the photochemical process. In fact, the NO_x and VOC levels were substantially higher in urban than in suburban sites. The author may also want to check out the ozone concentrations at both sites, since

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ozone is secondary in nature and can well represent the photochemical activity in the atmosphere.

7) P9, L8-9: I think it should be “million”.

8) P10, L14: remove “were” before “all increased”.

9) P10, L15: remove “were” before “increased”.

10) P10, L16: Change “didn’t” into “did not”. Change “obviously” into “significantly”

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-1260>, 2019.