Atmos. Chem. Phys. Discuss.,
doi:10.5194/acp-2016-317-RC2, 2016

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Atmospheric mixing ratios of methyl ethyl ketone (2-butanone) in tropical, boreal, temperate and marine environments" *by* A. M. Yañez-Serrano et al.

Anonymous Referee #2

Received and published: 17 June 2016

Authors present a study on MEK based on an extensive dataset from six different location. This is a very nice and well-written manuscript on MEK mixing ratios and possible sources with lots of data. It would have been also interesting to see results of other compounds measured with same instruments at the same time. However, this more detailed study on this particular compound is worth publishing also by itself. My recommendation is publishing with minor corrections.

Detailed comments:

It would be interesting to know detection limits and uncertainties for different instruments.

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Could you add some comments on seasonal variation of MEK? For example, you mention on lines 275-279 and in discussion that MEK levels were significantly lower at SMEAR-Estonia, but there you were measuring only in October, which is clearly not a high growing season anymore at this site. How was the seasonal variation at the sites where you were measuring for longer period?

Lines 293-297: You state that MEK did not show any covariance with butane and therefore it cannot be related to butane. However, I was wondering, if there is a constant local source or anthropogenic butane emissions are long range transported, then MEK would be produced during the day and lost on surfaces during the night while at the same time butane is not going on surfaces. Then you would not detect any covariance. Maybe you could mention the mixing ratio of butane and it is so low that butane cannot be the main source.

Line 340: change 200 ppt to 0.2 ppb

Lines 365-367: Acetone is regarded as biogenic origin. It has also direct anthropogenic sources and it is produced from the reactions of anthropogenic VOCs also.

Lines 418-420: Something missing from this sentence?

Lines 516-518: Is determination coefficient same as correlation coefficient?

Figure 6. Use ppb as a unit also here.

Table 3: No mean noon mixing ratios are shown and color codes for the sites are missing.

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