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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Stable carbon isotope ratios of ambient volatile organic compounds" *by* Anna Kornilova et al.

Anonymous Referee #1

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Review on:

Stable carbon isotope ratios of ambient volatile organic compounds

This paper presents $\int [OH] dt$ obtained from stable carbon isotope ratios of ambient aromatic VOC measured at a suburban area in 2009 and 2010. The authors claim that the extent of photochemical processing of the different VOC depends strongly on the VOC reactivity. They show that for this study the differences in emission ratios are larger than the impact of photochemical aging.

The use of carbon isotope ratios for the study of atmospheric pollution and the chemistry of organic compounds in the atmosphere is a newly emerging tool. The experimental work and data interpretation are of high quality and excepting very few

points, that need to be addressed, both description and discussion of measurements are well founded. The manuscript contributes to scientific progress within the scope of the journal, therefore it is suitable to be published in ACP.

Some comments:
- Page8Line23-Page9Line2: reformulate. This information is not included in Fig. 2. Generally, the caption of Figure 2 must be more concrete. Is this for benzene, or for all VOC?
- Pages48-50: captions Fig. 3-5 in the main manuscript should contain the VOC of interest: 'Example plots ... VOC (benzene/toluene)...' (like in the supplement)
- Page9Lines5-7: reformulate. 'There is a strong dependence between...' and what?
- Page44Lines33-34: Sentence 'The bars represent the mean concentration ratios normalized relative to the average of all available ratios' needs some more explanation, at least in text. Generally, the axes of Fig.9-10 should be described.

Editorial revisions:
- Page5Line17: replace second 'δ^{13}_{A}C' by 'δ^{13}_{S}C'
- Page8Lines2and 22: replace 'Fig.2' by' Fig.3'
- Page8Line12: replace 'Figure 3' by' Figure 2'
- Page9Line14: replace 'Fig.3' by' Fig.2' and later in manuscript.
- Page40Table11: in third row insert a 'but' before <$\delta^{13}C_{global}$

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