

Interactive comment on “Mass spectrometric measurement of hydrogen isotope fractionation for the reactions of chloromethane with OH and Cl” by Frank Keppler et al.

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This is a solid paper that presents a convincing case, that earlier measurements of the isotope effects in methyl chloride oxidation should be revised. It should be published subject to technical corrections to address the points below.

1. The authors use the unit 'mUr' for milli-Urey. This is not an accepted/defined unit in the SI or IUPAC systems. It is an unnecessary unit, as we already have the per mil symbol, ‰ which can be found in for example the IUPAC green book. Science should avoid a situation where each sub-field has its own obscure pet units or we shall soon see CO₂ mixing ratios expressed in microKeeling.

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2. In some places the grammar should be corrected e.g. Line 20 'but yet lacks'.
3. Line 27, 'increasing stable hydrogen isotope values', unclear, does it mean ${}^1\text{H}$ or ${}^2\text{H}$, concentration, atom ratio, molecular ratio?
4. Line 37 change 'named' to 'called'
5. Line 119, Agilent has made a lot of different GC-MS systems. Please specify which one.
6. Lines 217, 225, etc. 'f' and 'c' and other variables for physical quantities should be italicised.
7. Line 309, 'differences in the experimental smog chamber set-up', the phrase seems to be saying that the smog chamber was different from itself? Simply saying that FTIR is different from IRMS seems too obvious to be worth mentioning. Please give a specific cause or, leave it out.
8. I am wondering if there might be a better way to present the information in Figure 5, perhaps as a table, or a plot that would show both the fractionation of a given source and its magnitude. The argument should not simply be the fractionation of each process, but its effect on the atmospheric composition: isotopic mass balance.

Overall a very nice study that advances the field. Thank you.

Best regards, Matthew S. Johnson University of Copenhagen

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