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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Stable isotope measurements confirm volatile organic compound oxidation as a major urban summertime source of carbon monoxide in Indianapolis, USA" *by* Isaac J. Vimont et al.

Anonymous Referee #1

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Vimont et al. present the analysis of previously published CO mole fraction and isotope measurements at three stations in Indianapolis. The evaluation of summer time indicates that photochemical production of CO from BVOCs is a significant source of CO in summer.

The scientific content of the paper is low. At least 3 of the 5 figures (2, 3 and 5) were published previously; one other figure (Figure 1) simply shows three of the INFLUX stations of Figure 2 on a satellite image and has no additional scientific value. Also the entire dataset was already published previously, but then only the winter data were

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Discussion paper

analyzed. The “new” part of the present manuscript is that the summer data were also analyzed, which in terms of the dataset means that simple Miller-Tans plots were produced in Figure 4.

It was not a good idea of the authors to split the analysis of one dataset into two papers that now are largely repetitive and both have little scientific value. The main result that there is isotope evidence for photochemical production of CO from BVOC in Indianapolis is valuable, but the paper as a hole has for me too little scientific substance to be published in ACP.

The method description and data analysis is presented in a level of detail that is suitable for a thesis, but in my opinion not for a scientific publication. The analysis presented in Tables 2 in relation to the simplification of the CO budget was already performed in the previous publication by the authors, and is only shown in more detail here. The description of methods is very detailed and contains much material that should be considered general knowledge (e.g. the meaning of a correlation coefficient) or is repeated in too much detail from previous publications. The evaluation of the possible BVOC contribution resulting in table 4 is derived from a simple multiplication of an assumed OH level with rate constants and VOC abundances from the literature. It produces a result that is expected and the discussion then connects results from various previous studies.

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