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Atmospheric
Chemistry
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Discussions

Interactive comment on "Atmospheric chemistry of carboxylic acids: microbial implication versus photochemistry" *by* M. Vaïtilingom et al.

Y. Tan

yitan@andrew.cmu.edu

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This work provides a very neat comparison between biology and chemistry. My biggest concern is about the source of OH radicals in photodegradation tests. The photolysis of H_2O_2 is a relatively fast process. It is quite possible that H_2O_2 was used up after a few hours, especially considering the low amount of H_2O_2 added (20 μM). With limited OH radical availability, the more reactive formate could suppress the oxidation of acetate and succinate. (The oxidation rate for oxalate seems uncertain in literature, and oxalate could possibly react with inorganic species.) I think this could possibly explain why the photo-degradation of acetate and succinate was not observed. However, the situation in the atmosphere is different. OH radical from gas phase reactions can continuously partition into the aqueous phase and keep the oxidation of all compounds

going. I understand that it is unrealistic to add large amount of H_2O_2 at the beginning or maintain H_2O_2 concentration at a constant level, but is there any way to monitor the decay of H_2O_2? Is it possible for the authors to provide some discussion about this problem?

I am also curious about the detection limits of organic acids of Dionex AS11 column. The concentration of succinate (1.5 μM in both S1 and S2) might be close to the detection limit, so the quantification might be affected by noise. How does the separation between nitrate and succinate look like in this column? The nitrate concentration is very high. If the two peaks were not very well resolved, nitrate could affect the quantification of succinate also.

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