

Interactive comment on “Insights into hydroxyl measurements and atmospheric oxidation in a California forest” by J. Mao et al.

Anonymous Referee #3

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General statement

This article is a major breakthrough in the understanding OH chemistry in forested environments. This achievement boils down to the bravery of the authors. They are openly asking the question "What if all our measurements are wrong?" This type of action is exactly, how scientific knowledge should be improved over time.

The authors present two methods of OH measurements, introduced as OH wave and OH Chem, where the former is a typical FAGE setup and the latter introduces a scavenger prior detection, which is common in the chemical ionization mass spectrometry field. The OH from these two modes shows a remarkable difference, the OH Chem being approximately half of the OH wave.

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The main result of this paper is that the authors carefully rule out the possibility of internally generated OH and are left with a potential interference due to reaction intermediates of VOC oxidation producing OH inside the instrument. A good correlation with OH reactivity is a strong supporting evidence for this conclusion.

As the authors point out, clearly more collaborative work is needed to further refine these results. I suggest conducting, in way or another, a common field study in a forested environment, where also OH is also measured with CIMS technique, where the addition of an OH scavenger is a common practice, as the authors also acknowledge.

The article is well structured and clearly written. Over time, the importance of this paper will only increase. It most definitely fits the scope of ACP. Thus, I suggest that this manuscript should be accepted with only minor adjustments.

Detailed comments

1) The vertical profile of OH seems to be minor. This is surprising.

Please elaborate this point. What was the canopy structure around the tower?

2) OH Chem seems to be weakly correlated with temperature also. Any insights into this?

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 6715, 2012.

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