

Interactive comment on “Quantification of hydroxyacetone and glycolaldehyde using chemical ionization mass spectrometry” by K. M. Spencer et al.

Anonymous Referee #2

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Review of Spencer et al.

The authors discuss the use of two chemical ionization mass spectrometry methods for the detection of hydroxyacetone (HAC) and glycolaldehyde (GLYC) in the gas phase. The advantage of this technique compared to methods usually employed for detecting HAC and GLYC is that it allows sensitive, fast time response measurements without sample collection and processing. This capability enables high-resolution aircraft sampling such as shown in Figures 3 and 5. Detailed information regarding the techniques and their calibration is given.

I disagree with the first reviewer's statement that this is primarily a technical report or

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measurement technique paper, since a significant focus of the paper is the presentation and analysis of HAC and GLYC measurement data from ARCTAS and BEARPEX 2009. For this reason I believe it is appropriate for publication as a regular article in ACP (after minor revisions). The authors could do more to verbally highlight the unique aspects of this data that would not be possible without the CIMS techniques.

The authors present schemes for detecting HAC and GLYC simultaneously using both single-quad and tandem CIMS. I would appreciate the addition of a brief summary passage directly comparing the two techniques and their pros and cons. Obviously the mass interference by acetic acid is problematic for the single quad but the authors seem to have eliminated this problem in the data analysis. I may be wrong, but the acetic acid subtraction procedure doesn't sound much more involved than analyzing MS-MS data from the tandem instrument. Are there other reasons to choose the single quad over the tandem instrument (sensitivity, detection limit time response, weight, etc.)?

I agree with the first reviewer that it might be a case of circular logic to reference the Yokelson (2009) biomass burning data using the single quad technique as proof of low interference at the HAC mass by propanoic acid. While the concentrations of propanoic acid reported for that study were indeed low, how do we know to what extent they were affected by HAC interference? Perhaps some lab experiments with the tandem CIMS can shed some light on this issue.

Figures 6, 7 – the colored dots in the legend are too small to distinguish, maybe use colored lines.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 23619, 2011.

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