

Interactive comment on “Dynamic Solution Injection: a new method for preparing pptv-ppbv standard atmospheres of volatile organic compounds” by K. J. Jardine et al.

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This paper describes a dynamic solution injection (DSI) technique that can be used for the calibration of instruments that measure VOC compounds. The paper is well written and the authors describe the technique well. However, this paper wishes to present quantitative results for the analysis of standards generated by three techniques and analyzed by two techniques but does not go about this using descriptive and normally accepted methodology for comparing results quantitatively. Because of this the conclusions drawn from the paper are not supported by the evidence presented. The paper

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does succeed in demonstrating that the technique works in a qualitative way and perhaps this should be its focus.

In order to compare standards from different sources the standards must be described fully including the source and stated accuracies. This was not done in this paper. Furthermore, when standards are diluted and introduced into an analytical system a full propagation of errors must be done to assess the overall uncertainty.

A manifestation of this issue is in the acetone calibration slopes where agreement to within 24% is considered “good”. This begs the question of at what point is the agreement bad? The reader is given no quantitative information from which to make a judgment on this. Later on in the paper the criteria is given that a factor of 2 is not good agreement. This gets to my point in the paragraph above that the authors are approaching the demonstration of the technique in a qualitative fashion but then make unfounded statements about the quantitative advantages of the DSI technique.

The authors could certainly avail themselves of high quality standards with stated uncertainties for “well-behaved” compounds (meaning compounds that are known to be stable in cylinders or permeation tubes) upon which to compare the DSI technique. They may, in fact, have done this but I don’t know enough about the standards that they used. If they have done this then the known standard has to be the reference and not the DSI technique. Differences must be assessed relative to known certified standard. If this requires having an independent lab verify the standards then this is what must be done. If the paper is intended to quantitatively demonstrate the DSI technique, this approach must be taken.

In conclusion, my suggestion is that the authors either 1) rewrite the paper and present the technique as a useful methods for performing calibrations in the field In a semi-quantitative way, stating that future tests will hopefully further demonstrate the quantitative capability (may actually not be that much of a rewrite) or 2) Go back to the lab and evaluate the technique quantitatively as described in this review and then rewrite

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the paper based on the results obtained.

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