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Atmospheric Measurement Techniques Discussions

Interactive comment on "Measurement of gas-phase ammonia and amines in air by collection onto an ion exchange resin and analysis by ion chromatography" *by* M. L. Dawson et al.

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I would like the authors to explain the reproducibility of the calibration curves (slopes) and detection limits.

Detection limits are calculated as the concentration whose signal corresponds to 3/5 of the average peak-to-peak noise in 10 independent sample chromatograms (Skoog et al., 1998). In this case, the noise in the region just ahead of the peak was used. The standard deviation of this value gives an indication of the reproducibility of the detection limit. The errors listed in table 1 are +/- two sample standard deviations. The

first paragraph in section 3 (page 1581, line 21) will be modified to give more detail on the reproducibility:

"Table 1 summarizes retention times and liquid-phase detection limits for ammonia, MA, DMA and TMA. These were calculated as the average concentration whose signal corresponds to 3/5 of the peak-to-peak noise from 10 typical cartridge measurements (Skoog, et al., 1998). The standard deviation of this value is a measure of reproducibility. Errors in the estimated detection limits shown in Table 1 are +/- two sample standard deviations."

Reproducibility in the standard calibration curves is determined by the reproducibility of the individual data points. Data points with error bars shown in Figure 6 (i.e. all points except the three marked with an (*) in the DMA plot) are based on at least three individual measurements. This variability is indicated by the error in the slope of the weighted least squares fits shown in Figure 6. These errors are +/- two sample standard deviations, and are calculated based on the sample standard deviations of the individual replicate samples at each dilution (shown as error bars on data points in Figure 6). The fourth paragraph in section 3.1 (page 1583, line 19) will be modified to give more detail on the reproducibility:

"These data indicate a linear trend of measured concentration with dilution of the gas standards and suggest good measurement efficiency for each of the gas-phase amines and ammonia. Error bars shown for individual data points are +/- two sample standard deviations, and are based on at least three individual measurements. These values are used to calculate the errors in the weighted least-squares slopes, which are an indication of the reproducibility of the technique."

Reference: Skoog, D. A., Holler, F. J. and Nieman, T. A.: Principles of Instrumental Analysis, 5th ed., Harcourt Brace & Company, Orlando, FL., 1998.

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 1573, 2014.