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Atmospheric Measurement Techniques Discussions

Interactive comment on "Accurate measurements of carbon monoxide in humid air using the cavity ring-down spectroscopy (CRDS) technique" *by* H. Chen et al.

Anonymous Referee #1

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The manuscript 'Accurate measurements of carbon monoxide in humid air using the cavity ring-down spectroscopy (CRDS) technique' by H. Chen et al. investigates the interferences of water vapor and CO2 on carbon monoxides measurements made with Picarro CRDS instruments. The methodology of obtaining appropriate correction functions is described in detail and will help users of these instruments to improve their measurements.

The paper is very well written and clearly structured. The abstract provides a good summary of the paper. The methods and measurements used for data evaluation

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are scientifically sound. The work is a valuable contribution for users of CRDS CO analyzers which I recommend to be published in AMT after considering the following minor issues.

Specific comments:

Griffith et al. (2012) and Zellweger et al. (2012) should be updated, now AMT.

P6497, L15/16: check lower/upper case of p84 and P84.

P6497, Equation (2): What is H2Opct? Please explain, more detailed as in line 21. Is this H2O reported by the instrument? Although, peak84_raw and P84_RAW should be described in one sentence; these parameters are very specific for the Picarro instruments.

P6499, L19-21: Is this also true for the instruments with improved fitting algorithms?

P6505, L1/2: 'To measure humid ambient air without drying the air...' Consider rewriting this sentence.

The paper focuses on CO2 interferences on CO in the CO2 mole fraction range from 360-390 ppm. Very often, 390 ppm is exceeded even at remote sites, and it would be helpful if the authors could more clearly state if the interferences above 390 ppm are significant or not. If I understood correctly, these CO2 interferences are small with 0.3 ppb per 100 ppm CO2 change, even above 390 ppm CO2. Is this correct?

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 6493, 2012.