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Atmospheric Measurement Techniques Discussions

Interactive comment on "Calibration of sealed HCl cells used for TCCON instrumental line shape monitoring" *by* F. Hase et al.

Anonymous Referee #1

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This is a very clear and concise description of a very solid piece of research. The authors exhibit a thorough understanding of their subject and the skill to convey their research and technique for use by others. It is timely and important and should find application by others working in the same area.

I include here only a few minor comments that might improve the presentation or content.

Page 7187 Line 8 What is residual here? Is it not just variation?

P 7190 L 26 This is the first introduction of the XCO2 nomenclature, it would be good to define it here.

P 7192 L 20 Regarding the wave number ratio: in Figure 1 the ratio of CO2/O2 = 6300/7900 = .80.

P 7193 L 16 "fictive" is strictly correct but "imaginary" or "notional" are more widely used

P 7194 L 3 CaF(subscript 2)

P 7194 L 9 Figure 2 is not very helpful The radiation path is not clear. All the components are not shown. Perhaps an optical diagram could be included. P 7195 L 17 Not clear what is meant by 2,....,2.5%

P 7195 L 20 Why is the ME curve not sensitive to information at path lengths greater than 45 cm? Is the max OPD in these tests 45cm or greater (as Fig 4 would imply)?

P 7196 L 4 add: ...3.00 mbar C2H2, with the addition of an independent measure of the cell pressure.

P 7196 L 15 Is this the standard deviation of the difference in the temperature retrieved from C2H2 and HCl?

P 7198 L 12 This calibration can identify some misalignment that may influence the ILS of a specific instrument. Does it necessarily eliminate a bias?

Table 1

The number density of HCl in a cell is: n = Ap/RT and the column amount is nl

Where A is Avogadro's number, R is the universal gas constant, p is pressure and T is temperature For cell #1 H35Cl T=296K, p= 473.2 Pa, and l= .1m

so nl = (6.02E23 molecules/mole 473.2 Pa .1 m) / (8.314 Pa m3 / mole K 296 K) = 1.16 E 22 molecules m-2

Which is not the value in the table.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 7185, 2013.