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Atmospheric Measurement Techniques Discussions

Interactive comment on "Retrieval and validation of carbon dioxide, methane and water vapor for the Canary Islands IR-laser occultation experiment" *by* V. Proschek et al.

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Here are some comments that I noted down when reading the paper. Figure, page, and line numbers refer to the original submission, so may deviate from the AMTD version.

1. Figures 4 and 5: Near 4772.0 cmˆ-1 there seems to be a quite strong H2O line in the simulated data that seems to be completely missing in the measurement. Even in the filtered simulated data in Figure 5 this line is still clearly visible. Can this apparent discrepancy be explained?

2. Page 15, line 502: "This would enable to reduce this uncertainty component in a

follow-on experiment to smaller than 0.2%." I think this number needs some justification.

Reducing the spectroscopic uncertainty component from now 10% to 0.2% seems to require a reduction in spectroscopic parameter uncertainty (line intensity and line broadening) by a factor of 50. It is not self-evident that such a large improvement is feasible, given the usual systematic errors in laboratory spectroscopy measurements, particularly for the broadening parameter.

3. Page 15, lines 513-515: "Table 6 (fourth column) shows that this fairly limited knowledge on H2O that we could get during the campaign strongly governs the uncertainty that we need to conservatively attribute to the H2O retrieval results." I do not understand the logic here. I thought Table 6 lists retrieval errors, not validation data uncertainty. Why does the limited validation data accuracy for H2O lead to a higher retrieval error?

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 11593, 2014.