

Interactive comment on “The detection of carbon dioxide leaks using quasi-tomographic laser absorption spectroscopy measurements in variable wind” by Z. H. Levine et al.

Z. H. Levine et al.

zlevine@nist.gov

Received and published: 4 December 2015

AR#2 asks if there is a specific reason for reversing the logical sequence of simulation followed by measurement.

We agree to swap the order of presentation of the simulation and the experiments in the final paper.

AR#2 suggests that the experimental result cannot be considered as a validation of the model.

We agree. We will add the text: "The experimental result cannot be considered to

C4217

be a validation of the proposed technique. A full validation would require a similar measurement using an intentional carbon dioxide source with a known leak rate."

AR#2 suggests performing the validation measurement.

Ideally, we would do such a measurement. In the real world, we cannot complete such a study before the end of the comment period for this discussion paper.

AR#2 suggests 14 specific changes to particular lines. We agree to make 13 of these suggested changes. The exception is:

P. 12309, l 5-6. Regarding specifying the criteria for choosing Q.

We would rather not specify our motivation for choosing these value of Q. The larger value is a round number near to the experimental value. It's easier to work with round numbers to quickly assess percentage deviation. The smaller value is a still-tractable value. We explored yet smaller values of Q but we do not report on these. We hit a technical problem, namely, they lead to log likelihood surfaces with multiple local maxima which are difficult to maximize. The difficulty of performing this maximization has nothing to do with the validity of the results if the maximum can be found. So, we've made a real-world compromise in choosing these values, a full explanation of which would distract from the main point of the article.

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 12297, 2015.