

Reviewer comments

Improved instrumental lineshape monitoring for the ground-based high-resolution FTIR spectrometers of the NDACC

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General comments:

This technical paper describes a revised strategy for characterising the instrument lineshape of solar Fourier Transform Spectrometers (FTSs) used to retrieve total column amounts of trace gases from solar infrared absorption spectra. The need for this improvement is well justified in the paper, and in reality. The need is especially great as accuracy and precision of measurements improve and improved vertical profile information is to be retrieved from the measured spectra. The paper is important and will be of interest to both the NDACC and TCCON networks, but has limited relevance outside these communities. Nevertheless it is suitable for publication in AMT with only minor revisions suggested below.

However, I have a general comment: that the paper is perhaps a little premature on two counts, and could be considerably improved with a little expansion and extra work:

1. It would be preferable to wait a little longer until more actual ILS measurements are available over a longer timeframe and discussed in the paper. The natural timeframe for changes in ILS, as pointed out by the author, is ~ 1 year.
2. In the final paragraph, similar work for the TCCON near IR instruments is also foreshadowed. I agree that this is very important, arguably more so for TCCON than NDACC. However it makes sense to me, and reduces two closely related publications to one, if the TCCON treatment is included in an expanded version of this paper. Most of the background material is common to both, and most of the target audience are active in both networks. If the TCCON work is meanwhile well advanced, I would strongly recommend expanding this paper to include it rather than a second very similar paper. The TCCON study should certainly also be published.

Specific comments:

These are mostly for clarity:

Page	Line	Comment
7699	Title	Spell out NDACC in the title
7701	3	; after atmosphere
	22	Most NDACC stations measure to 4200 cm ⁻¹ rather than 4000 cm ⁻¹ to capture HF
7702	4	Avoid “model data” ! Suggested rewording of first sentence New upcoming scientific challenges, as <i>for example</i> the inversion of <i>measurements to derive</i> sources and sinks for long-lived greenhouse gases, and the associated advance of satellite <i>data</i> (e.g. Butz et al., 2011) and model <i>evaluations</i> (e.g. Chevallier et al., 2011) exert a steady pressure on the precision achieved by ground-based FTIR measurements.
	9	... the target precision <i>and accuracy</i> for TCCON’s....
	11	...the increasing precision <i>and accuracy</i> requirements
	15	... improved ILS determination <i>and ensures</i> network consistency.
	21	Replace <i>NaCl windows</i> with <i>appropriate windows (eg NaCl, KBr)I</i> . There is nothing specific about NaCl, any window with the right cutoff isOK
	24	<i>Sapphire</i> should not be capitalised
7704	14	I suggest <i>shear-compensated</i> not <i>shift-compensated</i> .
7705	3	<i>reasonably</i> not <i>reasonable</i>
	12	Perhaps <i>vertical shift</i> rather than <i>lateral shift</i>
	29	Due to the <i>apparent</i> overmodulation