

Interactive comment on “Validation of IASI FORLI carbon monoxide retrievals using FTIR data from NDACC” by T. Kerzenmacher et al.

Anonymous Referee #1

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This is a generally well-written paper on a satellite-ground-based network comparison. With some modifications as discussed below, it should be suitable for publication in AMT.

3975 - Line 25 There are a fair number of references for MOPITT dated after 1995, (see http://www.acd.ucar.edu/mopitt/mopitt_ref.shtml) This reviewer would recommend that the authors familiarize themselves with some of the more recent ones for a better appreciation of the present state of the MOPITT instrument.

3976 – Line 15-20. It would perhaps be worth noting what George et al found for the SH. The lack of comment on the SH is noticeable (see section 4 of the George paper cited)

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3978 – Line 1 FORLI-CO uses look-up tables for what? There are various ways in which look-up tables might be used to accelerate a retrieval – needs to be specific as to the methodology.

3981 – This reviewer had difficulty following the methodology for correcting for altitude. There is mention of partial columns, but these are not defined. An equation or a figure or an example could be introduced to help elucidate the argument more clearly. This was the point that this reviewer found most difficult in the paper.

3984 Line 21 – what is an “ideal” averaging kernel for the ground-based measurements?

Figure 6 is intriguing, but difficult to interpret reliably. This reviewer is not an expert in statistics but it would appear that if this is a normal distribution (no guarantees of that) for every value of the random error (horizontal cut in figure 6) about 2/3 of the comparisons should be blue and 1/3 red. According to the text, approximately the reverse is true. (the paper states that 69% of differences are “significant” - presumably outside a 1-sigma criterion) This would imply that the total error is about double that calculated from the random error. Further from Figure 6 it appears that this error is not a function of the known random error as the red “blob” where most of the measurements occur is not highly structured in the vertical.

One possible error source is alluded to - viewing the same air mass. (page 3986 line 23). It should be remembered that IASI has a range of viewing geometries from its large swath, including some fairly long slant paths, and the FTIR instruments are constrained to follow the sun vector for their air mass, so the combination of the viewing directions might make some difference in the air mass sampled even if the IASI pixel is nominally centred on the FTIR and the timing is perfect.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 3973, 2012.

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