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Atmospheric Measurement Techniques Discussions

Interactive comment on "Validation of MOPITT carbon monoxide using ground-based Fourier transform infrared spectrometer data from NDACC" *by* Rebecca R. Buchholz et al.

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We thank Reviewer 1 for their valuable comments. Below, reviewer comments (in italics) are addressed separately, followed by a list of manuscript changes.

1. *Figure 4: It is difficult to interpret figure 4 without also having the averaging kernels of a FTIR for comparison. Having been frustrated by this while reading the text in section 3.4 I discovered the averaging kernels for a FTIR shown later on in figure 12. It seems to me that it should be possible to fit figure 12 into the bottom right corner of figure 4 in place of the (over-large) legend, fitting the legend itself into the lower left panel of figure 4.*

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We have combined figures 4 and 12 as suggested, now presented as Figure 2. Figure 12 has been removed. We have also changed the plot labels from V6T to TIR-only, V6J to TIR-NIR and V6N to NIR-only. Total column AKs have also been combined on the same plots as the VMR AKs. Consequently, the seasonal column AK plots, Figures 3 and 13, have been removed (in response to Reviewer 2, comment #3).

2. *Page 9 line 1: It does not seem to me to be good mathematical typesetting style to use an entire word (bias in this case) for a mathematical variable.*

We have removed ($\overline{bias}$) on page 9, line 1 (now page 8, line 25) and replaced $\overline{bias}$ with "all station mean bias": page 9 line 2 (now page 8, line 26-27).

3. *Page 11 line 6: "Satellite retrievals over colder surfaces at higher latitudes are challenging mainly due to low thermal contrast" This is not true of all satellite retrievals; for example, limb sounding and UV backscatter are not affected by the surface temperature. A more specific term than "Satellite retrievals" should be used.*

(now page 11, line 3) The sentence now begins "Retrievals from nadir viewing satellite instruments that measure in the thermal infrared are challenging over colder surfaces at higher latitudes, mainly due to ..."

4. *Figures 7, 8 and 10: The blue and green used to distinguish land from water appear very similar to my eyes in all but the strongest lighting. It might be worth choosing colours which are more easily distinguished.*

The symbols for water and land are different (circles and diamonds), but perhaps not significantly different. Therefore, we have enlarged the land symbols and

lightened the green relative to the blue. This results in more clarity for Figures 7, 8 and 10 (now Figures 6, 7 & 9), which are now discernible when printed in black and white.

List of changes from Reviewer 1 comments:

- Figures 4 and 12 combined, now Figure 2
- New Figure 2: Added column AKs
- New Figure 2: Changed labels
- Figures 3, 12 and 13: removed
- Page 9, line 1 (now page 8, line 25): removed $\overline{bias}$
- Page 9, line 2 (now page 8, line 26-27): $\overline{bias}$ -> “all station mean bias”
- Page 11, line 6 (now page 11, line 3): Reworked sentence
- Figures 7, 8 and 10 (now Figures 6, 7 & 9): Changed data icons

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