Atmospheric Measurement Techniques Discussions

Atmos. Meas. Tech. Discuss., referee comment RC2
https://doi.org/10.5194/amt-2021-370-RC2, 2022

Excellent documentation accompanying MOPITT V9 release

Anonymous Referee #2

Referee comment on "The MOPITT Version 9 CO product: sampling enhancements and validation" by Merritt Deeter et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2021-370-RC2, 2022

This paper describes the MOPITT V9 products, and compare the calibration results to V8. In general, the paper is very clear and focusses on the effect of modifying the cloud mask. This leads to a larger number of scenes that pass the MODIS/MOPITT filter criteria, specifically in cases in which heavy aerosol loading is present in the boundary layer. Using a number of examples, effects are clearly illustrated.

I will upload an annotated pdf, in which I made some small suggestions that might further improve this excellent paper. Specifically, while figure 4 focusses on the TIR product (only small differences in zonal mean compared to V8), Figure 8 shows results of the TIR-NIR product that show substantial increases. This hints to improved sensitivity to boundary layer pollution, a subject that is not fully exploited in the text. Likewise, Figures 6 and 7 show distinct increases in sampling frequency at higher latitudes. Here, it might be instructive to provide more insight in the physical reasons for this phenomenon. While boundary layer aerosols are mentioned as possible reason, the widespread enhancement in sampling frequency over Canada in Jan 2017 has likely other reasons.

Apart from that I am really satisfied with this paper.

Please also note the supplement to this comment:
https://amt.copernicus.org/preprints/amt-2021-370/amt-2021-370-RC2-supplement.pdf