



EGUsphere, referee comment RC2
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Comment on egusphere-2022-450

Anonymous Referee #2

Referee comment on "Sixteen years of MOPITT satellite data strongly constrain Amazon CO fire emissions" by Stijn Naus et al., EGU sphere,
<https://doi.org/10.5194/egusphere-2022-450-RC2>, 2022

This is an interesting and well done study. I have the following recommendations that I wish the authors to address:

Main Comments

Line 5: Why don't you use 2003-2021 in your analysis, especially since you say on Line 12 that 2019-2021 are interesting years?

Line 45: In this paragraph, you are trying to say what's new about your work as compared to other studies in the literature. Your topic sentence seems to address the novelty of your work (i.e., data assimilation), but then you say in the next sentence that others have done this as well. That is, you only give a few sentences about the previous work which only raise questions about the novelty of your work. Your new aspect seems to be that you are looking at a longer time period than in other studies. If this is true, this is a weak justification unless there is something unique about the additional years. MOPITT data have been around for a very long time and many studies have been done, so I strongly recommend that you expand discussion on these previous studies and clearly articulate how your work is new.

Note: Upon reading further, I see that you devote Section 3.3.2 to Zheng et al. (2019). This makes it even more important for you to clearly differentiate between Zheng et al. and your work in the introduction.

Line 110 & Line 151: Why not assimilate satellite retrievals over the whole globe? Is it simply because such an inversion would be computationally expensive as suggested in the paragraph beginning on Line 146? It seems that it would make more sense to do the

assimilation for the whole globe so that your background CO will be more realistic, especially since your OH and CO production from methane/VOC oxidation are both static (Line 102-108). What are the implications for your study by not accounting for the background trend in CO over your study period?

Minor Comments

Line 5: "3-daily" is unclear. Replace "3-daily" with "3-day average". I think that's what you mean.

Line 62: You said in the introduction that the model framework is comparable to other setups. Please clarify if the other studies used the same setup or some of the same components.

Line 125: Again, why just assimilate in situ observations when you have satellite retrievals?

Line 316: You didn't mention how MOPITT's averaging kernels may introduce uncertainty in the inversion.