

We would like to thank the reviewer for his/her positive and insightful comments on the manuscript. Below is our response (black) to the referee comments (red).

L41: ‘a 5-10% positive bias that increases in highly polluted scenes.’

Here it should clearly be mentioned to which values the bias increases (up to >100% for highly polluted scenes). I don’t think that mentioning such high numbers decreases the value of the dataset since it is even not clear if IASI or MOPITT or both are erroneous, if at all.

We meant that this bias is more pronounced in polluted conditions. The word “increases” is replaced by “more pronounced” as indicated in line 41.

L109:

On the request: ‘Please specify in the instrument description the swath width, pixel size etc. which is referred to later on.’ This answer has been provided: ‘Thanks for the comment, it is added in lines 110:113 in the revised manuscript’  
However, I can’t see this in the revised manuscript.

We do apologize for this mistake. It was accidentally missed in the final version that we submitted. It is added in the revised manuscript in lines 110-112.

L159: ‘If’ -> ‘if’

Thanks for the comment, it is changed as it is shown in line 163

L210-L222: There is quite a confusion in this paragraph with figure numbers and ‘left’, ‘right’...

We do apologize for the confusion. The figure numbers are clarified in the revised manuscript in lines 215-229.

L259-L264:

Original comment: 'How is the MODIS cloud height for a MOPITT pixel determined (should also be described in the instrument-section)?'

Answer: 'Thanks for the comment, it is added in lines 259:264 in the revised manuscript.'

However, I cannot see any change here to the original manuscript.

We apologize for the mistake. It is added in the revised manuscript in lines 269-274.

L330: 'It' -> 'it'

Thanks for the comment, it is changed as it is shown in line 349.

L343: 'the Canada region' -> 'the region of Canada'

Thanks for the comment, it is changed as it is shown in line 363.

L351: '7b' -> '10b'

Thanks for the comment, it is changed as it is shown in line 371.

L352: '7d' -> '10d'

Thanks for the comment, it is changed as it is shown in line 372

L353: can you comment on the smaller density of points in V9 compared to V8 which seems not to be the case in Fig. 12 and Fig. 14.

Thanks for the comment, the low density of V9 compared to V8 in Figure 10 is because those are the data that are collocated with IASI, which means the non-collocated V9 points are not plotted. So, to avoid confusion,

we have replotted the V9 MOPITT Figure 10 to include all data points and hence it does not have low density compared to V8.

L440: 'interesting'

How is 'interesting' defined? Please use some more descriptive expression.

Thanks for the comment, we meant by interesting, coherent structures of CO plumes. The word interesting is removed and replaced by coherent structures of CO plumes as indicated in line 463.

L457: There is something wrong with this sentence.

Thanks for the comment, the statement is rephrased to be more clear as indicated in lines 480-483.

L460: 'which increases in highly polluted scenes'

Same comment as for the same expression in the abstract: please be more quantitative here.

Thanks for the comment, the phrase "highly polluted scenes" is removed and the whole statement is rephrased to be more clear as indicated in lines 480-483.

Fig. 3, middle panel:

Could you explain why in this difference plot there are clear orbit-like structures extending from about 30 deg S to 30 deg N latitude between about

20 deg west and 140 deg east?

Thanks for the comment, the orbit-like structures is resulted from missing some days in April 2014. We examined all MOPITT years till 2020, and we found that 2014 is the only year that has an odd structure. We do apologize for accidentally choosing 2014. To avoid this problem, We replotted Figures 2-5 using 2013 instead of 2014.

L294: 'left', 'right' -> 'top', 'bottom'

Thanks for the comment, it is changed as it is shown in line 623.

Figure 10 a,b,c: 'May.' -> 'May'

Thanks for the comment, it is changed as it is shown in Figure 10.

L634: 'Figure 7' -> 'Figure 10'

Thanks for the comment, it is changed as it is shown in line 662.

L641: 'Figure 3' -> 'Figure 10'

Thanks for the comment, it is changed as it is shown in line 669.