

Dear Editor,

Thank you for the positive evaluation of the manuscript updates. Please find hereafter the responses to your and Reviewer#2's comments. We hope that those responses will be considered satisfactory.

Best regards,

Jean-François Müller

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## Reviewer#2

**(1) For my original comment starting "The updated / optimized model is evaluated against the same observations that are used to bias correct the OMI HCHO product used to derive emissions.", the authors point out that this is not correct, so I'd recommend making this clearer to the reader and in so doing this more effectively convey that the evaluation is independent. Figure 1 and Table 1 are clear, but these do not convey that more observations are used in the evaluation than in the bias correction.**

The Figure 1 legend clearly distinguishes the aircraft campaigns used for the bias correction and the additional campaigns used for model evaluation. Nevertheless we changed the main text with the following sentence "Those campaigns, as well as 7 additional aircraft campaigns (datasets 5-11 in Table1) are used to evaluate the inverse modelling results. "

**(2) For my comment starting "The description of the OMI HCHO product in Section 2.1 is ... ", the updated text provided by the authors still doesn't convey what this cloud correction is. It would help to state that this cloud correction is ordinarily applied to the AMF.**

Thanks for this comment, we updated the text as follows

"However, in this work, the cloud correction to the AMF calculation is switched off..."

**(3) Related to the same original comment in (2) above, the updated text tells us that the background values from the model are finally added, but missing from this is "finally added to the vertical columns of HCHO", if this is the case.**

Updated as suggested.

## Editor

**In addition, in lines 125-126, you mention about the row anomaly. Can you please comment on this in Conclusion, whether we can use the OMI data after the year 2014?**

As explained in Section 2.1, there is a gradual degradation of the spatial coverage. However it does imply a degradation of the quality of the data, even after 2014. However we did note in Section 5.4 a deterioration of the satellite data after 2016, possibly related to instrumental degradation and/or changes in the TM5 model used to compute the air mass factors. A sentence was added in the conclusions.