

Response to Editor' Comments

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On behalf all co-authors, I would like thank the editor Abhishek Chatterjee for reviewing and provide valuable feedback of the findings found in our manuscript. Below the editor will find detailed answers to his questions. Answers to editor comments are shown in blue font.

- (a) It is certainly a great idea to tap into the inversion estimates from the OCO-2 MIP repository. I just want to make sure that you have made all the inversion modelers aware that you are using their product and following the data fair use policy and guidelines. In case you have, then please make sure to capture this in the acknowledgement section. In case you missed this, then please make sure to check in with Dr. Andrew Jacobson at NOAA about the fair use policy

Dr. Andrew Jacobson and the other modellers are aware that we are using their product. I emailed them on May 31, 2021 asking about the MIP data fair use policy and guidelines. We certainly overlooked inclusion of the contributors to the manuscript. This was amended in the acknowledgement section.

- (b) Along the same lines, please note that LoFi is not a global inversion product as the other products listed in Tables 3 (or Table 4). You can find details about the LoFI system here - <https://acp.copernicus.org/articles/21/9609/2021/>. It is primarily a bias correction technique for surface fluxes using the AGR information from in situ sites. My strong recommendation would be to keep the global inversion products that are actually based on Bayesian inference techniques, thus making it a more apples-to-apples comparison. In case you do decide to retain LoFI, then the fact that it is not based on Bayesian inference (as the other global inversions) should be made clear for the benefit of the reader.

We thank the editor for the clarification with the LoFi product. We thought that LoFi was part of the ensemble mean of MIP product because it was included within the global attribution description of the netCDFFile provided by MIP. I contacted Dr. Andrew Jacobson and he said that was error in the file.

After removing the LoFi inversion flux product from the ensemble mean of the OCO-2 (LNLG) MIP, we found that the annual carbon sink estimate for Australia was larger (-0.23 ± 0.12 PgC y^{-1}) than the previous estimate (-0.17 ± 0.26 PgC y^{-1}). Contrary to these results, the Australian annual ensemble mean derived by in situ MIP remain almost the same (0.20 ± 0.22 PgC y^{-1}). As consequence of this changes, Figs. 14 and 15 were updated accordingly. Please see more details in the discussion section of the manuscript.

Table 4 and Figs. I1 and I2 (Appendix I) were also updated because we found a small error in the code that aggregate the MIP flux estimates across Australia. We had aggregated the fluxes across the whole CMAQ domain instead of masking only Australia. The new estimates do not impact the main results presented in the discussion and idea we want to convey to the readers.

- (c) Kindly take note that there are a few spelling mistakes throughout the manuscript (for e.g., see Table 4 headings, or in the body of the table). Please look through the manuscript carefully and revise, as necessary.

We have now conducted a careful review of the manuscript and amended all spelling mistakes found. These changes can be seen in the latex diff document attached to the manuscript.