

Biogeosciences Discuss., editor comment EC1
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Comment on bg-2022-88

Jamie Shutler (Editor)

Editor comment on "Sensitivity of land-type variations across Canada using S-5p products" by Saheba Bhatnagar et al., Biogeosciences Discuss.,
<https://doi.org/10.5194/bg-2022-88-EC1>, 2023

Editor comment, 30 January 2023

I read your paper with interest as it is excellent to see satellite column integrated gas observations being used within a biogeoscience study. I have had significant issues in identifying reviewers for your manuscript, having invited 21 reviewers, 4 of which accepted, but then only 1 reviewer submitted a report. Hence I am now submitting this editor comment so that we can allow this review process to proceed. I realise that I have previously reviewed your paper prior to its publication within the discussion forum and that you revised your work addressing my earlier comments. So my comments below focus mainly on the major points raised by the single reviewer.

Its clear from the reviewer's comment that your manuscript has suffered from some unfortunate timing in relation to your analysis and then the subsequent release of an updated Sentinel 5P methane dataset. The production of this revised Sentinel 5P methane dataset was triggered by an error (regional bias) that was identified within these data (as presented most recently within Lorente *et al.*, 2022, but also studied within the three other references identified by the reviewer). And it appears that this bias likely forms part of the signal identified within your analysis and manuscript. And you have (not surprisingly) attributed the signal to a change in the natural system, whereas it seems highly likely that at least a part of the signal you identify is due to the error within the Sentinel 5P methane data dataset. The updates and changes in this underlying Sentinel 5P dataset are likely to significantly impact your results and therefore the conclusions from your work are also likely to change.

In light of this, its clear that you should at least repeat your analysis using the updated datasets (i.e. those provided by the reviewer) and then revise your manuscript following the results of this new analysis. I therefore conclude that major revisions are required.

You can re-submit your analysis that use the most recent datasets, revise your conclusions and you may have to revise your paper title. If you choose to perform these major revisions you will need to make sure that you fully account for the new revised Sentinel 5P data along with the associated data uncertainties and make sure that you show how these uncertainties likely impact your results. This will help to illustrate how robust your findings are to the underlying uncertainties of the Sentinel 5P dataset. This issue of unfortunate timing highlights the need to include the data version numbers and sources for all data (so authors can trace which datasets were used) so please make sure

you include this information within your revised work.

Reference

Lorente, A., Borsdorff, T., Martinez-Velarte, M. C., and Landgraf, J.: Accounting for surface reflectance spectral features in TROPOMI methane retrievals, *Atmos. Meas. Tech. Discuss.* [preprint], <https://doi.org/10.5194/amt-2022-255>, in review, 2022.