

## Response to Editor

Thank-you for your time. We have responded to the final technical suggestions by the reviewer comments below. We have not changed the main paper, other than one minor typo. The technical changes are all in the Supplement.

## Reviewer Comments

Thank you for your responses to the reviewer comments, most of the questions have been appropriately addressed. I think that the analysis of potential biases in the inflow/background methane mixing ratios has improved the study significantly. One slight complaint is the assessment of the prior and posterior fluxes outside of the domain, illustrated in Figure S8: Here it may have been more informative to consider measurement sites at the same latitude band separately to better see the impact on the outflow, rather than combining all (non-Canadian) global data, or perhaps to have considered the mean bias as a function of time for a subset of data most likely to be affected. But this is rather a suggestion for future studies: as it stands now, the paper is appropriate for publication one the labelling issues described below have been addressed.

Technical suggestions: In the supplemental figures, the plots should be clearly labelled to indicate if they are showing anthropogenic fluxes (only), natural fluxes (only), or total methane emissions. While this is explained in the caption for Figures S4 and S5, it should be on the axis label, or otherwise marked on the figure (as in Figure S11). Likewise, I believe that Figures S2 and S7 are showing natural fluxes only, but this is indicated neither in the figure labels nor in the caption. Please amend this.

[Response: We thank the reviewer for their time, and will consider these comments for future studies.](#)

[Yes, we agree with the reviewer that the figures should be labelled to add clarity. We have added appropriate labels \(either Anthropogenic Methane Emissions or Natural Methane Emissions\) to all appropriate Figures including Figures S2, Figure S4 a, b, Figure S7 and Figures 11, a, b.](#)

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