

Response to the Reviewers

We are submitting a response to the reviews as recommended by the editor. We thank the reviewers for the helpful comments which enabled us to improve the manuscript.

Reviewer 2

This paper presents source areas of measured CO and other gases, using the tag tracer experiments of GEOS-Chem. The CO emitted from the boreal wildfires are contributed to the episodic CO increase over the Arctic sites, mainly coming from North America and Asia. The topic of this study is interesting and the results of FTIR data is valuable, while there are no scientific new results in this manuscript (episodic increases due to wildfires are well known). In addition, this paper only shows the list of results and there is no sufficient discussion. Thus, I recommended major revision before publication.

Comment 2.1 — There are many figures which are not necessary needs. In addition, some figures can be summarized. For example, Figs. 11-13 are summarized to the percentage contributions to each site.

Reply: In response to the previous reviewers comments, the number of figures was reduced by moving the non-essential figures to the appendix. The authors believe the information of Figures 11-13 are best represented as figures rather than tables and therefore have left them as figures.

Comment 2.2 — The authors will improve the papers to include the descriptions of scientific new results and discussion related to these results.

Reply: This comment has been addressed in response to a similar comment made by Reviewer # 1.

Comment 2.3 — l.l. 470-475 The injection level and the transport pathway of CO are probably simulated in GEOS-Chem and the details will be analyzed.

Reply: The authors believe that this is outside the scope of this paper. The focus of the paper is on the use and the interpretation of the FTIR measurements presented. However, injection heights are simulated in GEOS-Chem as stated on L187-190.

Comment 2.4 — Typos. l. 545: 0.89 -> 0.86 maximum of 0.84 is only for Rikubetsu in Fig. 16

Reply: The authors have corrected this typo in the revised manuscript.