

Geosci. Model Dev. Discuss., author comment AC5  
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## Cover letter

Zhiqiang Liu et al.

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Author comment on "Improving the joint estimation of CO<sub>2</sub> and surface carbon fluxes using a constrained ensemble Kalman filter in COLA (v1.0)" by Zhiqiang Liu et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2021-375-AC5>, 2022

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Dear reviewers and editor Prof. Yuefei Zeng,

Thanks for the careful reading and insightful comments. We have carefully revised the manuscript accordingly. We believe this study is an important advancement for the ensemble-type CO<sub>2</sub> flux estimation study. And this paper is also a milestone for our COLA system that the long-standing mass conservation issue is fixed. And, we have submitted our real data assimilation results to the OCO-2 Model Intercomparison Project (OCO2MIP). We got lots of feedback and encouragement from the MIP community. The preliminary comparison with other state-of-the-art systems among the MIP further verified our methods and the robustness of the COLA system. We hope the revised manuscript is appropriate for publishing in GMD.

Sincerely,

Zhiqiang Liu

, on behalf of all co-authors