

***Interactive comment on “Atmospheric inversion of the surface carbon flux with consideration of the spatial distributions of US crop production and consumption” by J. M. Chen et al.***

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Many thanks for your kind review and fair assessment. I agree that the results from our study are not surprising and conforms to our existing understanding. However, up to now, the spatial distribution of carbon sources and sinks over North America is still uncertain and different bottom-up and top-down estimates differ greatly. Our study intends to address this issue by quantifying the impact of lateral crop carbon transfer on the top-down estimates. As shown in our discussion, this impact could explain a large portion of the discrepancy among inversion results constrained by different prior fluxes. I think that the need to consider lateral carbon transport in inverse modeling is made

C3315

clear in this manuscript, and this conclusion would have implications for subsequent studies.

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C3316