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Comment on bg-2021-85

Anonymous Referee #1

Referee comment on "Reviews and syntheses: Enhancing research and monitoring of land-to-atmosphere greenhouse gases exchange in developing countries" by Dong-Gill Kim et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-85-RC1>, 2021

The presented paper "Reviews and syntheses: Enhancing research and monitoring of land-to-atmosphere greenhouse gases exchange in developing countries" aims at bringing some light into our current knowledge of GHG exchange in developing countries. While this topic is very relevant to the scientific community the current document only barely provides any new information. Given that this is a review and synthesis, one would expect the authors would do some in-depth analysis of the existing knowledge with the overall goal to generate new information. Unfortunately the current documents does not fulfil these expectations. At the moment the document rather represents a list - also not a full list I must admit - on what types of research related to GHG emissions in developing countries has been ongoing. Such lists are already available and the authors even present a figure from Burba et al. on the number of EC stations globally, yet it remains unclear what the share of such stations between developed and developing countries is and which sites are active and/or part of networks etc. At the same time, and specifically for the African continent such a review of stations has recently been made and the authors even cite the relevant papers. Yet there is no need to repeat such information.

There are some interesting aspects in the manuscript, ie why is it the case that station of South America are not part of the bigger networks and how could this be overcome? Also the AT&A approach is interesting, though it has also been stated before. At the moment the authors dont provide a clear way forward on how one could come to a point to use such technology. Similarly, while the authors mention that there is a large uncertainty in global GHG knowledge due to the lack of observations in developing countries, there is no analysis on how large this bias actually is nor what would be necessary to reduce the uncertainty by XY%.

Another important point is that the title is misleading. It states GHG exchange, however the authors start with an overview on Carbon stocks. Moreover the flux value definition is not fully clear, nor is it clear how the information was derived.

In summary, the document resembles rather a white paper in its current stage and could be informative for ie international organization or to a certain degree for policymakers but it does not fulfil the necessary in depth analysis and standard of a scientific paper. I don't doubt the ambitions or efforts anticipated by the authors but in order to derive something feasible, more research on the existing literature and synthesis analysis is needed.

This may not be what the authors have hoped for yet I am confident that with some reflection the authors will see the shortcomings here too and will work on an in depth analysis tackling an interesting topic.