

## Response to editor's comments

Abstract okay except various acronyms not defined.

Page 2 line 9: IPCC uses the familiar acronym LULCC. You should adopt the same or specify how and why yours differs from the expected community term. Check all uses of LUCC vs LULCC.

Reply: Thank you for your comments. We have changed LUCC to LULCC.

Page 2 line 11: Usually, instead of citing the entire WG I report of AR-5, authors cite a specific chapter or even a page number?

Reply: Thank you for your comments. In the last version of our manuscript, we have cited the name of chapter. "**Anthropogenic and Natural Radiative Forcing**" is the chapter's name. In this version, we also cite the page number. Please see **page 38 lines 23-29**.

Reference: Myhre, G., Shindell, D., Bréon, F.-M., Collins, W., Fuglestedt, J., Huang, J., Koch, D., Lamarque, J.-F., Lee, D., Mendoza, B., Nakajima, T., Robock, A., Stephens, G., Takemura, T., and Zhang, H.: **Anthropogenic and Natural Radiative Forcing**. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, [Stocker, T.F., Qin, D., Plattner, G.-K., Tignor, M., Allen, S.K., Boschung, J., Nauels, A., Xia, Y., Bex, V. and Midgley, P.M. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, **688pp.**, 2013.

Page 2 line 21: List of acronyms (e.g. SAGE, HYDE, PJ and KK10) need definition. Given the range of acronyms used in this manuscript, from old Swedish sources to modern satellite products, authors should consider a table of acronyms with definitions as an Appendix?

Reply: Thank you for your comments. We have added the definitions of SAGE, HYDE, PJ and KK10. We also add a table of acronyms with definitions as an Appendix.

Page 2 line 29: If Le Quéré et al., 2018 is supposed to represent most recent global carbon budget, more recent versions exist (e.g. Friedlingstein et al. 2020) exist.

Reply: Thank you for your comments. We have changed this reference to the most recent version of global carbon budget. Please see **page 2 line 29**.

Page 3 lines 1 through 5 "There uncertainties were unneglectable in regional applications" ?? Following sentence adds to confusion rather than clarifying. This means that uncertainties acceptable in global context become too large in regional products? "There" or "their"? Confusing. I think you mean that assumptions made in global products become unacceptably large at regional contexts? But, for IPCC at least, most LULCC and AFOLU estimates come from most-recent national reports of varying quality and reporting date? If you want to declare a need to validate more carefully on regional scales for historical cropland changes, you have not made the point clearly.

Reply: Thank you for your comments. We are sorry there is a mistake in the sentence "There uncertainties were unneglectable in regional applications". We have deleted this sentence and given more detail explanation of the uncertainties of global datasets. Please see **page 3 lines 1-16**.

Page 3 line 7: ALCC - what's this? Not defined. Same as AFOLU in IPCC terms? Or do you mean

‘anthropogenic land-cover change’ ala PAGES. If different, how and why justified?

Reply: Thank you for your comments. ALCC in our manuscript means ‘Anthropogenic Land-Cover Change’. We have added the definitions of ALCC in our revised manuscript (**Page 3 line 15**).

Page 3 line 8: PAGES LandCover6k mostly focuses on paleoclimate indicators (e.g. pollen) and not exclusively on regional patterns. Here you focus on small region (Scandinavia) with unusually-good historical records? How does this work fit with PAGES paleoclimate projects?

Reply: Thank you for your comments. One of the LandCover6k’s aims is to “evaluate the existing ALCC (anthropogenic land-cover change) scenarios with the combined information from the pollen-based reconstructions, archeological and historical data, and other evidence of human-induced land-cover change such as paleofire reconstructions” (Gaillard et al., 2015). We aim to evaluate the existing ALCC scenarios in Scandinavia based on historical records. Thus, this work fits with LandCover6k projects.

Reference: Gaillard, M. J., and LandCover6k Interim Steering Group members: LandCover6k: Global anthropogenic land-cover change and its role in past climate, Past Global Change Magazine, 23, 38-39, 2015.

Page 3 line 10: “Errors” in regional reconstructions or in global products. Need clarity here.

Reply: Thank you for your comments. We have changed “Errors” to “Errors in global products” (**Page 3 line 20**).

Page 3 line 16: farmers are were, please make careful and consistent use of past tense.

Reply: Thank you for your comments. We have changed “are” to “were”. Please see **page 3 line 27**.

Page 3 line 30 to page 4 line 1: “importance .... could fail to be determined precisely” What? Confusing!

Reply: Thank you for your comments. We have changed the sentence to “The impacts of ALCC on climate and environment cannot be evaluated precisely without grid-based cropland maps”. Please see **page 4 lines 11-12**.

Page 4 lines 15 to 19 - finally, a clear statement of intent. This text could replace much of what precedes it. Dataset will provide? Better: dataset provides!

Reply: Thank you for your comments. We have changed “will provide” to “provides” (Please see **page 5 line 1**).

Overall, good helpful description but methods, data and results sections need careful scrutiny and occasional re-write!

Page 36, around line 30: Reference list not in alphabetical order. Please check entire reference list for similar errors.

Reply: Thank you for your comments. We have checked entire references list and the references list is in alphabetical order now.

Typesetters and proofreaders from Copernicus will apply very careful very good language services for this manuscript but they will have many questions! Two changes suggested here: careful reading

and re-writing by a native English speaker and careful definition of all acronyms (consider a list of acronyms as suggested) will make their job easier and your product better!

Reply: Thank you for your valuable comments for our manuscript. We have defined all acronyms (Please see **Appendix**). The manuscript has been read and polished by a native English speaker. But we believe language services from Copernicus will make our product better.