

Interactive comment on “A cultivated planet in 2010: 1. the global synergy cropland map” by Miao Lu et al.

Anonymous Referee #1

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The paper by Lu and coauthors represents a very laudable effort to derive consensus maps on global cropland occurrence from multiple disagreeing input maps. This effort is highly valuable for the global scientific community. The importance of more accurate global cropland maps for research and applications in food security, climate modelling, and other fields cannot be overstated.

I see that this manuscript has already been in revision rounds before, and from what I can tell, the quality is already at a very high level at this point. I can confirm that the cropland maps are accessible and that the quality of the presented data is very high. I particularly like the spatial depiction of confidence levels. I was not sure, though, if these confidence maps are also being published alongside the cropland datasets (they should be!).

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I have a couple of minor comments on how the manuscript and data and code presentation should be further improved:

I think the discussion could be slightly improved by including a section on necessary (or useful) next steps to further increase on the quality of the presented dataset.

I find the argument that the used statistical data on cropland are broadly reliable and therefore suitable as reference overly simplistic. While I do not imply to criticize the presented approach as such, I think it should be better acknowledged that also these statistics have uncertainties, and in some regions likely very large uncertainties. In some countries, individual remote-sensing based maps might even be more accurate than the used statistical data. Apart from the general acknowledgement of these uncertainties, could the authors maybe also add some discussion on where in the world the statistical data are deemed more or less reliable and why?

How exactly the confidence levels shown in Fig. 6 were generated is not fully clear to me. Could more information on this be provided (ideally with code to reproduce these maps or reapply the methodology elsewhere), including a short self-explanatory summary in the figure caption? Generally, I find it hard to interpret the figure captions without constantly referring back to the main text, so a few more explanatory words throughout the captions would be helpful.

The presented layers will surely be widely used, including in international policy contexts and as a reference for comparing or validating other products. Therefore, I think that absolute transparency regarding all input data and methodologies is required to assure reproducibility and possibilities for scientific scrutiny. In this respect, I have the following request:

To the extent that this is legally possible, all input census and point datasets that were integrated as a basis for developing the presented maps should be made openly accessible, either alongside the presented data products or via a separate publication. In cases where republishing these data may not be legally possible, sufficiently detailed

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descriptions should be provided on how to independently access each input dataset so that the presented work could be scrutinized and reproduced by others. Similarly, sufficiently annotated code used to derive the presented layers from these source data, and code underpinning other presented analyses, should be provided.

I might have missed it, but I also didn't find the information on which data on cropping intensities were used to translate between harvested areas and crop areas (e.g., which values for which countries? What are the sources?) – these should be made fully transparent, too. Finally, although I ask for further transparency and some additional text, let me repeat that I regard this product as extremely valuable. My sincere gratitude to the authors for producing it and making it available!

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