Interactive comment on "New anthropogenic land use estimates for the Holocene; HYDE 3.2" *by* Kees Klein Goldewijk et al.

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Received and published: 31 January 2017

Anonymous Referee #1 Received and published: 25 January 2017

Comment1: General Comments This paper describes a major update in the most popular, spatially explicit, long-term historical land use and population reconstruction. These data are widely used in land change and climate change science. More detailed categories of land use are included in this version and the algorithms are improved. Basic issues remain with the modeling methods, including uncertainties introduced by a number of untested, and perhaps untestable assumptions. It would be useful if these were assessed and presented in more detail.

Reply 1: We thank the reviewer for recognizing this kind of pioneering work and we fully acknowledge that some of the underlying assumptions introduce more uncertainty.

However, reliable land use change data differs along various historical time periods, from current statistics from FAO and satellite imagery, to sparse historical census data only. Especially before pre-1700 period it is really 'uncharted territory' at the moment, and we feel that many assumptions are indeed untestable in a strict scientific way, but are the result of a merely 'common sense' approach. Therefore, the output should be regarded as a possible 'what if' scenario of historical land use (changes) and hope that the scientific community will be triggered to carefully look into the data and assumptions we have collected, use them in modelling studies which then hopefully stimulate discussion on the underlying land use reconstructions. We certainly remain open for any suggestions to improve our estimates on historical per capita land use, and we will try to explain in a better way the various data sources used for the different time periods

Comment2: It is also concerning that the Introduction gives scarce background on the work presented here, including a review of other similar datasets, the broad methodological challenges of producing them, how they were produced in the past, and how this work improves on these.

Reply 2: We agree with the reviewer that more information should be given of the general background of this work, and we will add a paragraph with an overview of other similar datasets, discussing the methodological differences and challenges. We also agree with the reviewer that some of the aspects of the uncertainties should be addressed in the abstract.

Comment 3: Nevertheless, this dataset remains the most widely accepted mainstream global dataset of its type; there is no full replacement, and the changes introduced are very welcome improvements.

Reply 3: Thank you for this comment.

Technical Corrections : 1. P1 L13: change "and" to "an" Reply: we will change that

2. P2 L7: change "the last millennia" to "the last 10 millennia" Reply: we will change that

3. P2 L8-17: I urge the removal of these four sentences. Reply: we will change that and remove the lines involved.

4. "Prestele (2016) was cited but is not in the references. Reply: we will include the reference in the reference list.

Interactive comment on Earth Syst. Sci. Data Discuss., doi:10.5194/essd-2016-58, 2016.

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Discussion paper