

Apologies for delay. I needed to discern status of companion product (ESSD-2021-251) as a prior for evaluating this product. I conclude from #251, the PFT (only from a single year = 2015) paper, quoting from authors (line 556) “the LANDMATE PFT map is able to represent LULC over large parts of Europe in a sufficient quality”. Sufficient! Followed by several paragraphs of important cautions and caveats.

Therefore, for this manuscript (2021-252), applying again a translator (LUT in this case) to derive a newly uncertain product (LUCAS LUC v1) from a different previous but likewise uncertain product (LUH2), itself derived in part from a previous product (HYDE, at least accompanied by a serious uncertainty analysis in a previous ESSD paper, but such analysis never mentioned here), compared to two recent satellite products (ESA, MODIS) which disagree substantially with each other, to derive - sans any hint of uncertainty or rigorous validation - what?

I agree with all concerns raised by other reviewer. I particularly echo that reviewer’s point about other organisations (IPCC, FAO) already having wrestled with complex questions of uncertainty on both inputs and outputs, none of which these authors mention. In fact, I take a stronger negative assessment: garbage in, garbage out. Authors should react very strongly against this assessment! Fair enough. They have certainly assembled a lot of information and undertaken significant processing. But, they need to convince users they have produced a valid useful product. For this reader / potential user, they fail completely.

I revert to ESSD guidelines: <https://www.earth-syst-sci-data.net/10/2275/2018/>. I strongly suggest authors do likewise. They will find, as I do, emphasis on systematic quantitative end-to-end uncertainty analysis accompanied by careful rigorous validation. Reader finds none of this in present manuscript. If they don’t know, how can we know? Uncertainties must carry forward from PFT effort (#251), arise from LUH2, increase after application of LUT, vary with aggregations or disaggregations applied to converge on various spatial resolutions, increase again across various (too many) SSP, etc. Reader finds not one error bar in the entire manuscript. E.g in Figures 3 and many similar maps following, we find a legend denoted in fractional coverage changes of 0.01, 0.1, 0.2 etc. Personally, this reader doubts they can have confidence in any change smaller than 20% but we get zero information. If they disagree, prove it! Likewise, reader encounters many time series figures such as Figs 4,5, 12 etc, with never a hint of uncertainty. Given so many vagaries, some even mentioned here, this reader doubts whether they can show any reliable, repeatable quantified difference in projected land use changes between RPC1.3 and RPC8.5. They may already have concluded the same: “Up to now, LULCC forcing is not sufficiently accounted for in climate change projections conducted with regional climate models (RCMs)” (lines 28, 29). Have they done any better here? One hopes so, but - without any information on uncertainty - how can any reader accept?

Validation remains astonishingly weak. Numerous ground-based time series over substantial areas exist, covering changes in cropland, forest, urban areas, etc. For UK, France, Germany, Spain, etc. Some over 30 years or more, certainly longer than

MODIS or ESA CCI products. Many published in ESSD. Habit may cause them to revert to satellite products when rigorous evaluations should rather look at on-the-ground products? I hear the author's complaints. "Too much work." "Not covered by the funding proposal." "No ground-based product has sufficient LU types or long-enough time coverage." "Mismatch between survey categories and our land-use categories." All complaints valid but, without a good effort, they have not proved their product better or more useful than anything pre-existing. In fact, we find no basis for confidence that, despite abundant careful work, they offer any 'improvements'. If an RCM community deigns to use this product, shame on them for sloppy work.

Garbage! Wrong? Prove it.