Comment on essd-2022-135
Anonymous Referee #3


This manuscript describes the development and details of a land-use dataset for the United States for the years 1630-2020. The dataset differs from other land-use datasets in that it is a high-resolution product, for almost 400 years of the historical period. The dataset combines multiple different input datasets, for different time-periods, and in different formats/spatial resolutions and reconstructs the historical areas of cropland, pasture, urban land, and forests annually at 1km x 1km spatial resolution, for the CONUS. The results show expansion of cropland and urban areas, with associated losses of natural vegetation. Comparison with other datasets show many areas of qualitative agreement, with some interesting differences for some time periods and land-use types.

Overall, the manuscript is mostly well-written and organized. It includes some useful information about the dataset development process, and an analysis of the resulting products. The dataset will be useful to modelers working in the areas of climate and ecosystems to better understand the high-resolution impacts of LCLUC in the CONUS over a long historical period. A few areas for improvement include:

1) Although other alternative datasets are mentioned and compared with the new dataset, it would be helpful to know what advantages those other datasets might have (if any) over the new dataset (e.g. for HYDE an even longer time period is used, and for some datasets there could be additional data layers beyond the ones provided in this dataset, etc).
2) There are different versions of HYDE3.2 – it would be good to know which one was used in this manuscript.
3) Does the pasture category in the dataset include natural grasslands, as well as managed grasslands and rangelands?
4) I also had a bit of confusion about the forest category in the dataset – is it primarily about land that is being used as a forest (regardless of the numbers or ages of trees)? Or is it based more on forest land cover? This distinction between land use and land cover could be discussed a bit more to help with this. There are several places in the manuscript
where the authors state that forest area decreased due to wood harvest or fuelwood extraction, but if that did not result in a conversion to another land-use type, then the forest area would not be changed (even if the land cover changed).

5) I found the color scale on figures 5 and 7 quite difficult to read to distinguish between the various land-use colors.

Overall, I think a discussion of the differences between land-use and land-cover and how that is represented in this dataset would be a helpful addition. Also, some more discussion of how this product differs from the technical details of other products and in what ways that is useful and in what ways other products might have some advantages, along with how those differences in underlying details are driving differences in the qualitative dataset results.