

Earth Syst. Sci. Data Discuss., referee comment RC1  
<https://doi.org/10.5194/essd-2021-253-RC1>, 2021  
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## **Comment on essd-2021-253**

Anonymous Referee #1

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Referee comment on "TimeSpec4LULC: a global multispectral time series database for training LULC mapping models with machine learning" by Rohaifa Khaldi et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-253-RC1>, 2021

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The manuscript presents a dataset useful to train machine learning models for LULC mapping and the methods and results it presents are original and sufficiently well explained. However the manuscript would benefit from a clearer focus on the scope and limitations of this training dataset. For instance, both the title and the abstract do not contain 'training' and do not obviously point to the type of data that are presented. Some of the technical choices should be better justified (e.g. why not using the standard Land Cover Classification System as the basis to derive consensus between different land cover and legends; why not including the LCCS-based types from the MODIS land cover; some of the LULC categories are not defined, e.g. broadleaf cropland). The manuscript should more openly discuss the limitations and weaknesses of the dataset including on the methods applied for data validation and on the potential applications of the dataset – for instance it is not immediately obvious if the dataset could support machine learning methods to detect LULC changes with complete transition matrixes. Particularly for the classes with lowest purity – defined as the combined consensus spatially and temporally across products, it would be useful to add to the discussion some insights on what classes cause confusion and reduced consensus. I believe this (ancillary information) may be included as part of classification efforts. This information could be enriched by I recommend the publication of the manuscript after major revision – see my specific comments and suggestions in the attachment.

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2021-253/essd-2021-253-RC1-supplement.pdf>