Comment on essd-2021-253
Anonymous Referee #2


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General comments

The manuscript is generally well written and organized. I recommend it for publication if the following are addressed. This does not require further processing and/or analysis, just clarification.

There are no reference to MODIS LC product at all nor of the ATBD:


Per validation / accuracy assessment: Expert opinion is extremely problematic. There is no mention as to cross-validation, agreement of interpreters etc. Is this just a call as to what class it might be?


Co-registration: There is no documentation of pixel-to-pixel co-registration. Did you look at the PSF?

There are no problems reported: Might there not be mention of assumptions, possible errors?
There is no details on the classification algorithms.

Monthly composites: Are not 32-day monthly MODIS composites available?

**Specific comments**

10 I don’t know what “smartly pre-processed” means

25 Not sure what an “essential planetary boundary” might be

45 Global products are not meant for local studies. MODIS was meant to parameterize BGC and GCM.

60 Deep Learning is not defined.

80 CNN and RNN are not described. NNs have been in use for quite some time, at least 20 years

90 The purpose overall is to create a dataset that allows for deep learning?

125 Cross-walking categorical/nominal variables, i.e. classes is deeply problematic

185 What about areas with persistent cloud cover: Ecuador, Colombia, Peru, DRC, ROC?

200 Again, global products are not necessarily meant to be down-scaled

**Technical corrections**

- Graphics: While this may just be the pdf rendering, the graphics are small and color rendering dull: Figures: 2, 3, 4, 5