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Open Access Earth System Science Data Discussions

Interactive comment on "Annual oil palm plantation maps in Malaysia and Indonesia from 2001 to 2016" *by* Yidi Xu et al.

Anonymous Referee #1

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The article presented the first annual oil palm plantation maps in Malaysia and Indonesia and demonstrate the accuracy of the maps through various comparisons with existing statistic dataset and regional maps. It's an interesting paper that exhibits the efficiency of fusing optical and radar data in over coming data gaps to produce consistent annual maps. However, there are quite a few details in the abstract and introduction session that need to be checked. Some statement are lacking adequate references. More detail needs to be given on the methods, especially validation approach. Some of the conclusions in the discussion section need to be backed up, either by reference or by results. I'm not very convinced by the results due to limited information was given to the independence validation approach.

Please see the particular comments below: Abstract/Introduction: âĂć 12: The land

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Discussion paper

convention to oil palm plantations not always lead to deforestation. âĂć 26: Current discussion is not strong enough to support the conclusion that the higher trend in this study is due to the inclusive of smallholder farmers. (more comments in the Results part, section 3.3) âĂć 36: Corley, 2009- any more recent ref to support the expected growing rate from 2003? âĂć 38:"forest cover dropped from 76% to 9% since 1990 in Malaysia and Indonesia". Please double check these numbers, and cross reference with other sources. âĂć 43: There are quite a few existing dataset/report that are providing continuous information about the expansion of oil palm in Indonesia and Malaysia. E.g. https://theicct.org/sites/default/files/publications/ICCT_palm-expansion_Feb2012.pdf âĂć 59: There are quite a lot of Machine learning or Deep Learning based methods for automatic identification of oil palms.

Methods: âĂć Any co-registration issue between MODIS and ALOS/ALOS2? âĂć 149: Any other prove that no calibration is needed between ALOS and ALOS2 in Indonesia and Malaysia? The study site for the two referenced papers are not for these two countries specifically (Thus with different incident angel, weather condition, etc). âĂć 108: How dose 98.91% been calculated? âĂć Why the NDIV information from MODIS is not used as input to the RF model for classification? âĂć 213: How many MODIS time series are used exactly? How many are actual data and how many are interpolated? As the author explained, Indonesia and Malaysia are heavily affected by clouds, so as MODIS NDVI as well. âĂć Eq 4, 5 and 6: some errors in explanation. âĂć More information is needed for the validation methods (2.5). E.g how many samples are there for each land use class for each year? âĂć 726: Fig 3: are all the 2986 annual sample from 2016, and other years are interpolated? And how? âĂć 725: Fig 3: the distribution of validation dataset is very uneven. There is no annual sample set in Sumatra Indonesia at all. âĂć 300: How does the total number of validation points (5000) been decided? What's the ratio of the validation points to the total pixel been detected as change?

Results: âĂć Paragraph 1 and 2: There is no other information/ref/map/graph/table

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provided to support many of the conclusions in these two paragraphs. Some of the sentences read like discussion rather than results. âĂć Section 3.3: Have you compared your results from Global forest watch, oil palm concession dataset 2014? âĂć Section 3.3: There lacks adequate reference to support the linkage between oil palm expansion, price fluctuation. âĂć Section 3.3: There are potentially more reasons to explain the higher estimated oil palm area in this study compared to existing dataset. More evidence is needed to exclude other reasons and draw the conclusion to smallholders' oil palm plantation. Especially the minimum mapping unit in this paper is 1ha. âĂć 435: what does 'limited bands in ALOS/ALOS 2 mean?

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