

## ***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: 12: The land

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convention to oil palm plantations not always lead to deforestation. 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) 36: Corley, 2009- any more recent ref to support the expected growing rate from 2003? 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. 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](https://theicct.org/sites/default/files/publications/ICCT_palm-expansion_Feb2012.pdf) 59: There are quite a lot of Machine learning or Deep Learning based methods for automatic identification of oil palms.

Methods: Any co-registration issue between MODIS and ALOS/ALOS2? 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 angle, weather condition, etc). 108: How dose 98.91% been calculated? Why the NDIV information from MODIS is not used as input to the RF model for classification? 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. Eq 4, 5 and 6: some errors in explanation. 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? 726: Fig 3: are all the 2986 annual sample from 2016, and other years are interpolated? And how? 725: Fig 3: the distribution of validation dataset is very uneven. There is no annual sample set in Sumatra Indonesia at all. 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: 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.    Section 3.3: Have you compared your results from Global forest watch, oil palm concession dataset 2014?    Section 3.3: There lacks adequate reference to support the linkage between oil palm expansion, price fluctuation.    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 small-holders' oil palm plantation. Especially the minimum mapping unit in this paper is 1ha.    435: what does 'limited bands in ALOS/ALOS 2 mean?

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