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Discussions

Interactive comment on "Early season mapping of winter wheat in China based on Landsat and Sentinel images" *by* Jie Dong et al.

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The ms presents the method and data for winter wheat mapping in China at 30 m spatial resolution for 2016-2018. Authors use Landsat, Sentinel-1 and Sentinel-2 data for mapping and phenological metrics to do it in-season. I think overall it is an interesting study and having those maps for China is of paramount importance for global Ag monitoring, and though it's a data-description paper, I'd like to see more analysis on how certain selection of method components can influence the resulting performance and accuracy of the product. Major issues: 1. I'm curious if monthly composites are enough for discrimination. Can you show some analysis how the accuracy depends on the composite period? 2. Line 124-125: how accurate and reliable census data? It's well known that official statistics is adjusted and it takes time for that to be released.

Which census are you taking? Please provide a strong justification why it's appropriate to take census data as part of the method. Overall, matching to official stats, in my mind, is not a good practice, since your method is influenced by accuracy and reliability of census, which for most countries is not available and unknown (in terms of uncertainties). 3. Line 129: why 20%? Actually looking at Fig. 4 – there's a lot of variability. For example, there are provinces having NDVI 0.3 in March, and other having 0.8 at the same time. 4. Line 132-133: please prove this assumption/claim. I would suspect that profiles would vary depending on the temperature. 5. Line 144-145: can rapeseed be identified during the flowering stage? Obviously just NDVI will not help, you shall employ red band, since during the flowering it's yellowish (a combination of green and red). 6. How is your method for rapeseed different from the one described in d'Andrimont, R., Taymans, M., Lemoine, G., Ceglar, A., Yordanov, M., & van der Velde, M. (2020). Detecting flowering phenology in oil seed rape parcels with Sentinel-1 and-2 time series. Remote sensing of environment, 239, 111660.? 7. Line 169: kappa is discouraged to be use – see Foody, G. M. (2020). Explaining the unsuitability of the kappa coefficient in the assessment and comparison of the accuracy of thematic maps obtained by image classification. Remote Sensing of Environment, 239, 111630. Kappa is correlated with Oa, and for this study the most important metrics PA and UA. 8. Line 164: you used census in your method (line 126). I don't think you can use census for validation. 9. Table 3 – can you present comparison to official stats through plots – it's not clear what areas are and how RMSE is related to it.

Minor: 1. Introduction line 33 – add Russia and Ukraine and Argentina to the list of countries 2. Paragraphs 55 and 60: In addition to DTW, please add accumulated GDD which is a more physical way accounting for difference in wheat emergence, see Franch, B., Vermote, E. F., Becker-Reshef, I., Claverie, M., Huang, J., Zhang, J., ... & Sobrino, J. A. (2015). Improving the timeliness of winter wheat production forecast in the United States of America, Ukraine and China using MODIS data and NCAR Growing Degree Day information. Remote Sensing of Environment, 161, 131-148. 3. English shall be edited and improved, e.g.: o Line 103: "involves produces" -> rewrite

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