Response to comments

Title: A 30-meter terrace mapping in China using Landsat 8 imagery and digital elevation model based on the Google Earth Engine

MS No.: essd-2020-157

Referee #1

General comments

Comment 1:

Below are my comments for the revised version of your paper, please refer to them.

Response 1:

Thank you very much for the comments and suggestions. Please see the detailed point-by-point responses below.

Specific comments

Comment 1:

Were all 39 input features useful for the rice terrace classification? It was time consuming to prepare the input feature as well as train the model using the huge input data, wasn't it?

Response 1:

Thank you for your comments. As described in Section 2.2, all these features play an important role in terrace/non-terrace classification. And due to the difficulty of terrace identification and large area of research region, it is necessary to use more features. Additionally, we also further quantified the impact of feature number on classification accuracy and added the statement in **Section 3.6**: "To further illustrate the usefulness of all the 39 features selected in the study, we took a terraced cropland-dominated province (Guizhou) and a non-terraced cropland-dominated province (Hubei) as examples to train the classification model based on different feature numbers and evaluate the accuracy. According to Fig. 13, OA generally showed an upward and gradually stable trend as the feature number increased in both provinces, the maximum values were reached when using 35 features in Guizhou and 39 features in Hubei, indicating features were not redundant. Therefore, we applied all features in this study."

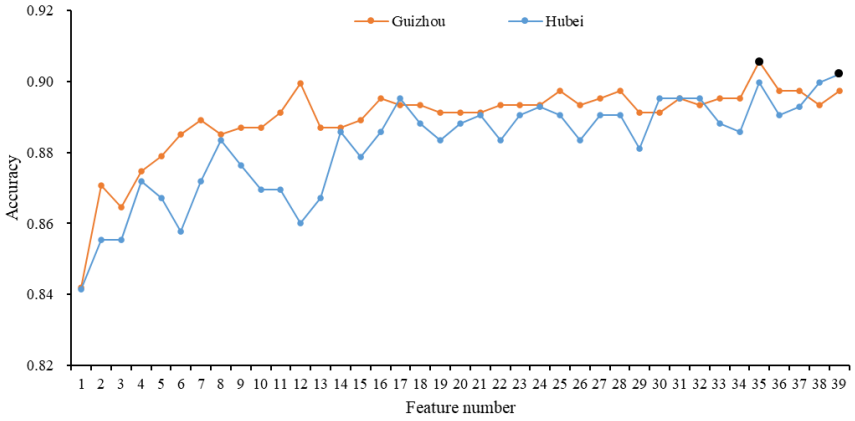

Figure 13: OA for using different feature numbers in Guizhou and Hubei. The feature addition order along the horizontal axis is identical with the feature importance ranking of the province. The maximum value of accuracy is marked in black.

As for the efficiency, if using traditional software packages, it is indeed time consuming for data preprocessing and model training. However, the GEE platform provides the analysis-ready data and high-performance parallel computation service, making it convenient and fast to prepare all the 39 features and train the classification model.

Comment 2:

What if you apply the model using only local samples and compare the results for the provinces with sufficient train and test samples?

Response 2:

Thank you for your suggestion. We trained the classification model using only the local training samples in all provinces where both local terrace and local non-terrace training sample number were more than 10. And the results were compared with the classification using national, regional and local training samples in the study.

The comparation was supplemented in **Section 3.6**: "As for the sampling strategy, to further clarify the effectiveness of the national and regional training samples in the study, we compared the accuracies of classification through only using local training samples and through using national, regional and local training samples in the provinces where both local terrace and local non-terrace training sample size were more than 10 (Anhui, Beijing, Chongqing, Fujian, Guangdong, Guangxi, Hainan, Hebei, Henan, Hubei, Hunan, Inner Mongolia, Jiangsu, Jiangxi, Liaoning, Qinghai, Shaanxi, Shanxi, Sichuan, Taiwan, Tianjin, Zhejiang). On the whole, adding the national and regional samples increased OA by 6.90% in these provinces, proving our sampling strategy in the study is reliable and can be applied to other large-scale researches."

Comment 3:

"Nine-Dash Line": In Figures 2, 3, 6, 9, other I will have missed, the controversial "Nine Dash Line" is shown. I strongly recommend the authors to remove the controversial "Nine-Dash Line" from all figures of this manuscript. This item is irrelevant to the scientific content of this paper, and has also been rejected by a 2016 international tribunal in The Hague (see a summary at https://www.theguardian.com/news/2016/jul/12/south-china-sea-dispute-what-you-need-to-know-about-the-hague-court-ruling?fbclid=IwAR0POoX2gUpHd_r16bFtpEUKwkxaY23z4du1Dbqq0IqpEV6IDQ7HJh6k8jk; and the Press Release of this international court at https://pcacases.com/web/sendAttach/1801).

I strongly believe that papers published in ESSD journal should only focus on the scientific aspects of the Land Cover and Land Use mapping disciplines rather than (political) propaganda. As a result, the inclusion of the "Nine-dash line" is both irrelevant and inappropriate.

Response 3:

Thank you for your advice. We have removed the "Nine-Dash Line" in all these figures.
