

This article generated a 30m Chinese winter wheat yield from 2016 to 2021 based on the HLM model, called ChinaWheatYield30m. The semi-mechanical model was constructed in a combination of RS observations and regional meteorological data for major wheat-producing regions in China. The ChinaWheatYield30m dataset is validated and has a potential to be applied in some related academic researches.

The paper was basically well organized and written. However, to further improve the paper, some issues need to be deal with. Below are some specific comments:

1.The detailed description is needed to address how to compare the ChinaWheatYield30m dataset with the province-level statistical data;

[Response]: Thank you very much for your suggestion. The primary purpose of statistical data is to verify the accuracy of data sets when statistics are performed at different scales, in order to better serve different institutions for use. Modification is incorporated in Line 223-225. as following:

*“This study compared and analyzed national statistical data at different scales, focusing mainly on the provincial and municipal levels, to validate the accuracy of the ChinaWheatYield30m dataset. This study compared the difference between statistical yield per unit area from 2016 to and the average yield using ChinaWheatYield30m extracted from both province and municipal vector data.”.*

2.The strength of the ChinaWheatYield30m dataset needs to be emphasized comparing with some existed remote sensing yield estimation datasets;

[Response]: Thank you very much for your suggestion. According to your opinion, the article further elaborates on the advantages of the ChinaWheatYield30m. Modification is incorporated in Line 344-375. as following:

“...

*1) This study generated ChinaWheatYield30m dataset with 30-m resolution (Fig.10), the primary reason is we adopted winter wheat classification map from (Yuan et al., ESSD 2020), providing highest resolution of 30-m wheat pixels. Such a resolution will provide not only higher result credibility, but also balance the computational efficiency problems. High-resolution yield datasets can provide more accurate spatial information about crop production, improving agricultural productivity and enabling*

*rapid monitoring and analysis of large agricultural areas. This allows for timely detection and resolution of issues that arise during crop growth, ultimately enhancing both the efficiency and effectiveness of agricultural production.*

*2) A stable accuracy at field scale and large regional scale will highly contributing to field management, modelling agricultural systems, drafting agricultural policies. This study combined remote sensing and meteorological data to construct a spatiotemporally expandable HLM method for predicting winter wheat yield in the main producing areas. The relationship between vegetation index and crop yield varies across different years and regions (Li et al., 2020). Meteorological data has an important impact on crop yield (Moschini and Hennessy, 2001; Lee et al., 2013). Li et al. (2021) showed that environmental data for wheat in China explained more than 60% of the variation in wheat yield. In this study, we generated ChinaWheatYield30m with stable results, which fully exploited the advantages of HLM to solve the nested problem of yield prediction impacted by remote sensing and meteorological data.*

*3) The product has a high real-time performance and can be used to forecast the output in the early period of the year. EVI2max and meteorological data used in this paper can be obtained before May, while wheat in China's main winter wheat production areas is generally harvested in June. Therefore, the proposed method can accurately predict winter wheat yield in real time. The strengths of the HLM model are overcoming inter-annual and regional variations (Li et al., 2020; Xu et al., 2021; Zhao et al., 2022). The results based on field investigation and statistical data show that the method can accurately predict winter wheat yield in the main production areas. The ChinaWheatYield30m is presumed to be most commonly concerned in metropolis level or county level, in this sense, the resolution will be feasible to these scales.”*

3.The Table 1 needs to be reformatted;

[Response]: Thank you very much for your suggestion. Table 1 is now reformatted.

4.A line needs to be inserted between the Table1 and the below paragraph;

[Response]: Thank you very much for your suggestion. A row has been inserted below Table 1 in the article.

5.Line135:“2.1 The winter wheat land cover data” should be “2.2.1”;

[Response]: Thank you very much for your suggestion. Based on your feedback, 2.1 has been changed to 2.2.1. Modification is incorporated in Line 138.

6. There is something wrong with the format of the 2.3.1 section, needs to be adjusted.

[Response]: Thank you very much for your suggestion. The format of section 2.3.1 has been modified and all format throughout the entire document has been checked. Modification is incorporated in manuscript.