We sincerely appreciate your affirmation of this research and your valuable suggestions. As you pointed out, continuous and accurate mapping of crop production at different spatial and temporal scales is of great significance for agricultural production monitoring and food security early warning. The release of GGCP10 is precisely intended to provide crop production data with high spatiotemporal resolution for scientists and practitioners engaged in related research.

Regarding the issue of model training sample representativeness, we fully agree with the point you raised. Due to significant differences in topography and climatic conditions between countries, even within a single country, crop production levels may vary considerably between different regions. FAO's national-scale statistical data can hardly reflect this spatial heterogeneity at the regional scale. However, it should be noted that in this study, we did not directly use national average production data to train the model. Instead, we constructed the association between pixel-level production and multi-source data at the agro-ecological zone scale based on the gridded production data of the reference year, and predicted the gridded production of the target year based on this. In the revised manuscript, we will clarify our modeling approach and provide a more thorough discussion of the data representativeness issue mentioned above.

In fact, we compared the dataset with the SPAM 2010 dataset, which is a globally-covered dataset. In the revised manuscript, we will introduce in more detail the consistency of our dataset with the SPAM 2010 dataset in different regions, as shown in **Figure 1**. In the future, we will also actively integrate crop production data products from other sources and further improve the regional applicability of GGCP10 through cross-validation of multi-source data. At the same time, we also welcome more researchers to validate GGCP10 using the ground observation data they possess, promoting the continuous improvement of data quality through extensive academic exchanges.

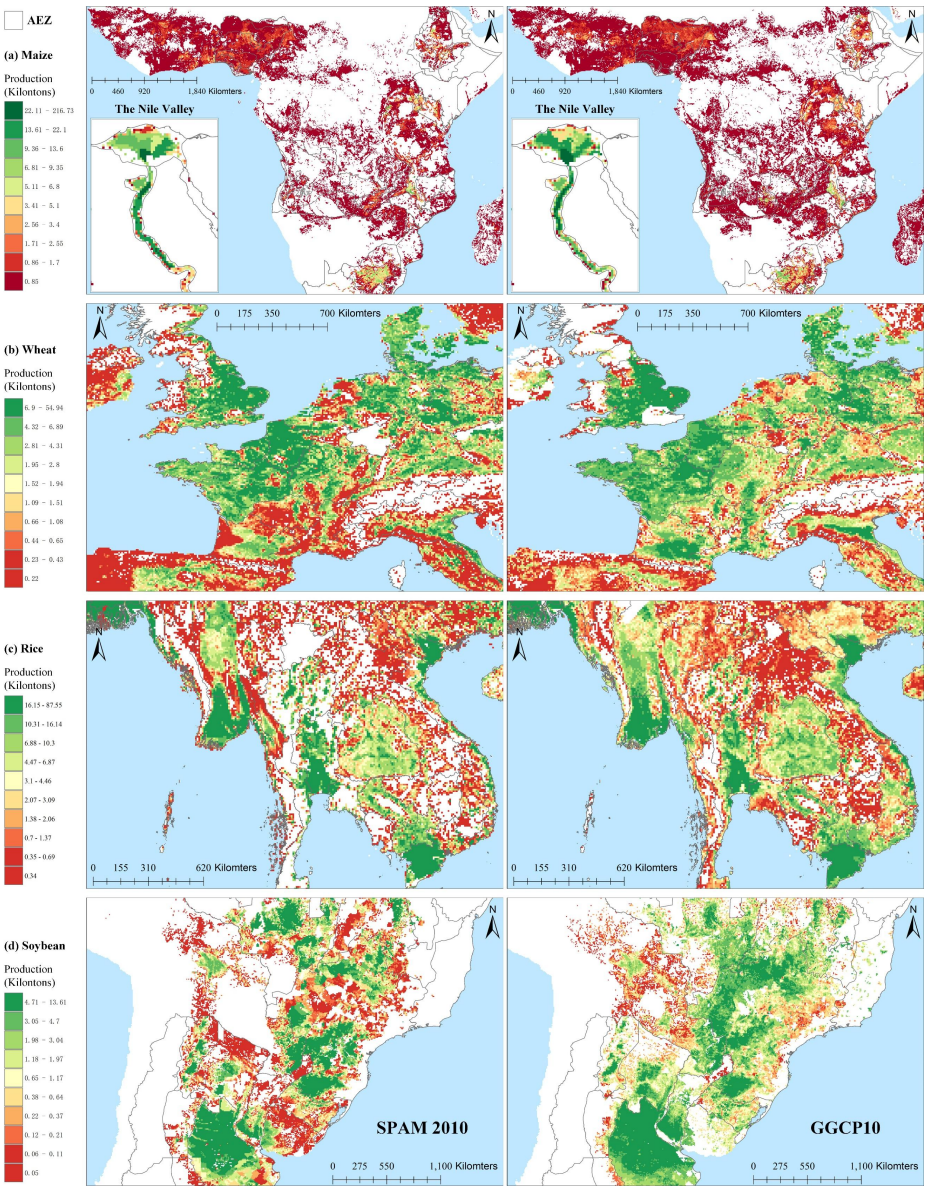

Figure 1. Spatial comparison of crop production between SPAM 2010 and GGCP10 datasets for selected regions: (a) Maize production in Africa; (b) Wheat production in Western Europe; (c) Rice production in Southeast Asia; (d) Soybean production in Brazil and Argentina, South America.

Finally, thank you very much for your suggestion on incorporating factors such as agricultural inputs. In the current version of GGCP10, due to the lack of unified global agricultural input data, we find it difficult to directly use agronomic management measures for modeling. This is indeed a limitation of the current research. It should be pointed out that although there is a lack of direct agronomic management data, some of the factors included in the model can, to a certain extent, reflect the spatial differences in agronomic management levels. For example, irrigation data reflects differences in irrigation management inputs, which greatly

influence crop growth and production. Crop planting area data partially reflects farmers' planting preferences and resource allocation decisions for different crops, demonstrating farmers' responses to market conditions and policies.

Some of the remote sensing-derived indicators we included can also reflect the impact of agronomic management to a certain degree. For instance, the Vegetation Condition Index (VCIx) describes the historical relative level of vegetation conditions during the study period. A higher VCIx indicates relatively better crop growth during that period, which to some extent benefits from farmers' good field management. Indicators such as Net Primary Productivity (NPP) and Leaf Area Index (LAI) reflect crop biomass accumulation and photosynthetic intensity. Higher NPP and LAI are often the result of good management.

We will provide further explanation and analysis of this issue in the discussion section of the revised manuscript.

Thank you again for your insightful comments.