

Earth Syst. Sci. Data Discuss., author comment AC1
<https://doi.org/10.5194/essd-2022-336-AC1>, 2023
© Author(s) 2023. This work is distributed under
the Creative Commons Attribution 4.0 License.

Reply on RC1

Yating Ru et al.

Author comment on "Estimating local agricultural gross domestic product (AgGDP) across the world" by Yating Ru et al., Earth Syst. Sci. Data Discuss.,
<https://doi.org/10.5194/essd-2022-336-AC1>, 2023

Thank you for your comments.

We have modified the text to avoid confusion in the two places where we use "mismatch" in this context.

First, in line 15

"Furthermore, the geographic unit of interest like the natural area of a river basin may not align with the administrative boundaries."

Second, in line 32

"One method to address the case where administrative boundaries and geographic areas of interest are not aligned is to use the gridded (raster) data format. It provides an intermediate and consistent unit for disaggregation and

aggregation (e.g., UNISDR, 2011)."

The statistics data we use for disaggregation are national agricultural GDP from the World Bank World Development Indicators (WDI). The WDI data does have limitations and may not include natural losses or self-consumption. We have added text and a link in the footnote for more details about the dataset.

We added text in Section 2.2, AgGDP Statistics and Linked Grids

"The World Bank compiles these national accounts data following the International Standard Industrial Classification (ISIC) divisions 1-3 that includes agriculture, forestry and fishing. Given the challenges of compiling national accounts data across the world, limitations include the exclusion of unreported economic activity in the informal or secondary economy. In particular, agricultural output in developing countries may not be reported due to issues such as, natural losses, self-consumption or not exchanged for money. Despite best efforts, agricultural production may be estimated indirectly leading to approximations that are different than the true values. \footnote{See \href{https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS}{World Bank WDI} for more details on metadata and limitations}"

Starting in line 90 and until line 183, we construct the priors for different components to be used as input for disaggregation of WDI national AgGDP statistics. We have modified the text to emphasize the data construction is a prior in the model and figures.

Line 91

"The **prior for** crop component in the gridded AgGDP is generated by multiplying the quantity of production..."

Line 113

"We calculate **the prior for** the component of livestock production in gridded AgGDP based on..."

Line 143

The value of wood products **prior** per pixel

Figure 1 legend

"Crop production value prior"

Figure 2 legend

"Livestock production value prior"

Figure 3 legend

"Wood forest production value prior"

Figure 4 legend

“Fishery production value prior”