

Comment on **essd-2022-336**

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Community 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-CC1>, 2022

There clearly is a great effort behind this manuscript, but I feel the authors should focus on the refinement of the methodology in view of producing something that can be more easily updated to account for the dynamicity of the agricultural sector. The authors generate a spatial distribution of the agricultural GDP circa 2010 but this information can hardly be useful for analysis of the risks that the agricultural production face more than a decade later given that the authors themselves highlight the dynamicity of the sector. Besides, the analysis of the exposure to drought falls short to describe the adaptive capacity that characterize many agricultural systems. The authors indicate that the results of the analysis are suitable for global, continental and regional analysis but not for local analyses and one may wonder if in the end this effort is worth doing, also considering that this information cannot be easily validated and that is not suitable to inform local planning. There are some methodological issues that would require in my view some attention: for instance the spatial analysis of the agricultural GDP that is done for the wood products; collinearity of input data. The paper does not contain a quantification of the uncertainties and does not mention the fact that agricultural GDP cannot capture well agricultural production in the informal or secondary economy. A more consolidated discussion of the limitations of this product would greatly benefit the strength of this paper.

Overall, I would welcome the publication after a revision that addresses these main points: 1) Strengthen the methodology or justify better some of the technical choices that were made; 2) Provide some quantification of the uncertainties. 3) Add some discussion on how the ever-growing release of new and better inputs data (crop maps; livestock distribution; dynamic land cover maps; more spatially-disaggregate and recent statistics) may be integrated into this product to reduce or even better to keep up with the temporal mismatch in agricultural production. Finally, one suggestion: the linkages between drought and agricultural production are less important for fisheries and wood production than for crop and livestock whereas the water crowing index is more associated with the distribution of the population, which is itself quite outdated in this analysis. My suggestion would be to remove or shorten the discussion on the exposure to drought. I understand that it was used as an example of application but in my opinion doesn't really bring much value to the discussion.

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2022-336/essd-2022-336-CC1-supplement.pdf>