

Hydrol. Earth Syst. Sci. Discuss., author comment AC6
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Reply on RC2

Elias Nkiaka et al.

Author comment on "Evaluating the accuracy of gridded water resources reanalysis and evapotranspiration products for assessing water security in poorly gauged basins" by Elias Nkiaka et al., Hydrol. Earth Syst. Sci. Discuss.,
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This work tackles one of the key scientific questions raised by Bloschl et al (2019) in the 23 unsolved problems in hydrology over Africa. It is a product of a widely shared endeavor toward raising awareness about hydrological basins across Africa and improving our understanding on what has been tagged for long decades as ‘‘ungauged’’ or ‘‘poorly gauged’’ basins. This is a considerable step toward reaching water security and better basin-scale water resources management. The gridded water resources reanalysis (WRR) and satellite based evapotranspiration products are arguably the last hope for rivers’ discharge assessment in most of the basins in Africa despite their well-reported and confirmed uncertainties even in this study. It would be of great interest for the next step to extend this kind of studies to more basins, evaluate more models, and use the machine learning algorithms for prediction of future scenarios in order to provide the policy makers with more reliable tools.

The noticed technical corrections are:

(Page 2, line 39-41) though this statement might seem fairly acceptable, the authors should mitigate a little bit as efforts are made in recent years in some countries especially for rainfall data collect.

Response: Thanks for highlighting this flaw. I have modified the statement to focus on river discharge only and only one reference on river discharge is cited.

(Page 2, line 41) Replace ‘‘Despite’’ by ‘‘Add to’’

Response: Thanks for the kind suggestion. I beg to disagree with the suggestion. The reason being that if I replace the word, the sentence will no longer carry the same message I intend to convey in the sentence.

(Page 4, line 117-118) This statement is not that necessary and should be removed because previous arguments are enough to mean what the authors intend to say.

Response: Thanks for the suggestion. The statement has now been removed.

(page 4, line 119) The authors should state first the overarching goal of the work and remove this part of the sentence ‘ Focusing on eight basins of different sizes in Africa,... ‘.

Response: Thanks for the suggestion. The overarching goal of the work has now been stated and the statement removed.

(Page 5, line 142) For more clarity, the authors should increase the maps’ scale to reasonable level or map each basin separately. If the second option is chosen, the drainage network, some localities, and important water-related infrastructures should be added (if the latter one exists). The coordinates grid of the maps should also be added.

Response: Thanks for the suggestion. The scale of the map has been increased and the coordinates grid of the map added.

(Page 5, line 145) The source of the population data should be mentioned.

Response: Thanks for this reminder. The source of the data has now been added.

(Page 7, line 181 and Table 1) Based on the fact that the authors got at least some in situ river discharge data for each basin, I would suggest to change the term ‘ ungauged ‘ to ‘ poorly gauged ‘ throughout the manuscript.

Response: Thanks for the suggestion. I beg to disagree here. The reason been that “ungauged catchment” is a more commonly used phrase in search literature than “poorly gauged”. Changing from “ungauged” to “poorly gauged” will reduce the visibility of the paper when researchers are searching for relevant literature.

(Page 1) There are numerous different ways to evaluate the usefulness of a dataset according to the purpose which could be scientific, economic, social,... Even in the scope of this work, there are many other methods which could be used to achieve the same goal. Therefore, I will kindly suggest to the authors to lessen the ambiguity of the title and modify it a little bit to ‘ Evaluating the accuracy of gridded water resources reanalysis and evapotranspiration products for assessing water security in poorly gauged basins. ‘.

Response: Thanks very much for your kind suggestion. We have now modified the title of the manuscript to read as “Evaluating the accuracy of gridded water resources reanalysis and evapotranspiration products for assessing water security in ungauged basins”

(Page 13, line 338) Omission: most ‘of the’ models.

Response: Thanks for highlighting this error. It has now been corrected.

Please also note the supplement to this comment:

<https://hess.copernicus.org/preprints/hess-2022-185/hess-2022-185-AC6-supplement.pdf>