Earth Syst. Sci. Data Discuss.,
https://doi.org/10.5194/essd-2020-281-RC1, 2020

Earth System Science Data Discussions

Interactive comment on "The African Database of Hydrometric Indices (ADHI)" *by* Yves Tramblay et al.

Anonymous Referee #1

Received and published: 4 December 2020

Review Tramblay et al. 2020 ESSD

Tramblay et al. present the African Database of Hydrometric Indices (ADHI), a database containing streamflow metrics and metadata for a large sample of African catchments. They describe how the database was created, what it contains, and how the database can be accessed. They also provide some background information and discuss potential uses of the database.

The paper is well organised and mostly well written. The idea of providing a large hydrometric database for Africa is a very welcome one and within the scope of ESSD. While I think that the paper (and the database) could be published with only minor revisions, I am also left with the feeling that the database could be made more attractive by expanding it (more signatures, more metadata, etc.). I leave it up to the authors to

decide whether to expand the dataset or not, but below I provide some comments on why I think this would be helpful.

Major comments:

The title is clear, but when I first read the abstract, I thought that this database also contains streamflow time series. I think it should be made clearer in the abstract that the database does not contain any streamflow time series. I am curious to hear about the authors' experiences with the data owners. What are the main reasons for not allowing to share the (raw) data? This does not have to be part of the paper, but I would be curious to know.

I think providing more hydrological metrics/signatures would make the database more attractive. Most of the metrics provided are statistical metrics, with somewhat limited use for hydrological (process) studies. There is a wide range of potentially more meaningful signatures (e.g. Addor et al., 2018; or see McMillan, 2020, for a review focusing on process-based signatures).

Similarly, while the database contains some metadata, there is potential to provide much more information. You already calculated catchment shapefiles, which could be shared as well. You could also use the shapefiles to extract more catchment characteristics from global (or African) data products. For example, there are products for P, T, PET, and for many catchment attributes, which would make the database more attractive (in my opinion). Otherwise it might be a bit hard to compete with recently published datasets that provide time series and various catchment attributes, despite the geographically unique coverage of your database.

Since the original time series are not accessible, there is no way to reproduce the derived indices. But I think that it would be helpful if you could share the code used to create the database.

It would be helpful to discuss a little bit more quantitatively how this database differs for

example from GSIM. How many more catchments are in there? This will make it easier for users to see the advantages of that dataset.

There are a few language errors and some unclear sentences. It's mostly minor, but I think proofreading the paper again would be helpful. I made some comments on that in the list below.

Minor comments:

L:85-86: "carefully checked for quality control". I would rephrase this – you do a quality control, that is, you check for quality. But you don't check for quality control.

L.86-87: This first suggested to me that the database also includes the discharge data, which (unfortunately) it doesn't. I would suggest rephrasing it so that this is clear. The same holds true for the following sentences.

L.104: "aquifers" – remove the "s"

L.126: You mentioned two main reasons, but you then list 3 points.

L.134: I would suggest writing 20th century instead of using Roman numerals.

L.132-136: That sentence is quite long and could be simplified/split.

L.144: The reference Gnann et al. (2020) doesn't really fit here as the study does not look at climate change or human activities. It would fit better into the next sentence after Westerberg et al. (2020).

L.181: "A careful inspection" – please be more explicit here.

L.187: "After this data quality processing step,. . .". Do you mean all the steps described above, that is the minimum length requirement, checking for duplicate time series, and merging with the GRDC? L.197: Replace "About" with some other word, it sounds a bit awkward.

L.202-205: I would suggest rephrasing that sentence. I think I understand what you

want to say here, but it's a bit unclear.

L.219-220: "manyfold" instead of "many folds"

L.230 and others: perhaps write southern Africa to clearly distinguish between the south of Africa and South Africa. Technically, the capitalisation should suffice, but it can be a bit confusing.

L.231 "includes" remove the "s"

L.283: I'm not sure what you mean by "relative indices computed with a base period as reference, such as standardized drought indices." To which indices do you refer to?

L.309: Here you use "indexes", earlier on "indices"

L.316: I am not entirely sure about the purpose of this paragraph. It reads like a discussion, which I didn't expect in that section. But it's a bit vague and doesn't really help the reader (in my opinion).

L.351: "sumary.txt file" is called "summary.tab" in the database

L.360: "contains" – remove the "s"

L.380: do you mean "organisations" here rather than "organisms"?

L. 418-420: Could you provide links (if they exist) to the GRDC and the SIEREM database websites? (Obviously the data cannot be accessed that way, but providing contact info of the data owners would be helpful.)

Figure 1: In the caption you mention twice that regulated basins are basins with dams.

References

Addor, N., Nearing, G., Prieto, C., Newman, A.J., Le Vine, N. and Clark, M.P., 2018. A ranking of hydrological signatures based on their predictability in space. Water Resources Research, 54(11), pp.8792-8812.

McMillan, H., 2020. Linking hydrologic signatures to hydrologic processes: A review. Hydrological Processes, 34(6), pp.1393-1409.

Interactive comment on Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2020-281, 2020.