

## ***Interactive comment on “Basin-scale water-balance dataset (BSWB): an update” by Martin Hirschi and Sonia I. Seneviratne***

**Anonymous Referee #1**

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This paper extends to an existing terrestrial water storage data set to a remarkable temporal and spatial scope, enabling a wide variety of regional or global analysis. The methods describing the derivation of this dataset are generally quite clear, however, I did not completely understand the relationship between this dataset and the previous (BSWB v2011). It is clear that the new dataset expands on the old dataset, but I did not find it clear if the datasets differ in their data sources or methodology. The analysis of the correlation between the 2011 and 2016 datasets is, to me, suggestive of major differences in the derivation of the datasets. However, the only difference mentioned was the potential change in the ERA-Interim dataset (line 148). Additionally, I did not understand the modification to the GRDC data (line 90), and whether this modification is unique to the 2016 dataset, or also included in the 2011 dataset. While the correlation analysis is undoubtedly useful to users of the previous dataset, I think that a

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clarification of the intent of the analysis, and of the sources of differences between the datasets, would reduce the potential for confusion.

I found the data to be easily accessible via the provided DOI, and I was able to read, compare, and manipulate both the tabular and spatial datasets with free and widely available open source software. I was initially confused as to whether the deltaS.corr field contained the corrected data or the correction to the data, but this confusion was simply resolved with some experimental subtraction. I would suggest considering a modification to the field name, however, as deltaS.corr can be interpreted in either way. Additionally, I did not find the projection of the spatial data defined in this paper, dataset, or metadata, but I was able to use the data assuming a common WGS84 projection. I particularly appreciated the disclaimer regarding the use of this data for trend analysis, and the availability of both the raw and trend-corrected data, as I can imagine uses of the data which would benefit from a less sensitive drift correction.

Beyond this minor confusion, the BSWB data appeared reasonable, and I was able to validate the drift correction as well as recreate sections of the long term imbalance vs. basin area relationship (figure 2).

Overall, I found the article concise and descriptive, and the dataset to be accessible and easy to use. With a couple minor clarifications, I expect this dataset will be easily understandable and useable by anyone with access to basic analytical and spatial tools. I expect that this extended dataset will be useful to the development of regional and global climate analysis, and will also provide a useful independent constraint for regional terrestrial hydrologic models.

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