

Interactive comment on “Global-scale evaluation of 23 precipitation datasets using gauge observations and hydrological modeling” by Hylke E. Beck et al.

Anonymous Referee #3

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General comments:

This paper examines 23 near or global precipitation datasets and performs two types of validation. First, validation against gauge data is done for products that do not directly use gauge data in them (no gauge datasets); a calibrated (for each datasets) hydrologic model is compared to streamflow observations around the world for precipitation datasets that incorporate gauge data. This provides independent validation for both types of global precipitation products.

Overall the article is easy to read and the tables and figures are generally informative. This is a nice contribution to our general knowledge of performance of many widely

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used precipitation products. I think this article will be suitable for publication after the authors address my specific comments below.

Major comments:

The discussion should try to answer the “why are the products different, or why do they behave as they do?” question(s) more. Large inter-comparisons are nice to highlight differences, but without answers to “why?” we don’t learn much as a field (e.g. the many model inter-comparison studies). I think more effort in discussing this issue throughout will be very beneficial to the final paper. Examples would be the statements on page 6 lines 17-18 regarding GridSatV1.0, and lines 30-31 regarding the reanalyses.

Another concern for me is the reference to the MSWEPv2 paper. It is stated this paper is in prep, not even in review. It is fine to evaluate the new version of a product here, but to have multiple key references to a paper discussing methodological changes, data sources, etc. that is not even in review is not acceptable to me. I understand the desire to publish an evaluation of a product quickly after it is released, but some type of remedy to this needs to be found.

Minor comments:

Page 6, lines 32-33. Is there any comment on the gauge quality in Africa? Could low quality obs be the cause of the poor R3 scores?

Page 7 lines 1-13: Was any quality control done on the trends in the observations? There may be spurious trends in the gauge data.

Page 7, lines 4-5. It should be easy to determine if the assimilated data in the reanalyses changed significantly in the 2000-2016 period, it would be nice to check.

Page 11, lines 10-11. Could the issues in Hawaii be from a missing process in HBV? Can HBV account for deep percolation? Much of the water in Hawaii is lost below the channel network and moves to the ocean in the subsurface.

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