

Interactive comment on “Near real-time adjusted reanalysis forcing data for hydrology” by Peter Berg et al.

Peter Berg et al.

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Dear Graham, We appreciate the time taken on reviewing our manuscript, and the comments you have made. Our response to each comment are given in bold font below:

Minor comments: 1) Although the authors target updating beyond the current coverage of GPCCv7 precipitation (2013) using GPCC products, in fact datasets such as WFDEI already extend to the end of 2015 through the use of the CRU observations of precipitation. Therefore the need for updating is not as severe as implied, especially for Europe where the half-degree resolution GPCC and CRU precipitation totals show good overall matches. Additionally, the post 2013 data (CRU of

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Rain_{WFDEI}CRU plus Snow_{WFDEI}CRU) could be used within the validation of the new product. The reason why CRU precipitation

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It is true that the CRU-version of WFDEI is updated more frequently than appears from our manuscript, and we will make statements to emphasise the more frequent updates. We have not used any data after 2013 because we wanted to have a complete set of data for all data sets, and we believe the WFDEI product based on GPCP data is the better one globally as well as more compatible with the current GFDCL version. Extending the analysis beyond 2013 would therefore introduce more even more complexity in the paper with multiple versions of WFDEI. We will therefore not extend the analysis beyond 2013.

2) The abstract should make it clear that the new product is available at half-degree resolution and for daily precipitation and near-surface air temperature only (other variables provided by the existing datasets, such as downwards shortwave radiation fluxes [suitable for land surface models and global hydrological models] are not provided).

Yes, we will mention that in the revised version.

3) The name GFD (Global Forcing Data) is very generic. This name does not convey the fact that only temperature and precipitation are involved nor that the data are updated to near real time. I would suggest a change to something like Current Global Forcing Data to emphasise the value added.

Point well taken, and we have on several occasions considered a different name of the product. It has however been used in many applications already and it would be confusing for current users to re-name it now.

4) The updating methodology is dependent on the availability of ERA Interim products. In the next couple of years ERA Interim will no longer be available and a different reanalysis (ERA-5) will be provided by ECMWF instead. The nature of ERA-5 is such (higher resolution, multiple realizations) that a smooth transition from ERA-Interim to ERA-5 for the GFD is not guaranteed. Some comment on this would be appropriate.

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GFD is generic in the sense that it can easily be applied to other re-analysis and observational data sets. We will comment on our plans for switching to ERA-5 once enough data has been released in 2018, and that we will then rebuild the complete data product to make use of the full ERA-5 data.

Figure changes: Fig 2 is currently difficult to comprehend. The caption says "Climatological mean (top) precipitation" - the brackets should say "(left)" similarly "and (bottom) temperature" - the brackets should say "(right)". The top row shows absolute means and the colour bars should be provided next to them. The next three rows show differences and the other colour bars should be there. However, the caption says: "the relative difference EI, GFDCL, and WFDEI." This should be changed to "(left) the relative difference in precipitation and (right) absolute difference in temperature." Finally to be clear what is shown every panel should have its own heading. For example, panel b should be headed with something like: "100

We appologize for the incorrect information in this figure caption due to a last minute restructuring. We will make changes to the figure as suggested.

Fig 6 It is noticeable that the authors have been careful to avoid poor colour pallets that could confuse colour-blind readers. However, it is very hard to distinguish the yellow shades as well as the blue shades for the E-HYPE maps. Can the colour scheme be changed to show clearer gradations?

We will make the suggested changes.

Fig 7 The labelling is misleading. It is far easier for the reader to understand this figure if every panel has a heading of either "Europe" or "Arctic". Also every Y axis should have the evaluation metric indicated for every panel ("Bias", "NSE", "r", "Variability"). The caption should also spell out NSE, r (is this Pearson's or Spearman's?) and what is meant by "variability" (is this standard deviation or variance?).

We will clarify the figure, which is a scatter plot of results for the different data

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sets, as well as clarify the statistics.

Minor text corrections: p4 line 14 The word "data" is plural. A dataset (singular) contains a lot of data (plural). Hence in both places on this line change "is" > "are". p4 line 14 "On notable" > "One notable". p5 line 33 and p6 line 1 "Priestly" > "Priestley". p8 line 5 "method overestimate" > "method overestimates". p8 line 5 "The updating method also produce" > "The updating method also produces". p8 line 7 "a difference already in the observations" > "a difference in the observations". p8 line 15-16 "is mainly used interim to bridge" > "is mainly used as an interim measure to bridge". p10 line 6 "for the first about 90-100" > "for about the first 90-100". p10 line 11 "which is on a much larger magnitude" > "which is of a much greater magnitude" [note the "of" not "on"].

Thank you for the detailed language checks, which are much appreciated! We will correct accordingly.

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