Can discharge be used to inversely correct precipitation? (hess-2024-375)

Ashish Manoj J, Ralf Loritz, Hoshin Gupta, Erwin Zehe

Dear Dr. Roger Moussa, 20.10.2025

Attached, please find the revised version of the manuscript "*Can discharge be used to inversely correct precipitation?*" co-authored with R. Loritz, H. Gupta and E. Zehe, to be considered for publication in Hydrology and Earth System Science.

After carefully reviewing the minor comments from Anonymous Reviewer 1 in the previous round, we have decided to implement the changes suggested by the reviewer in the revised manuscript. We have omitted the ambiguous usage of the term *effective precipitation* and changed it to *actual precipitation*.

We would like to thank the Editor and Anonymous Reviewer 1 again for giving us another opportunity to revise our manuscript.

Please get in touch with me if you need any additional information.

Thank you very much for your consideration.
Best regards,
Ashish
On behalf of Ralf, Hoshin and Erwin
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Reviewer 1:

The authors would like to thank Anonymous Reviewer 1 for again carefully reviewing our manuscript and providing their helpful comments. We have followed the reviewer's suggestion in the revised manuscript. The following responses have been prepared to address all the reviewers' comments point-by-point. We have responded (in black) to the reviewer's comment (in blue).

General comments:

Dear authors,

Thank you for improving the manuscript. I basically just have one topic left to be clarified, which is the use of the term "effective precipitation".

Line 166:

"Both models were trained to predict daily catchment average precipitation sums from the observational EOBS product (ERA5 Land). Therefore, we only deal with spatially averaged timeseries for precipitation, assuming that these values represent the effective precipitation over the entire catchment."

In my first review I already pointed out the ambiguous use of the term "effective precipitation". I post here my comment and your response:

I agree that we can never really know the "true" precipitation amount a catchment receives. However, the term effective precipitation is a major term in hydrology and I have the feeling you are using it unconventionally: it describes the fraction of precipitation that is converted into run off, after a fraction is lost to interception, infiltration etc.. Except for completely sealed surfaces the effective precipitation is always smaller than the precipitation. Are you mixing up the terms of, what you describe as "true precipitation" and effective precipitation?

Keeping this in mind, I find the sentence in line 166 quite confusing. EOBS and ERA5 land contain precipitation and the LSTMs are trying to predict this precipitation, not the effective precipitation.

We thank the Reviewer for pointing out the ambiguity in our usage. Line 166 has been updated to *'assuming that these values represent the ~~effective~~ actual precipitation over the entire catchment'.* The term has also been omitted from Line 353 in the revised manuscript.