

Interactive comment on “Investigating basin-scale water budget dynamics in 18 rivers across Tibetan Plateau through multiple datasets” by Wenbin Liu et al.

Wenbin Liu et al.

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This manuscript investigated the dynamics of water budgets of the 18 river basins over Tibetan Plateau (TP) by multisource datasets including in situ observations, satellite retrievals, reanalysis outputs and land surface model outputs. The actual evapotranspiration was estimated using a water balance-based two-step procedure which considered the changes in basin-scale water storage at the annual scale. Their results show that precipitation is the major contributor to the runoff in TP basins and the weakening East Asian Monsoon mainly affected the increased water budget components. It offers a helpful insight towards understanding the water and energy budgets and sustainability

C1

of water resource management practices in the data-sparse TP region based on the current-existing multi source datasets. Overall, the topic and results of the manuscript are very interesting and meaningful, and fit well with the scope of HESS. It is also well-written and organized. I have also noticed that the manuscript is a resubmission. After reading the review comments and the corresponding responses in the last time, I found the manuscript has been significantly improved. In my opinion, the manuscript could be considered for publication after some minor revisions this time.

Thank you very much for the invaluable comments/suggestions. Based on your suggestions, we have revised the manuscript accordingly (please see the point-to-point responses below).

Specific comments: Some typo errors given below need to be further corrected, for example, 1. Lines 226-228: The sentence “It has been demonstrated cannot be neglected . . .” should be re-written.

We have rewritten it for “It has been demonstrated that ΔS cannot be . . .” in Line 245 in the revised version. Thank you.

2. Lines 294-295, 306, 307 and 307: The unit of statistical indicators should be uniformed, such as “RMSE=8.34 mm/month” in line 294, “RMSE=5.69 mm month⁻¹”. The authors should change them in the whole manuscript.

Thank you for your nice suggestions. In the revised manuscript, we have unified them by using the “mm/month”.

3. Line 343-352, these sentences should be rewritten to make them more readable.

We have rewritten these sentences as follows (Line 338-347 in the new version) “...Overall, from the westerlies-dominant, Indian monsoon-dominant to East Asian monsoon-dominant basins, the annual mean air temperature (-5.68 0.97 oC) and ET (and thus runoff coefficient gradually decreases) increases while the multiyear mean glacier area (and thus the glacier melt normalized by precipitation) gradually decreases

C2

(Fig. 4 and Table 2). Moreover, the vegetation status (NDVI range: 0.05–0.43; LAI range: 0.03–0.83) tends to be better. The R^2 between basin-averaged NDVI and ET (0.76) is much higher than that between T and NDVI (0.35), which indicates that the water availability plays a more important role than the heat stress (i.e., colder status) over such basins...”

4. Lines 346, the use of “ ” and “-” should also be unified for the entire manuscript.
Thank you. We have unified them using the “-” for the entire manuscript in the new version.

5. Line 350, Table 1 or Table 2?

It is Table 2. We have revised it in the new version.

6. Lines 420: “change” should be “changes”.

Done!

7. Line 562: “indicates”??

We have changed “indicated” for “indicates” in the revised version. This manuscript investigated the dynamics of water budgets of the 18 river basins over Tibetan Plateau (TP) by multisource datasets including in situ observations, satellite retrievals, reanalysis outputs and land surface model outputs. The actual evapotranspiration was estimated using a water balance-based two-step procedure which considered the changes in basin-scale water storage at the annual scale. Their results show that precipitation is the major contributor to the runoff in TP basins and the weakening East Asian Monsoon mainly affected the increased water budget components. It offers a helpful insight towards understanding the water and energy budgets and sustainability of water resource management practices in the data-sparse TP region based on the current-existing multi source datasets. Overall, the topic and results of the manuscript are very interesting and meaningful, and fit well with the scope of HESS. It is also well-written and organized. I have also noticed that the manuscript is a resubmission. After read-

C3

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C4

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