

We thank the anonymous referee for his/her detailed review and critical but constructive comments. In the following, we would like to respond to his/her main points and detailed comments:

This is an interesting paper shows the application of the WA+ to the Awash basin in Ethiopia. The paper attempted to assess the uncertainty involved to support decision making for water resources management at a river basin scale. My main comments on the paper, it still lacks giving accurate assessment of the uncertainty for the decision making. While emphasizing advantages of satellite measurements, the paper misses to discuss accuracy of ground measurements, at least for runoff as the most viable method for checking a closure of water balance in a river basin.

The main goal of this paper is to lay the foundation and introduce a standard method for incorporating and assessing impact of the error in remote sensing measurements on water accounting and information provided to users. The Awash basin is used to showcase and test the proposed method. Discussions on accuracy of ground measurements, although very interesting, is not within the scope of this paper. We will revise the paper to be more explicit on this matter.

Detailed comments:

-P 1126, 18, 19: low reliability of utilized flow, and basin closure fraction? This conclusion of the abstract needs to be clarified further. In fact basin closure is a measure to the water balance closure, if it has high uncertainty it indicates large error of the runoff (blue water). The error seems small for other fractions and water balance components, e.g., rainfall and ET, because typically these are much higher than runoff in river basins such as Awash.

Response: We will revise the paper to provide further clarification on this point and to discuss what probable causes for such low reliabilities are.

- P1127, 17: “.....and the data quality from field observatories is questionable”, this general statement may not be correct, e.g., runoff measurements can be accurate, and vital term to check the accuracy of the water balance.

Response: The sentence will be revised to reflect on this point.

- P1127, 19: “.....the average error in land use, precipitation and ET is was 14.5, 18.5, and 5.4% respectively? For which time step. Discuss high accuracy of P, and ET.

Response: These numbers are taken from, and discussed in, the companion paper and are based on an extensive literature review. To better inform the readers we will include few supporting lines and provide more information on them.

- P1127, 19: “.....Such errors are not worse than classical ground based observations? Too general statement, and may not be accurate.

Response: The sentence will be revised to reflect on this point.

- P 1128, 14: “..... river and canal discharge is often based on water levels or the sound of water flow, rather than direct measurements? This statement is not accurate a discharge derived from discharge rating curve can be considered as measured flow.

Response: The sentence will be revised to reflect on this point.

- P 1129, first and 2nd paragraph: too detailed description on groundwater, while also missing other important features, e.g., land use land cover.

Response: The paragraphs will be shorten and land use of the basin will be discussed.

- P 1130, 1 8: do you mean GDP of Ethiopia? Please mention in the text.

Response: Yes, it should read “GDP of Ethiopia”. Will be revised.

- P 1134, 1 23: define “agricultural production” and give examples.

Response: Agricultural production refers to rainfed and irrigated crops. The term will be defined in the paper.

- P1136, 12, on what bases is the “constant correction factor”, will it not affect the error analysis then?

Response: The sentence will be revised to better communicate the point. The total basin area is 116 449 km² and in simulations the total were kept constant. What changed in 1000 simulations was the distribution the total area among to different land use classes.

- P1136, 19: does standard deviation for rainfall or ET, derived from 3 values, give any meaningful information?

Response: Good point. Rainfall variation is high compared to ET but we agree that standard deviation derived from 3 numbers may not be enough for making any conclusion. The paragraph will be revised.

- P1137, 120: “The only possible outlet is underground basin discharge”. This assumes no error in P, or ET, so that the closure of the water balance minus runoff must be groundwater recharge. This is not an accurate conclusion, and need to be supported by first confirming accuracy of both P and ET.

Response: there is no surface outflow from the Awash basin. Thus outflows, if any, only can happen through outgoing groundwater flow.

- P1138, 14: the assumption of 50% change needs to be supported.

Response: the assumption will be discussed more in the paper.

- P1138, 114 such assumptions “If we assume that one-third of rainfall surplus...” cannot lead to the conclusion given earlier that satellite measurements can be more accurate than ground measurements, see related comments given above.

Response: The aim of this paper by no means is to argue that satellite measurements can be more accurate than ground measurements. The paper acknowledges the error in satellite measurements and is designed to reflect on the impact of these error on the reliability of outputs of water accounting.

- P1140, 110: would be good to briefly describe the method of error analysis here for reference.

Response: Will be included.