

Dear Prof. Dr. Hendricks-Franssen,

We would like to sincerely thank you for handling the manuscript and the reviewers and Korbin Nelson for their valuable comments. We have responded to the comments online. We have already prepared a revised version of the m/s, which we hope to resubmit. The main changes are as follows:

1. Explained the calculation of the correlations using instantaneous satellite soil moisture retrievals; in response to all reviewers.
2. Added Kruskal-Wallis test probability values to Table 1; in response to reviewer 3.
3. Added a justification for our product selection; in response to reviewers 1 and 3 and Korbin Nelson.
4. Added information about the sensor types included in the ISMN archive; in response to reviewer 3 and Korbin Nelson.
5. Recalibrated HBV for ERA5 and IMERG and modified the discussion; in response to reviewers 2 and 3.
6. Discussed the layer depths of the models in the main text; in response to reviewer 1 and Korbin Nelson.
7. Added a statement about the generalizability of the performance of the calibrated models; in response to reviewers 2 and 3.
8. Added more precise latency values to Table 1; in response to reviewer 2.
9. Improved all maps (Figs. 1, 4, 5, and S2); in response to reviewer 3.
10. Provided information about the product quality flags; in response to reviewer 1.
11. Added a statement regarding the difficulty of satisfying the assumptions underlying triple collocation techniques; in response to reviewer 2.
12. Added details about the ERA5 temperature bias correction and the low- and high-frequency correlation coefficients; in response to reviewer 2.
13. Added details about the *in situ* data used for the calibration of HBV; in response to reviewer 2.

Sincerely,

A handwritten signature in black ink, appearing to read 'Hylke Beck', with a stylized flourish at the end.

Hylke Beck (on behalf of all co-authors)