

Interactive comment on “Operational reservoir inflow forecasting with radar altimetry: the Zambezi case study” by C. I. Michailovsky and P. Bauer-Gottwein

Anonymous Referee #2

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This study describes the application of a rainfall-runoff and a simple routing model over the Zambezi River basin, and the assimilation of altimetry observations into that model. The paper is very well written, and the topic is appropriate for the HESS journal. The methodology employed is sound, although there are some points that require clarification. Therefore, I recommend publication after the following minor revisions are made: - unless I missed it, I didn't see much on how the calibration was performed. Relevantly, was there any thought put on using the assimilation itself to perform the calibration? Regardless, I think there should be some discussion of that possibility. - the first paragraph of the abstract seems rather disjointed. I would probably start with the second

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paragraph or rewrite the first one to be more cohesive. - p. 9624, l. 2: shouldn't h_{fp} be at the bottom of the floodplain in Fig. 2 instead of the water elevation in the floodplain? - p. 9624, l. 7: a reference or more detail on how the widths were extracted from Landsat imagery would be helpful here (doesn't have to be long). - p. 9624, l. 17: maybe switch lines 19-20 at the beginning of this section to define what a Kalman Filter does. - p. 9625: there is not much on the dimensionality of the problem, which is what plagues the application of the EKF generally (with the inversion of the covariance matrix). Please add the pertinent information. - p. 9627, l. 5: need to explicitly say whether the estimation of model errors was done only during the calibration period. It seems like it, but if not I strongly recommend that it be done that way. - Fig. 3-5: I would use the terms "Prior" and "Posterior" instead of "Deterministic" and "Assimilation". - p. 9630, l. 19-25: why wasn't the implementation of these errors attempted. This is a very interesting hypothesis, and unless it's too much effort I think the paper would greatly benefit from the demonstration of its testing (even one of these error sources). - p. 9618, l. 8: replace "is" with "are".

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