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Interactive comment on "Real-time remote sensing driven river basin modelling using radar altimetry" *by* S. J. Pereira-Cardenal et al.

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The authors present an interesting integrated basin-wide water allocation modelling application largely driven by satellite data, particularly for countries with no or very little in-situ data and/or no forecasting abilities. Satellite altimeter data are assimilated into a conceptual lumped RR model to predict reservoir water levels which then feed into a water allocation model.

The paper is generally well structured and very well written. It reads nicely and it is a timely study for the remote sensing community as well as for monitoring/modelling water resources allocation in largely ungauged regions of the world, although there are a few things that need to be addressed before this paper can be published:

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Abstract: -Is the stated final RMS error of 6.7 m reasonable, when in some reservoirs the total water level variations over one year are 10 to 20 m max or so?

-I have a slight issue with the sentence in line 26-27 in that given the revisit times of the altimeter data used (35 days) and the fact that the study is based on archived data, the study is not really pointing towards a near-real time operational forecast and as such it is difficult to make any conclusions about whether this could actually be provided operationally in real time forecasting mode...

-The authors should state briefly, maybe in brackets, where Syr Darya basin is.

p. 8350: here the authors could also mention other data assimilation studies using remotely sensed data in the form of image derived water levels and hydrological modelling, such as e.g.: Neal, J. C., G. Schumann, W. Buytaert, P. D. Bates, P. Matgen, F. Pappenberger, 2009. An assimilation approach to discharge estimation from space. Hydrological Processes, 23, 3641-3649., or even: Montanari, M., R. Hostache, P. Matgen, G. Schumann, L. Pfister and L. Hoffmann, 2009. Calibration and sequential updating of a coupled hydrologic-hydraulic model using remote sensing-derived water stages. Hydrology and Earth System Sciences, 13, 367-380.

p.8356: More detailed explanation on the selection of areas of low or more significant runoff is needed here I think, i.e. was this done in a quantitative way or rather based on arbitrary threshold values?

p.8360: I am wondering whether the way the authors selected this 2.4 scaling factor is justified (line 24: '3B42-RT was 2.4 times higher than the precipitation from 3B42')? Both products (research and RT) are satellite derived and could thus both be wrong???

p.8362: At the start of section 4 the authors only list very briefly possible reasons for the large variation in model performance. This should be more elaborated.

p. 8363-8364: here it would be helpful to go into more detail and a possible explanation on why there is generally such a very poor performance of the RR model for the

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reservoirs Chardara and Kayrakkum. At Chardara the model seems to be missing any clear seasonal dynamics and at Kayrakkum there seems to be some sort of a phase shift.

p. 8364: why is the altimeter error so large (only 15 cm or so short of 1 m) for this test site? Are there any particular reasons for this?

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 8347, 2010.

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