

Interactive comment on “Calibration and sequential updating of a coupled hydrologic-hydraulic model using remote sensing-derived water stages” by M. Montanari et al.

Anonymous Referee #3

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Review and Comments on HESS Paper

We find that this is a weak paper describing a technique (approach 2) that does not give very strong results. In addition, I see no mention of other remote sensing techniques that can determine soil moisture. The large scale area coverage they need may be a problem for other remote sensing techniques. However, they never discuss this. It is hard for me to decipher what is the goal or objective of this paper; it is not clearly stated anywhere. Is it to develop a technique to update the soil moisture mod-

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ule of the hydrologic model; by determining water levels estimated from SAR imagery?

We reviewed the paper from the remote sensing perspective and have not made comments on the hydrologic modeling.

Minor Comments: mostly typographical errors or suggestions for clarifications. 1. Page 3216, lines 15-27: I am uncertain about the authors'; meaning of 'small scale'. When it comes to remote sensing and mapping scales, the generally accepted definition is that, on small scale maps (e.g., 1:5,000,000), objects and areas appear small while on large scale maps objects appear larger (e.g., 1:500). What is the intent of the authors here? Give some numbers so the reader can determine what they you mean. [http://en.wikipedia.org/wiki/Scale_\(map\)](http://en.wikipedia.org/wiki/Scale_(map)) Describe the SAR that they are talking about here, e.g wavelength? Resolution? 2. Page 3217, lines 9 & 12 do you mean active or passive microwave remote sensing? Clarify! Also what do you mean by remote sensing of floods? If you mean inundated area state that? 3. Page 3219, line 14: What is 'marls'? Should a reader know what this is? In area 1 what % is covered by limestone and sandstone? Since these would be impervious areas I think this is important. Line 26: What do discharge rates in units of mm/hr mean? How does it relate to m^3/sec ? 4. Page 3221, line 11: What is meant by 'recession time scale'? 5. Page 3221, line 16: The paper defines a new parameter, 'the stormflow coefficient, c '. The problem that I have is that the coefficient is not used in any equations. How does this parameter affect computations and how is it 'taken into account'? I would have expected to see either a modified eq. (1) or eq. (2) with the new coefficient c . 6. Page 3223, lines 20 -25. Do the authors have any estimates of the accuracy of their SAR flood extent limits? On the next page they note that this can cause considerable errors. What do they mean by 'hydraulic coherence constraints'? 7. Page 3224, line 20: Change the reference 'Raclot (2003)' to 'Raclot and Puech (2003)'. 8. Page 3227, line 1: Change 'Eq. (3)' to 'Eq. (4)'.

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9. Page 3227, line 10: Change Eq. (4) to Eq. (5);.

10. Page 3230, I don't understand the purpose of Section 5.3, since no SAR data are used for the 2007 event, why include it??

11. Page 3231, line 23: Change Eq. (23); and the ERS-2 and ENVISAT-derived water levels; To reverse the satellite order to read Eq. (23); and the ENVISAT and ERS-2 derived water levels respectively; I recommend this because that is the way figures 5a and 5b are arranged. Later in the paper, this is the order in describing figures 6a and 6b (line 26 on same page) and figures 7a and 7b (lines 18 and 19 on page 3232).

12. Page 3232, line 4: What is meant by global; (reach scale) and the evaluations of it?

13. Page 3232, lines 20-23: The authors are too general in commenting as to why the; For the majority of the cross section, the; likely; interval are quite wide; They state this is due to SAR noise. However, I would like them to describe the type of noise and its effect; e.g., SNR or clutter or speckling?

14. Page 3233, lines 9-10: Again I have difficulty with the generalization about the; high level of uncertainty that is associated with current satellite SAR data; What kind of uncertainty are the authors talking about and how does it affect their results for the first approach?

15. Page 3233, lines 16-19: This sentence is not a complete sentence. Thus I cannot understand what they are trying to say. Replace; not totally incomparable; with comparable. In general, I find that their conclusions are stated very weakly and with too many caveats.

16. Page 3235, line 11: Need to correct misspelling of; paramterization;.

17. Page 3237. In Table 1 give the wavelength or frequency for the SAR;s, C-Band does not mean anything to the non-radar reader. Also what is the range for the incidence angle for these SAR;s. Are the times in GMT or local time?

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