

Interactive comment on “Assimilation of ASCAT near-surface soil moisture into the French SIM hydrological model” by C. Draper et al.

Anonymous Referee #1

Received and published: 24 June 2011

With pleasue I have read this paper, which I found to be very interesting and very complete. It is very interesting to see how the authors demonstrate that a modelling and data assimilation exercise can allow for evaluating remote sensing products. The paper definitely falls within the scope of HESS.

I only have some minor remarks:

1. page 5436, line 6: there are two formulae which are probably wrong. If the standard deviation on w_1 is 0.04, then one can calculate from $0.5 \times (w_{fc} - w_{wilt})$ that there would only be a possible soil moisture range (i.e. $w_{fc} - w_{wilt}$) of 8 vol%. A standard deviation of 0.02 for w_2 would then result in a difference between field capacity and wilting point of 4 vol%. Something is thus wrong, and also I expect the range of soil moisture contents

C2394

to be much larger.

2. page 5437, lines 12 to 19: here you find a bias in the soil moisture: the paper should better address how this can be taken into account through data assimilation (different options exist (pdf matching, correcting for bias when assimilating, ...) , maybe the paper can briefly address these and better explain how they accounted for it.

3. page 5440, line 3 and 4: here you state that the data assimilation "adds" 38.5 mm yr^{-1} . However this seems to contradict what is stated on page 5444, lines 10 to 18, where it is stated that the impact of the assimilation on the soil moisture is about $0.1 \text{ mm month}^{-1}$. If there is a netto addition of 38.5 mm yr^{-1} , then the average per month should be larger...

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 5427, 2011.