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Hydrology and Earth System Sciences Discussions

Interactive comment on "Modelling soil moisture at SMOS scale by use of a SVAT model over the Valencia Anchor Station" *by* S. Juglea et al.

L. Brocca

l.brocca@irpi.cnr.it

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At first sight, the title of the paper is very exciting. To infer effective soil moisture temporal patterns at 50km x 50km spatial scale is a topic of great interest in the hydrology field. However, I am not sure that the outcome of this study has sort the problem out.

In particular, I would like to rise three points:

1) I have had the impression that the soil moisture stations are located within a very small area compared to the investigated one. So, you need to clarify how many stations are considered for MELBEX1 and 2 field campaigns and where they are located as well.

2) Why the calibration and validation of the ISBA model has been made for a single point only, whereas more measurements should be available?

3) How it's possible to assess the ISBA model parameters for the whole area if your model application is based on a single point? The parameters of regional relationship shown in Table 2 would seem calibrated by using one spatial point. If so, only the spatialization of the atmospheric forcing data was carried out; however, this one should be an obvious step to simulate soil moisture for large areas.

In short, the soil moisture temporal pattern simulated through the ISBA model can be conveniently considered as representative for the whole area. In fact, starting from the paper of Vachaud et al. (1985), a large number of studies concluded that a limited number of soil moisture measurements are sufficient to obtain representative values over large areas. However, if my inferences are right, since the model was calibrated by using a single point in an area of 2500 km2, I am not convinced that this soil moisture temporal pattern may represent the actual physical soil moisture average within the same area. Ground observations should have been taken at different locations if you want to really assess the model effectiveness at the SMOS scale, as it was reported in the title.

References

Vachaud, G., Passerat de Silans, A., Balabanis, P. and Vauclin, M., 1985. Temporal stability of spatially measured soil water probability density function. Soil Science Society of America Journal, 49: 822–828.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 649, 2010.