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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Calibration and downscaling of seasonal soil moisture forecasts using satellite data" *by* S. Schneider et al.

Anonymous Referee #2

Received and published: 3 January 2014

RECOMMENDATION

The paper entitled "Calibration and downscaling of seasonal soil moisture forecasts using satellite data" by S. Schneider and two others describes a new approach to calibrate and downscale soil moisture predictions using a combination of modeling and satellite data. The authors compare the output from their model with data obtained on the ground from two COSMOS probes in Kenya, and conclude that the model's skill is improved with the calibration and downscaling developed in the paper. This conclusion is warranted by the data and results, and the paper is written clearly and concisely. I recommend that it be published with one change to data analysis (described below) and some minor corrections (also described below).

CHANGE TO DATA ANALYSIS

I would like to make a suggestion that the authors reanalyze the COSMOS data from the two Kenyan sites. The data are not corrected for temporally-variable atmospheric water content. They should be. The corrections require meteorological data on the ground (relative humidity, temperature and pressure), and the equations described in Rosolem et al., 2013 (J. Hydrometeorol. 14, 1659-1671, doi: 10.1175/JHM-D-12-0120.1). Professor Kelly Caylor (kcaylor@Princeton.EDU), the curator of the meteorological data for the two COSMOS sites, has agreed to provide these data for the use in this paper.

MINOR CORRECTIONS

Throughout the paper: there are many acronyms, and on some pages (eg, p. 14792) too many; they stand out and distract the reader. Could the authors reduce the number of occurrences of acronyms?

p. 14784, l. 3: spell out the acronym ECMWF.

p. 14784, l. 25-26: mention disadvantages of satellites (high cost, large footprint, short duration, very shallow measurement, limited ability to see through vegetation, maybe others).

p. 14475, l. 10: Change the sentence that starts with "To partly overcome the problem of low forecast representativeness. . ." to "To improve forecast representativeness. . ."

p. 14476, l. 11: explain that ASCAT data are indices of soil moisture, not soil moisture per se.

p. 14476, l. 22: Here you use 0.7 degrees, but in l. 9 you said 0.7°; can you make all occurrences of degree consistent?

p. 14476, l. 25: Instead of "24-hourly" say "daily".

p. 14787, l. 15: change "to quantify if" to "to find out if"

p. 14791, l. 6: change ":" to "."

p. 14797, Fig. 1: The figure is unnecessary; it is not used for anything except showing location of COSMOS probes. I suggest deleting it.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 14783, 2013.