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Hydrology and Earth System Sciences Discussions

Interactive comment on "Influence of cracking clays on satellite observed and model simulated soil moisture" *by* Y. Y. Liu et al.

Anonymous Referee #1

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Soil moisture estimated from satellite microwave remote sensing has great contributions to many geosciences research disciplines, especially the soil moisture obtained at a temporal scale and a regional scale. The theory of soil moisture estimates from satellite observation is currently still under developing stage, many algorithms can not be directly used operationally. Therefore, the research conducted in this investigation on improving the accuracy of soil moisture retrieval over the vertisols is very interesting, it is especially useful for agriculture research and management, and have great potential applications, as this kind of soil is also agriculture fields in many cases. In the writing process, the authors firstly find research topics, and then give detail scheme for solving the questions, and finally have a discussion about his research, and an "cracking clay" module is added to the soil moisture algorithm, it is useful to improve the accuracy of the soil moisture algorithm, and this writing style is also abstractive to

reader. However, some aspects are still not well addressed, such as how to qualitatively qualify the cracking clay and surface roughness are not concerned. Based on all these points, I suggest accept this paper for publishing in HESS after a revision.

The specific comments P907: the words in title “satellite observed” should be changed to “satellite estimated".

P908L2TOL21: abstract is not well organized, it is more similar to an introduction, which is, identification of research topics, and then provided scheme for solving problems, no any qualitative results in the abstract.

P909L25L28: The authors claim to validate AMSER-E soil moisture by using CLM simulating results, this is not recommended, because both results are from numerical computation, it can be validated inter-crossly.

P910L23TOP9117L14: The literatures in this paragraph not sufficient, some are not listed, such as “Retrieval of soil moisture and vegetation water content using SSM/I data over a corn and soybean region. Journal of Hydrometeorology, 6 (6), 854-863, 2005”, “Determination of land surface temperature and soil moisture from Tropical Rainfall Measuring Mission/Microwave Imager remote sensing data. Journal of Geophysics Research, 108(D2), 4038, doi: 10.1029/2002JD002176, 2003”.

P913L20TOP914L8: The AMSR-E estimated soil moisture is high than CLM simulated low, one reason need to be discussed, the top soil is usually much drier than the deeper soil for vertisols, especially in dry season.

P913L19TOP917L26: The discussion and conclusion are a little confused in these two parts. The discussion should give description and results of your research and other ones, and the reasons why they are same or different, while the conclusion is the presentation of the results.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 907, 2010.