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Discussions

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comment

Interactive comment on "Soil Moisture Estimation Based on Probabilistic Inversion over Heterogeneous Vegetated Fields Using Airborne PLMR Brightness Temperature" *by* Chunfeng Ma et al.

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Dear Referee,

Thank you for your valuable comments and suggestions for our manuscript. Your comments and suggestions are very helpful for improving our manuscript. We revised the manuscript item by item according to your suggestions. 1. We added new a subsection (3.1) to introduce the Bayesian PI and the cost function, as well as, the results and discussion sections are extended and deepened. 2. Yes, the values of the empirical parameters. We are considering removing the 2P strategy because Martens et al uti-

lized only incidence angle TB data, but we have 3 incidence angle TB data. 3. The Equation (4) is from our empirical fitting using the data from 2013 of our area. The relation was not published yet. In this edition, to make it general, we use a relation that has been published in PP.367 in: C. Matzler. Thermal Microwave Radiation: Applications for Remote Sensing. 4. Yes, we revised the figures and re-conducted experiments providing site-by-site comparison of the estimated uncertainties. 5. We added equations to describe the calculations of uncertainty, skewness and kurtosis. 6. Yes, we explained why "SM distribution is well constrained by the PI" in the discussion section. 7. Yes, we discussed the uncertainty, MLE on all grid points. 8. Thank you for the comment, we will compare the results from different strategies. This analysis is undergoing revision. 9. L260: Why can the authors say "the simulated TBs are improved"?. When one can say "improved", one might compared the performance of their model with that of another model. Please consider to modify the expression of this point. Yes, we revised the expression. 10. L264: Please explicitly describe the performance scores of Yan et al. [2015]. Yes, we described the scores of Yan et al (2015)

11. The grammatical errors in the whole context are carefully revised point-by-point.

Overall, we thank your comments very much. We have finished revising the major part of the manuscript. The suggestion 8 is undergoing revision, we are afraid that we cannot upload the fully revised manuscript this time. But we will do our best to revise is as quickly as possible.

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