

Interactive comment on “Assessment of the consistency among global microwave land surface emissivity products” by H. Norouzi et al.

Anonymous Referee #2

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The paper provides a global intercomparison of different emissivity retrievals. There are various retrieval algorithms available for emissivity estimation, and still our understanding of surface emissivity products and their uncertainties are limited. One important question is how emissivity products can be used in precipitation retrieval algorithms to improve precipitation estimation. The paper performs a comprehensive evaluation of emissivity estimates from various sensors. The paper provides insights into the quality of the available data sets, especially given that the analysis is performed at the global scale. Overall, I am in favor of publication after addressing the below comments:

Main Comments:

1- Although the purpose of the paper is to study the inconsistencies among emissivity

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retrievals, it would be helpful to mention the level of accuracy that is needed for different applications. For example, what level of accuracy of emissivity is needed to make the data useful for use in satellite precipitation retrieval algorithms.

2- It is not clear how emissivity can be used in other retrieval algorithms. Please add a discussion.

3- The Radiative transfer models used in the selected retrievals are different. It would be good to mention the differences of these models. In fact, this could help explain some of the observed differences.

3- As mentioned in the paper, the WindSat removes the effect of vegetation while others retrieve the emissivity at the top of canopy. Doesn't this explain some of the observed discrepancies between and WindSat and other algorithms in northern regions? This is worth a discussion.

4- It would be helpful to quantify and report the maximum discrepancies observed for all the sensors as a general (metric) of uncertainty/error in Section Conclusions. Based on the presented results, the maximum error appears to be around 4 percent, except for AMSR-E that exhibits higher error at higher frequency (i.e., 89 GHz).

5- What is the level of uncertainty expected in “physical modeling” emissivity retrievals compared to “retrievals”? This is an important issue, and it is worth including a discussion on this.

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 9993, 2014.

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