The Cryosphere
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Discussions

Interactive comment on "Microwave scattering coefficient of snow in MEMLS and DMRT-ML revisited: the relevance of sticky hard spheres and tomography-based estimates of stickiness" *by* H. Löwe and G. Picard

Anonymous Referee #2

Received and published: 29 May 2015

The manuscript presents the linkage between two well-known microwave snow emission model, MEMLS and DMRT-ML, by expressing the two-point correlation functions for sticky hard spheres. The study also provides an objective retrieval method for sticky hard sphere parameters from tomography images.

The manuscript improves the understanding of microwave snow emission modeling. The retrieval of sticky hard sphere parameter from tomography images also opens up research opportunities for the improvement of emission models and a better understanding of microwave snow emission.

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Hence, I recommend publication in The Cryosphere following some minor revisions as outlined in the following report.

1. Eq.10 : is define only in Sect 4.

2. Eq. 12 : is nt defined

3. Eq.30 : β is not defined

4. At the end section 4.5, Fig. 8 is presented, but no specific comments are given. Some further comments on Fig. 8 should be given.

5. End of section 4.7. "Small difference…" I would say it is more like an offset. What can possibly cause that offset?

6. I would recommend including some more symbols definition in figure labels. Also in Fig.3, the values of d = 1,τ = 1,Φ2 = 0.15 could be include in the label. In Fig. 9, the blue circles should be defined.

7. Fig. 5 : The dashed line should be define.

8. Could be interesting to add R2 for the fits.

9. I would be very interesting if the author develop more on the polydisperse SHS. It seems to me that it could be another improvement in the model. The author could discuss on the feasibility of such an approach and on the possible effects on the results.

Interactive comment on The Cryosphere Discuss., 9, 2495, 2015.