

Interactive comment on “The Moon as a photometric calibration standard for microwave sounders” by Martin Burgdorf et al.

Martin Burgdorf et al.

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This is the author's reply on the comments by referee #1.

Leaving aside the question whether some statements in our manuscript are "blunt" and "unjustified" for the simple reason that I do not know which ones these are supposed to be, I shall address the more specific comments only.

1. Frequency of lunar intrusion in the deep space view: I welcome the suggestion by the referee to provide results for existing microwave instruments. They will be calculated for AMSU/MHS/ATMS and included in the manuscript.

2. Radiance of the Moon as a function of its phase: The referee is right that this function is not known with an accuracy sufficient for absolute flux calibration of AMSU-

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B or MHS. Previous estimations of the lunar contamination in the deep space views of AMSU-A and ATMS (Yang & Weng, Mo & Kigawa) only aimed at correcting these DSV reference measurements. Therefore in the microwave range the Moon can at best be used for checking the stability of the flux calibration by comparing observations at the same phase. This will be made clearer in the manuscript. The development of a lunar model that is more sophisticated than those published already (see above) is beyond the scope of the manuscript submitted. The suggestion by the referee to do at least "some study on Moon radiance", however, is understood mainly as a request for additional support of statements made on the lunar flux and its dependencies, and we shall have it in the revised version of the manuscript. A "final model" taking libration, frequency and spatial dependence of emissivity, etc. into account will make a good topic for a future publication.

3. Accuracy of normalised solid angle: The main source of uncertainty in the normalised solid angle of the Moon is the error in the beam width of the antenna. This is more relevant for an absolute calibration with the Moon than for just checking the stability of the calibration (see previous paragraph), but we accept the suggestion to add a more detailed discussion of this point to the manuscript.

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