

Interactive comment on “RTTOV-gb v1.0 – Updates on sensors, absorption models, uncertainty, and availability” by Domenico Cimini et al.

Anonymous Referee #1

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General comments:

The manuscript presents an updated version of a fast radiative transfer model (RTTOV-gb) for ground-based microwave radiometers. It discusses model uncertainties caused by absorption properties in the microwave range and shows validations of the model with observations.

The paper wants to contribute to a wider use of ground-based microwave brightness temperatures to be assimilated in numerical weather prediction models which has been shown to have a promising impact to the forecast skill.

The paper is written in a clear and concise way, and I suggest publishing with minor revisions.

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Specific comments:

Why did you restrict yourself to the frequency range 22-150 GHz? Did you also check the 183 GHz water vapor line which would be of great use in arctic or high altitude regions with low water vapor contents?

Is there any attempt to take cloud liquid water into account for RTTOV-gb? Please comment on that in the paper since there are many regions on Earth with frequent cloud cover.

p.3, l.6-8: I assume the coefficients are instrument type specific. This would mean that you can use the same coefficients for all stations with the same instrument type in different climate zones. Is that correct? That was not entirely clear to me.

p.5 and 6: Concerning the comparison of the model with observations: Did you check the calibrations of the instruments? Were there any absolute calibrations performed during the periods of study?

Technical corrections:

p. 1, l.26: Therefore (typo)

p.1, l.36: To my mind “model flavor” sounds a bit colloquial. Could you find a better expression?

p.2, l.11: not only “national” meteorological services (e.g. ECMWF!)

p.3, l.36: Turner et al. 2018 has not been submitted yet

p.4, l.1: Tretyakov is misspelled

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2018-285>, 2019.

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