

Atmos. Meas. Tech. Discuss., referee comment RC1  
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## Comment on amt-2022-129

Anonymous Referee #1

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Referee comment on "Updated spectral radiance calibration on TIR bands for TANSO-FTS-2 onboard GOSAT-2" by Hiroshi Suto et al., Atmos. Meas. Tech. Discuss.,  
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The authors report on the combination of two successful efforts: First, the calibration model was re-derived to account for nonlinear response, polarization sensitivity, and other features. Second, the spectral radiances were validated against three other instruments.

The new model is presented with 27 equations, which is both an advantage (very complete work) and a disadvantage (difficult to follow).

When possible, it would be beneficial to provide context for these reprocessed data products and validation activities by citing requirements, performance of other satellites, or accuracy thresholds linked to scientific goals. Also, the significance of the improved model could be highlighted by comparing accuracy & precision metrics between older and newer versions.

Finally, the authors are encouraged to make a number of minor English corrections:

Line 12: 0.2cm<sup>-1</sup> -> separate number & unit  
Line 39: the earth -> Earth  
Line 45: Characterization of these spectral radiance is essential (reword)  
Line 204: contamination -> combination  
Line 311 & 579: grided -> gridded  
Line 387: Table.3.  
Line 394: orthogoanl -> orthogonal  
Line 401: TANO -> TANSO  
Line 403: bias exceeds 0.5 K bias (redundant)  
Line 510: fig 2 legend - "vicalrous" -> "vicarious"  
Line 539: fig 4 caption - "londitude" -> "longitude"