

Interactive comment on “Imaging gravity waves in lower stratospheric AMSU-A radiances, Part 2: validation case study” by S. D. Eckermann et al.

Anonymous Referee #1

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This is a very thorough study comparing three different numerical weather prediction models with the measurements of nadir viewing microwave measurements. The study discusses in detail the model limitations and validates the models to in-situ and aircraft based lidar measurements. It shows also the limitations of these kind of measurements when it comes to the horizontal wave structure. The horizontal structure is revealed by the satellite measurements and it is shown how the instrument weighting functions influence the observations. The study can be taken as an example how comparisons between NWP model results and Nadir viewing microwave data should be performed. The paper is well written and highly recommended for publication in ACP. Some minor specific comments are given below.

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P2018 L20 Since the fields are smoothed by 3x3 average, isn't the noise floor reduced by a factor of three?

P2022 L9 Why are the radiosonde position data are not used directly? Since these and not winds are the original measurements a little motivation should be given.

P2025 L25 The paper is rather complex already and the Lidar temperatures do not contribute significantly, given the mentioned uncertainties of the data. It might be sufficient to note that they were considered and are in about agreement in case you want to shorten the paper.

P2028 L1 ... use the geolocations of the orbital scan data ...

P2029 L4 You mention the presence of a PSC. I know that PSCs are transparent for microwave radiation, but do they not influence the weighting functions at all? If they do, they would have a stronger influence for a sub-limb geometry than for true Nadir. A few lines of clarification should be included.

P2034 L18 You might consider to refer to Ern et al., JGR, 2004, who discusses in detail inferring momentum flux inference from satellite temperature measurements and validates the method to a certain extent.

P2007 L11 This -> Horizontal imaging is an important ...

P2009 L20 I would suggest to omit 'for postprocessing'

P2016 L1 weighting function responses -> weighting functions ?

P2018 L7 These -> The (It's the third 'these' in three consecutive sentences)

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 2003, 2006.

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