

Interactive comment on “Time Series Analysis of Ground-Based Microwave Measurements at K- and V-Bands to Detect Temporal Changes in Water Vapor and Temperature Profiles” by Sibananda Panda et al.

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Expand all of the acronyms e.g. SAPHIR-MADRAS, NN, AMSU, FLORA, MP-3000A. . .

Page 2, line 2: add to the reference list the following: Spuler, S. M., Repasky, K. S., Morley, B., Moen, D., Hayman, M., and Nehrir, A. R.: Field-deployable diode-laser-based differential absorption lidar (DIAL) for profiling water vapor, *Atmos. Meas. Tech.*, 8, 1073-1087, doi:10.5194/amt-8-1073-2015, 2015.

Page 2, line 10: Brogniez, et al.2013 does not show any retrieved humidity or temperature profile. Add an appropriate reference.

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Page 2, line 13: What is meant by ‘window frequency?’

Page 3, line 18: Define ‘oxygen complex.’

Figure 2: Explain why 22 GHz weighting function is lower than the 25 GHz weighting function but TB of 22 > 25 GHz as shown in Figure 1?

Explain why 53 GHz weighting function is lower than the 51 GHz weighting function but TB of 53 > 51 GHz as shown in Figure 1?

Page 4, line 9: Define apriori

Page 4, line 10: Describe ‘background information statistics’ and how it is used to constrain then inversion.

Figure 3: Add X and Y-axis labels. Why is Y-axis inverted?

Page 4, line 24: Spurious character ‘5’; something is missing.

Page 4, last line: What is the difference between apriori and background information covariance matrix?

Page 5 line 15: Why values of diagonal elements are fixed as 0.25 K? How is this value determined? How sensitive is this value to RMS errors shown in Figures 7 and 8?

Page 5: How equations 1 and 2 are related?

Page 7, line 9: Do the authors mean inversion instead of the gradient?

Page 7, line 29: Change Section 4C to Section 4.3

Figure 6b: Explain why a few of the water vapor profiles have errors > -2 g/ m² ?

Page 9, line 21-22: Describe what aspects of background information are correlated with measurements and why they are correlated?

16, 2016.

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