

Interactive comment on “Retrieval of ammonia from ground-based FTIR solar spectra” by E. Dammers et al.

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We would like to thank Referee #2 for his/her time, constructive and helpful comments and suggestions.

1) P.23283, Line 9: I prefer “artifacts” rather than “artefacts”

I kept it at “artefacts”, British versus US spelling

2) P.23283, Line 22: “CrIS” instead of “CR-IS” Corrected as suggested

3) P.23284, Line 12: It would be better to add some more references for FTIR validation of satellite products, such as; - Wood et al., JGR, 107, 8208, doi:10.1029/2001JD000581, 2002. - Griesfeller et al., JGR, 111, D11S07, C8095

doi:10.1029/2005JD006451, 2006. Added both references to the manuscript, Changed line 12 to: (Wood et al., 2002; Griesfeller et al., 2006; Dils et al., 2006; Kerzenmacher et al., 2012)

References, Griesfeller, a., Griesfeller, J., Hase, F., Kramer, I., Loës, P., Mikuteit, S., Raffalski, U., Blumenstock, T. and Nakajima, H.: Comparison of ILAS-II and ground-based FTIR measurements of O₃, HNO₃, N₂O, and CH₄ over Kiruna, Sweden, J. Geophys. Res., 111(D11), D11S07, doi:10.1029/2005JD006451, 2006. Wood, S. W.: Validation of version 5.20 ILAS HNO₃, CH₄, N₂O, O₃, and NO₂ using ground-based measurements at Arrival Heights and Kiruna, J. Geophys. Res., 107(D24), 8208, doi:10.1029/2001JD000581, 2002.

We also added a few extra references to earlier applications of FTIR techniques to estimate NH₃ emissions from fires, P.23284, line 15, Changed “by Paton-Walsh et al. (2005)” to, “from fires (Yokelson et al., 1997, 2007, Paton-Walsh et al., 2005)) but” References: Yokelson, R. J., Susott, R., Ward, D. E., Reardon, J. and Griffith, D. W. T.: Emissions from smoldering combustion of biomass measured by open-path Fourier transform infrared spectroscopy, J. Geophys. Res., 102(D15), 18865, doi:10.1029/97JD00852, 1997. Yokelson, R., Urbanski, S., Atlas, E., Toohey, D., Alvarado, E., Crounse, J., Wennberg, P., Fisher, M., Wold, C., Campos, T., Adachi, K., Buseck, P. R. and Hao, W. M.: Emissions from forest fires near Mexico City, Atmos. Chem. Phys. Discuss., 7(3), 6687–6718, doi:10.5194/acpd-7-6687-2007, 2007.

4) P.23290, L.14: 1.9 $\tilde{\nu}$ of freedom → 1.9 degree of freedom Good one, changed to degree of freedom

5) P.23291, Line 2: DOF of 1. → DOF of 1.0. Agreed, changed as suggested

6) P.23291, Line 24: 34.23 % for the Jungfrauoch → 34.2% for the Jungfrauoch Corrected as suggested

7) P.23292, Line 4: Is it really “pressure and temperature broadening parameters”

which are critical for the NH₃ concentrations, not “line intensity parameter”? All three are important but the line intensity is indeed the most critical, Changed line 4 to: Hence, line intensity parameters of the ammonia absorption lines are critical for the NH₃ concentrations.

8) P.23292, Line 11: mean column total of 13.7 → mean total column of 13.8 The number 13.75 in table 5 was rounded from the number 13.74500. 13.7 is the correct rounded value.

9) P.23293, Line 9: As for Bremen → As for Lauder Removed “As for Bremen” for clarity

10) P.23293, Line 15: The bottom panel → The third panel Corrected as suggested

11) P.23293, Line 17: 0.82×10^{-15} → 0.80×10^{-15} Corrected as suggested

12) P.23294, Line 13: mean of 13.47 → mean of 13.8 Corrected to: 13.7, see comment 8.

13) P.23295, Line 1: I prefer “artifacts” rather than “artefacts” I kept it at “artefacts”, British versus US spelling

14) P.23295, Line 16: NH₃ → NH₃ (subscript) Corrected as suggested

15) P.23296, Line 9: observations at 9.30. → observations at 9:30 local time. Corrected as suggested

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 23279, 2015.