

Atmos. Chem. Phys. Discuss., referee comment RC1 https://doi.org/10.5194/acp-2022-528-RC1, 2022 © Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.

Comment on acp-2022-528

Christian von Savigny (Referee)

Referee comment on "Hydroxyl airglow observations for investigating atmospheric dynamics: results and challenges" by Sabine Wüst et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2022-528-RC1, 2022

General comments:

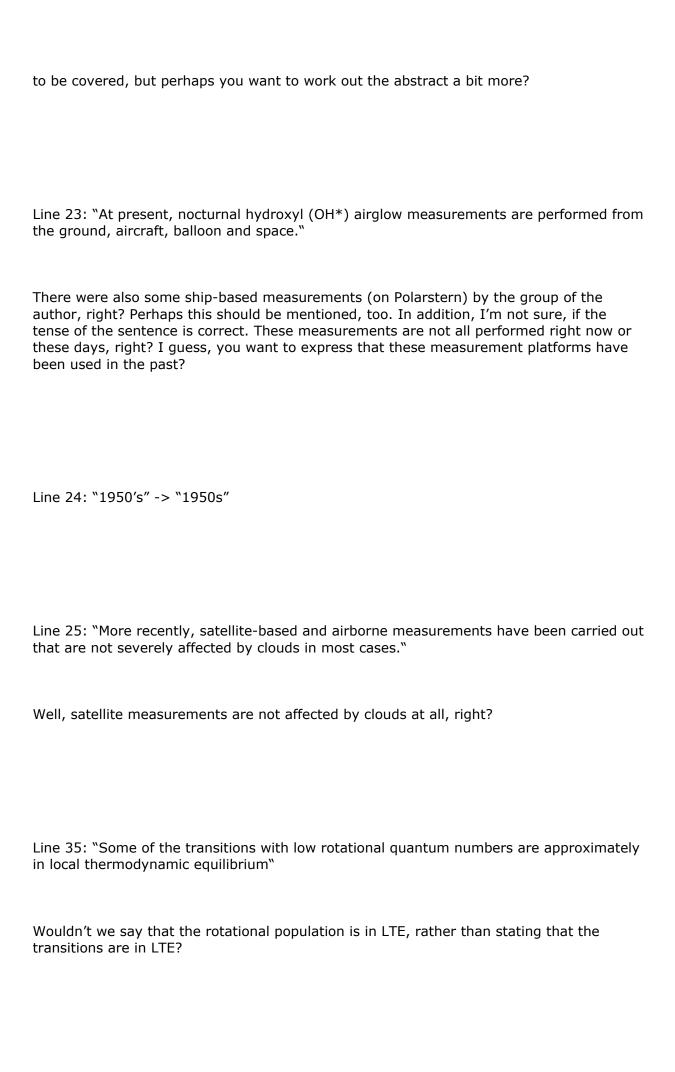
This is a generally well written paper on the exploitation of measurements of the OH Meinel airglow emissions with a focus on studying dynamical processes in the mesopause region. The paper does not really contain any new science results, but rather has the character of a review paper. In my opinion it is a useful contribution to the field, because it provides background information that is usually not included in that detail in more specific papers.

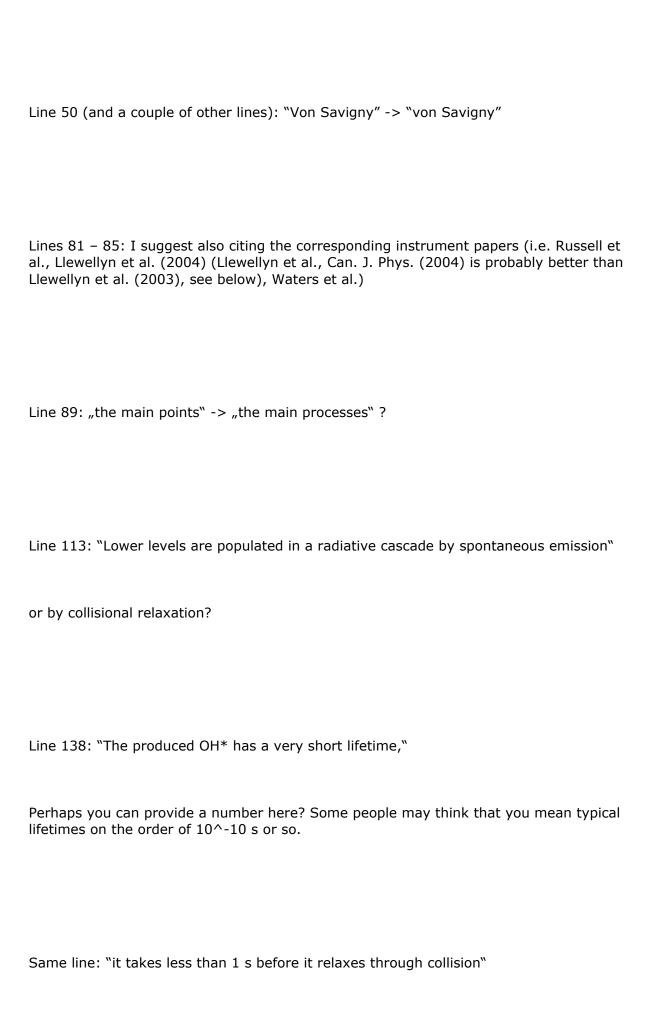
I have one general comment: I'm a bit surprised that the dependence of derived rotational temperatures on the vibrational excitation (works by Noll et al.) is not really mentioned in this paper. The paper discusses several potential issues regarding the measurement of temperatures from the OH emissions and this important aspect is not addressed. I suggest adding a brief discussion on the current level of understanding of the dependence of retrieved temperatures on the vibrational level.

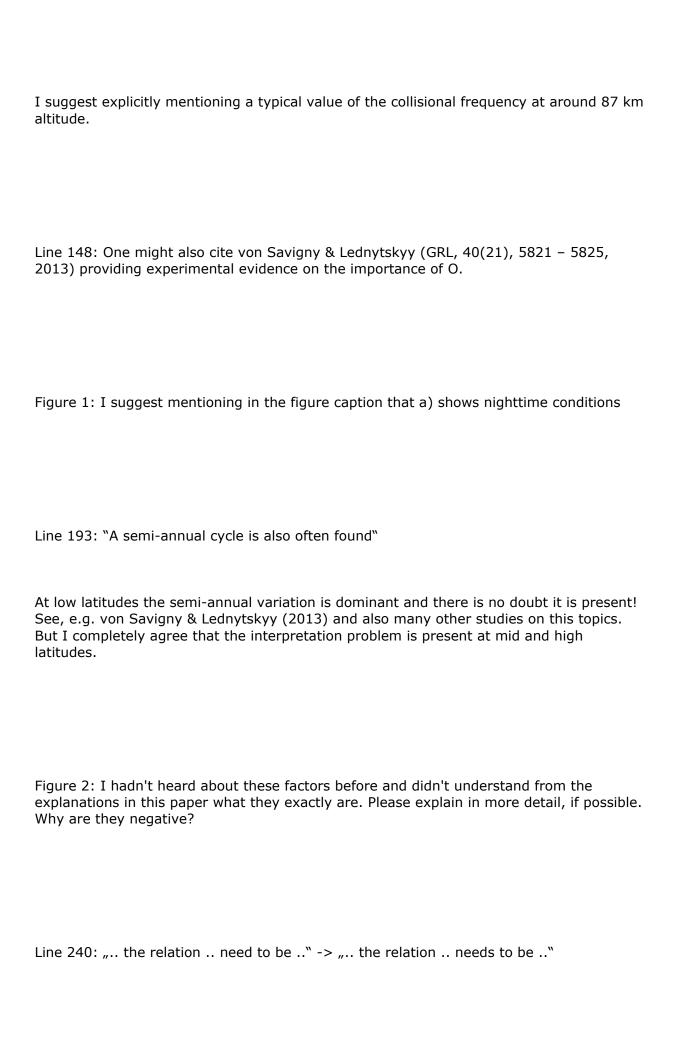
Below I offer some comments and suggestions for improvements for the authors to consider.

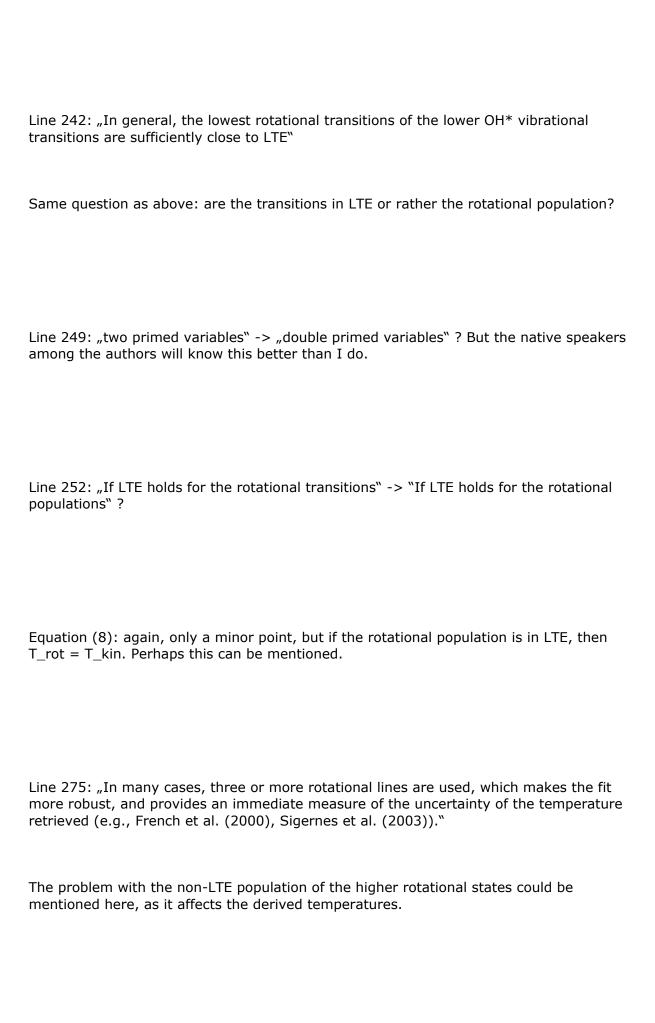
Specific comments:

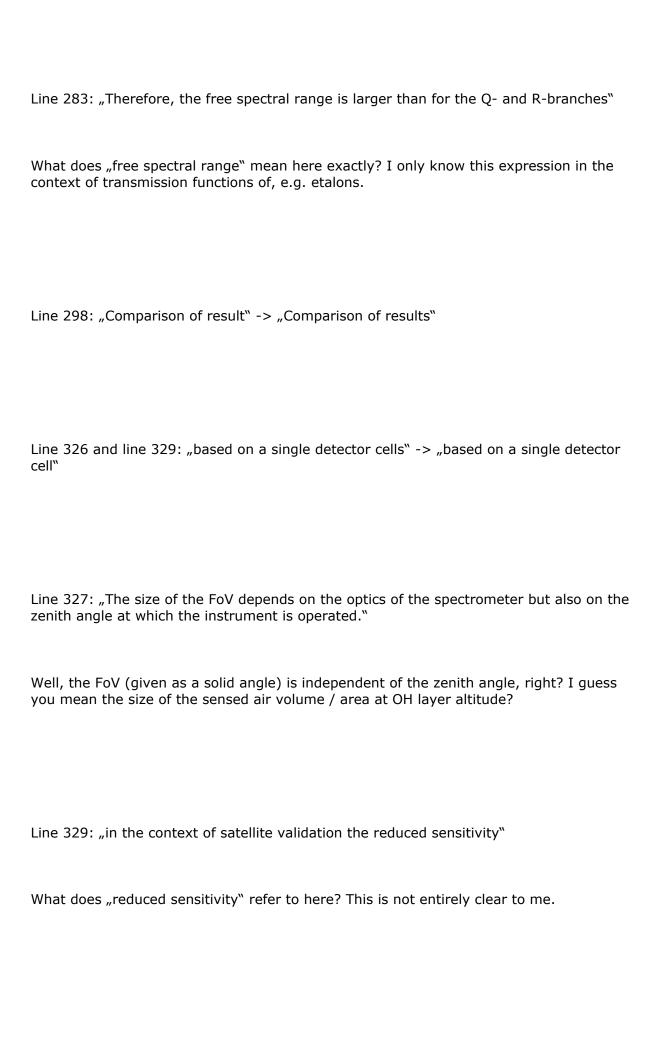
This is only minor comment, but the abstract appears a bit short. All relevant topics seem

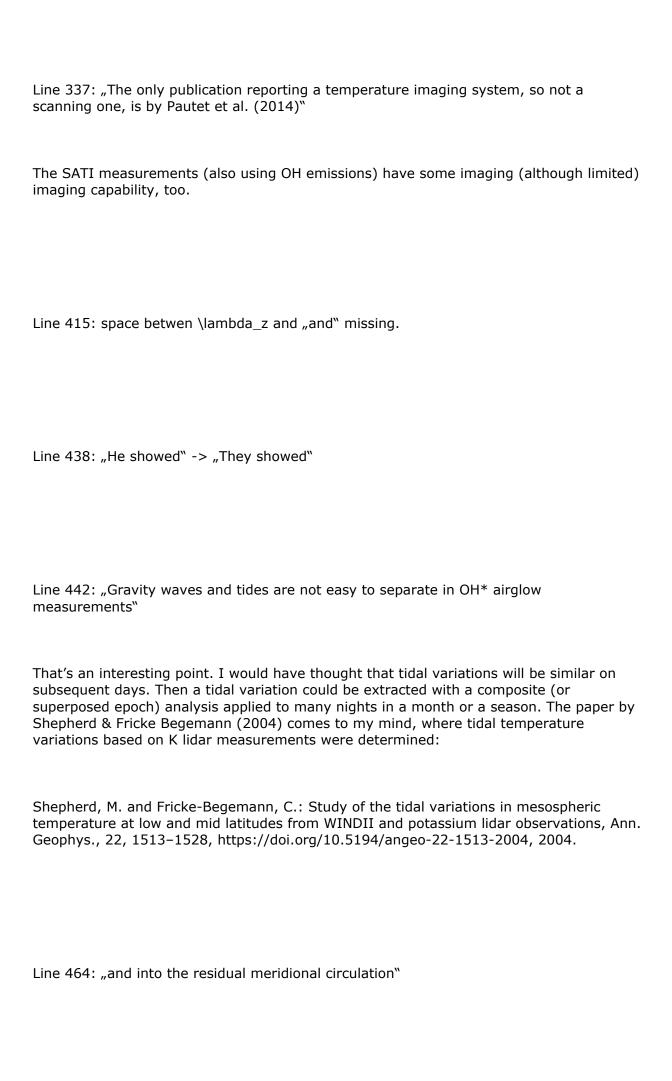


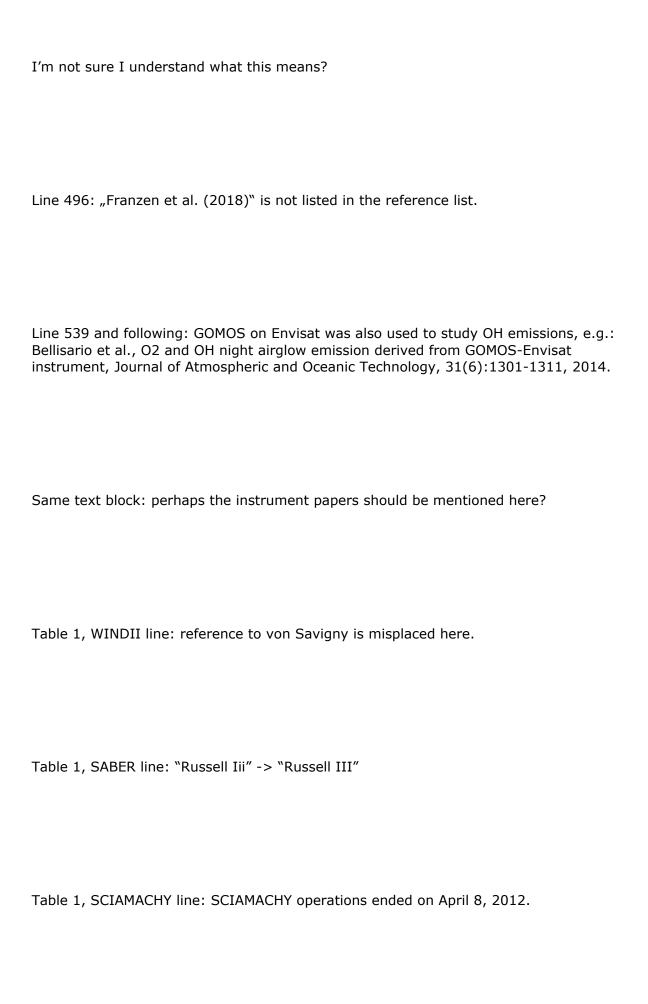


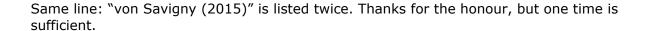












Line 617: "which is relatively broad compared to the other airglow lines mentioned here"

Why is it broader? There are two lines (630 nm and 636 nm), but each line is not really broader than the green line, I think. I checked GLO spectra by Lyle Broadfoot and the individual red lines don't appear to be broader than the green line.

Llewellyn et al. (2003): this paper certainly also deals with the OSIRIS instrument, but the "official" OSIRIS paper ist the following:

Llewellyn, E. J., N. D. Lloyd, D. A. Degenstein, R. L. Gattinger, S. V. Petelina, A. E. Bourassa, J. T. Wiensz, E. V. Ivanov, I. C. McDade, B. H. Solheim, J. C. McConnell, C. S. Haley, C. von Savigny, C. E. Sioris, C. A. McLinden, E. Griffioen, J. Kaminski, W. F. J. Evans, E. Puckrin, K. Strong, V. Wehrle, R. H. Hum, D. J. W. Kendall, J. Matsushita, D. P. Murtagh, S. Brohede, J. Stegman, G. Witt, G. Barnes, W. F. Payne, L. Piche, K. Smith, G. Warshaw, D.-L. Deslauniers, P. Marchand, E. H. Richardson, R. A. King, I. Wevers, W. McCreath, E. Kyrölä, L. Oikarinen, G. W. Leppelmeier, H. Auvinen, G. Megie, A. Hauchecorne, F. Lefevre, J. de La Nöe, P. Ricaud, U. Frisk, F. Sjoberg, F. von Scheele, and L. Nordh, The OSIRIS instrument on the Odin satellite, Can. J. Phys., 82, 411 – 422, doi:10.1139/P04-005, 2004