

Interactive comment on “Zeeman effect in atmospheric O₂ measured by ground-based microwave radiometry” by F. Navas-Guzmán et al.

Anonymous Referee #2

Received and published: 2 February 2015

This is a well written, interesting and important paper. The Zeeman effect on stratospheric O₂ is carefully observed and compared to simulations by the Atmospheric Radiative Transfer Simulator, ARTS. ARTS was recently upgraded to incorporate Zeeman splitting and this paper describe the first and successful test of this new ARTS module.

The other referees have commented on minor unclarities in the paper and I have nothing to add here. However I would like to see one more section in the paper.

To my knowledge this is the second paper about the TEMPERA instrument. Stähli et al. (2013) described the instrument and presented its first measurement of tropospheric and stratospheric temperature profiles.

In one of the final sentences in the present paper the authors (Navas-Guzmán et al.)

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claim that the successful inclusion of the Zeeman effect in ARTS will make it possible to extend the upper limit of temperature profiles, inverted from ground-based microwave measurements of O₂ (eg. at 53.06 GHz), beyond an altitude of 50 km.

I suggests that the authors add a section where they, with help from their new measurements and ARTS simulations, describe the optimal observation setup for the TEMPERA instrument to be able to get temperature profiles up to as high altitudes as possible.

This information would be very important for the microwave remote sensing community

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 1, 2015.

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