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Atmospheric Measurement Techniques Discussions

Interactive comment on "GROMOS-C, a novel ground based microwave radiometer for ozone measurement campaigns" *by* S. Fernandez et al.

Anonymous Referee #2

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Scientific significance: The paper describes GROMOS-C, an ozone-profiling radiometer for unattended operation at remote locations. Although the construction of the radiometer has elements of similarity to some commercially-available humidity and temperature profilers (e.g. HATPRO produced by Radiometer Physics), the frequency of operation, use for ozone profiling and, most especially, the incorporation of multiple internal calibration sources and lambda/4 translation stage, make this worthy of publication. Considerable thought has been given to the built-in calibration sources and they are described in appropriate detail. The field deployment activities are well described.

Scientific quality: I will restrict my comments primarily to the instrumentation; others will be better placed to comment on the quality of the retrievals and intercomparisons resulting from the field deployment. In general, the technical approach is well described

and appropriate references provided. The linearity performance of the instrument, established using the built in sources in addition to external LN2 targets, is extremely impressive.

Presentation quality: The presentation of the paper is excellent. There are a few grammatical oddities but it would be pedantic to highlight these; they in no way affect the readability of the paper, nor do they act as a bar to understanding. So my comments here are restricted to highlighting some technical corrections/additions:

Section 2, line 9 & Fig 1: It would be helpful to have the location of the (faint) CO emission line at 115.271GHz identified on Fig. 1 using a box or similar.

Section 2.1.1, line 21: "GRASP simulations 2.1.1. . ." Some acknowledgement of the suppliers of GRASP software (TICRA) would be appropriate. The "2.1.1" text appears to be a typo.

Section 2.1.2, line 20-23: No explanation of the slope in each panel of Figure 7 is provided.

Section 2.3, equation 4: Tb should be stated to be the sky brightness temperature.

Section 3, equation 11 & 12. Tw should be approximately equal to the external ambient temperature, whereas Tenv should be equal to the temperature inside the instrument; external-reflected sky radiation will not contribute to the measured brightness temperature, whereas internally-reflected radiation from the instrument will.

Section 4 lines 5-9 & Fig. 16. The features at approximately 110.76GHz and 110.91GHz are not discussed. Presumably these are data-processing artefacts or a dead spectrometer channel(s).

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 3001, 2015.