

# ***Interactive comment on “Characterization of blackbody inhomogeneity and its effect on the retrieval results of the GLORIA instrument” by Anne Kleinert et al.***

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Received and published: 10 April 2018

The manuscript proposes a threshold for the maximum tolerable uncertainty of the blackbody temperature for O<sub>3</sub>, H<sub>2</sub>O and temperature profile for the GLORIA instrument. The study considers the viewing geometry of the optical system and derives the blackbody nonuniformities through the retrieval algorithms. The optical performance of the instrument is not considered (point spread function, cross-talk, etc), but I do not think that it would change the main results. This study is of great interest for the understanding of the technology and to improve the domain knowledge. The O<sub>3</sub> requirement points to a value of 100 mK while the H<sub>2</sub>O would require larger values (less

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stringent). I wish this study to be considered for any mission in order to adjust the hardware requirements accordingly. I have some minor comments listed below.

Page 9, line 4 : The text indicates a range from 10-100 while Figure 5 rather suggests 10-15 pixels. Please justify the 10-100 range.

Page 9, line 11 : The text associates the  $\Delta T$  temperature standard deviation of the blackbody  $\Delta T$  to the  $\Delta T$  blackbody uncertainties  $\Delta T$  and indicates that the O3 retrieval requires a 100 mK value. I would suggest to clarify that the 100 mK corresponds to (1-sigma) with the mention  $\Delta T$  100 mK (1-sigma)  $\Delta T$ . You could also consider to refer to the expanded uncertainty of measurement for the blackbody properties. The expanded uncertainty of measurement is linked to the standard deviation by means of the coverage factor (<http://www.european-accreditation.org/publication/ea-4-02-m-rev01-september-2013>).

Page 13, Figure 8 : The figure on the right covers pixels 1 to 48 in the horizontal direction and pixels 1 to 128 in the vertical direction. The left figure covers the whole 128 x 128 pixels. I guess that the 1-48 area corresponds to the Horizontal Position 0-22.5mm, but I am not sure. Please clarify which area corresponds to whom in both figures.

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-59, 2018.

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