

Response to Reviewer #1

We like to thank the reviewers for providing helpful comments to improve the manuscript. All changes are highlighted in the manuscript file. Added text is wavy-underlined and blue, discarded text is struck out and red.

General Comments from the authors:

We fixed a bug in the source code resulting in a lower amount of reliable Polly^{xT} calibrations from 66 to 53. However, this did not change the results (e.g. bias) significantly. For that reason the following figures were updated: 3, 5, 7, 8 and 9 as well as tables 1 and 2. Furthermore, the figures 2 and 4 were improved with other colors and axis titles. Additionally we removed the coefficient of variation (rel. rmse) from Figure 8. Nevertheless the information is still mentioned in the text (pg 15 line 21).

a) General comments:

The paper is well written and to the point, but not too concise. Calibration of Raman lidar water vapour through MWR IWV has been done before, but this method focuses on automatic calibration procedures, which is relevant.

Done as suggested after the initial manuscript evaluation.

It should be checked if previous work is duly cited and how the present work improves upon previous approaches (as already indicated by another reviewer).

We expanded the references by two publications of Adam (2007,2010) and Ferrare (2006) which also describe routine Raman lidar calibration with integrated precipitable water from microwave radiometer.

b) Detailed comments:

- pg 6570 Line 18: replace 'dispose' by 'are equipped with'
Done as suggested.
- pg 6572 Line 7: replace 'informations' by 'information'
Done as suggested.
- pg 6572 Line 13: remove 'for'
Done as suggested.
- pg 6574 Line 4: replace 'adsorbed' by 'absorbed'
Done as suggested.
- pg 6579 Line 12: 'good agreement' - I would say: unbiased within about 10%. (verify that number, which I estimated visually)
'good agreement' is rephrased in 'show a similar behavior' (pg 14 line 3)
The bias is discussed a few sentences later.
- pg 6581 Line 7: replace 'less' by 'decreasing'
Done as suggested.
- pg 6582 Line 17: The last paragraph is a statement about the authors intent for further study, but is not a conclusion from this work. This may be removed.
We rephrased the paragraph and replaced it at the end of the introduction to motivate the importance of the automated calibration procedure.
- Figure 7: Add the integration time to the caption
Done as suggested.