

Atmos. Meas. Tech. Discuss., referee comment RC2  
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## **Comment on amt-2021-352**

Anonymous Referee #3

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Referee comment on "Extending water vapor measurement capability of photon-limited differential absorption lidars through simultaneous denoising and inversion" by Willem J. Marais and Matthew Hayman, Atmos. Meas. Tech. Discuss.,  
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Comment on amt-2021-352 "Extending water vapor measurement capability of photon limited differential absorption lidars through simultaneous denoising and inversion"

by Willem Jacobus Marais and Matthew Hayman

The authors describe in this manuscript a new method to derive water vapor profile from Micro Pulse Differential Absorption Lidar measurements. The method is specifically adapted to the Micro Pulse Differential absorption lidar developed by NCAR and the Montana State University and is based on a denoising method known in the medical community and the Poisson Total Variation. The performance of the developed PTV-MPD algorithm is demonstrated on selected real-world data highlighting improvements as well as challenges.

The manuscript is well written and the method is clearly described. I would recommend to reduce the number of occasions when abbreviations are used, maybe a few occasions can be just dropped.

Links are provided for the data sources. The code will be made accessible via github, but maybe a repository like the CERN repository zenodo.org, which offers a github integration would be a better choice as it allows to use DOI also for code repositories.