This manuscript investigates aerosol hygroscopic growth within the well-mixed planetary boundary layer, deriving backscatter coefficients as a function of relative humidity. The authors relate these measured growth factors to the aerosol chemical composition from the CAMS model. The study is executed at a high technical level by established experts in the field. While over half of the manuscript covers methodological details—including many well-known formulas—this comprehensive approach is justified as it provides a valuable, self-contained reference for the reader. I find this to be a high-quality contribution that matches the standards of AMT. I therefore recommend acceptance after the authors address the following minor comments:

Title. "…lidar-derived aerosol optical properties…". Actually only backscattering coefficient is presented.
It is a pity, that authors don't provide the lidar ratios. Dependence of lidar ratio on RH for different aerosols would be interesting.

Abstract. "…The results demonstrate the capability of Raman lidar to constrain aerosol hygroscopicity, offering valuable input to chemistry-transport models and helping to reduce uncertainties in climate projections related to aerosol-cloud interactions." This is very strong statement. I agree that analysis of backscattering at variable RH is an interesting approach to get information about aerosol mixture; still results presented are insufficient to access such goal.

Ln.217. Formulas for backscattering calculation were first published by Ansmann et al. 1992. Corresponding reference is needed.

Eq.16. This formula was used by Hanel for a single particle. When it is applied to aerosol with PSD, some assumptions are made. Should be discussed. The same is for Eq.18.

Section 4.4 Do authors consider change of the Angstrom exponent with RH?

Ln.435. Dependence of lidar ratio on RH was analyzed in recent paper

Fig.8. From this Fig. I conclude that it is not so simple to relate CAMS data with measured γ. For example Cases 3 and 4 have similar composition, but very different γ. As authors mention, aging can be also important. This is why I wrote above, that statement in Abstract is too strong.