The manuscript has improved after the first revision. However, I have a few comments / suggestions which relates to aspects which were not addressed properly or to some unclear expressions or misspelling. I refer mainly to my previous comments as the other reviewers may comment on their points. In bold, the text from the manuscript.

I suggest the publication of this manuscript after addressing all the points raised by Reviewers after the second revision.

General statement:

I was wondering why a common smoothing range was not used for both lidar and ceilometer. Thus, 12 bins smoothing for lidar and 9 bins smoothing for ceilometer would have given the same effective resolution of 90m.

Line 25: changed should be change

Lines 27-29: sentence is not clear:

A complete ceilometer data processing for a Vaisala CL51 is presented, including the water vapor correction for high latitude for the first time, from sensor provided attenuated backscatter coefficient to particle mass concentration.

Maybe:

A complete ceilometer data processing for a Vaisala CL51 is presented (including the water vapor correction for high latitude for the first time) and the estimation of the particle mass concentration from sensor provided attenuated backscatter coefficient.

Please revise and state what is performed 'for the first time'.

Lines 98-111: references
Please add:
Tsaknakis et (2011) for ceilometer capacity of measuring smoke layers and dust layers (Atmos. Meas. Tech., 4, 1261–1273, 2011, www.atmos-meas-tech.net/4/1261/2011/)
Cazorla et al (2017) for near real time monitoring of a dust outbreak (Atmos. Chem. Phys., 17, 11861–11876, 2017, https://doi.org/10.5194/acp-17-11861-2017)
Adam et al (2016) for operational ceilometer network for pollution events monitoring (EPJ Web of Conferences, 119, 27007, 2016, ILRC 27, DOI: 10.1051/epjconf/201611927007,)
Dionisi et al (2018) for ceilometer estimates of mass concentration (Atmos. Meas. Tech., 11, 6013–6042, 2018, https://doi.org/10.5194/amt-11-6013-2018).

Line 128-129:
This study reports, for the first time, a quantitative comparison study for Raman lidar and ceilometer observations of smoke particles.

It is not clear what quantitative comparison for smoke particles means. Do you refer to smoke mass concentration? Please state it. Tsaknakis et al showed comparisons for attenuated backscatter from Raman lidar and Vaisala ceilometer. Mass concentration comparison between model and ceilometer (derived) is shown by Dionisi et al. No specific case of smoke only is discussed though.

Lines 131-132

E-profile is the good example of monitoring smoke, dust and other aerosol layers. I don't know how many papers are published. E.g. Vaughan et al, 2019.

Line 162:

When talking about radiosonde sounding, please cite Weigner et al 2019 (Atmos. Meas. Tech., 12, 471–490, 2019, https://doi.org/10.5194/amt-12-471-2019)

Line 165: GDAS1

It is not discussed the uncertainty of the water vapor transmission was assumed, using GDA1 for obtaining the water vapor number concentration. Figure 1 shows the uncertainty in the backscatter coefficients but we don't know what the input uncertainty in water vapor transmission was. The use of RH derived from Raman water vapor channel was no mentioned (as PollyXT provided it). From RH one derives AH and then number density (e.g. Bedoya-Velasquez et al 2021 (Atmospheric Research 250 (2021) 105379). However, Bedoya-Velasquez uses MWR to get T and RH.

Please add for reference Bedoya-Velasquez et al 2021 (Atmospheric Research 250 (2021) 105379) for water vapor correction.

Line 273:

In Haarig it is 82 $\pm$ 27. Please correct (also in Table 2).

Line 287:

If you assume that the pollen is well mixed in PBL, please mention it.

Lines 405-406

I wonder if the large difference at 14-16h UTC can be due to an inaccurate estimate of the water vapor transmission term in ceilometer retrieval. Usually, the water vapor amount is higher during day time.