Answers to Rev. # 4

We thank the reviewer for his comments. Please find our answers in red (here and in the manuscript).

The paper is very interesting because it deals with electromagnetic interferences that is often a problem that affects lidar systems, and the related discussion is still going on within the lidar community. Therefore, further studies on this topic are always welcome.

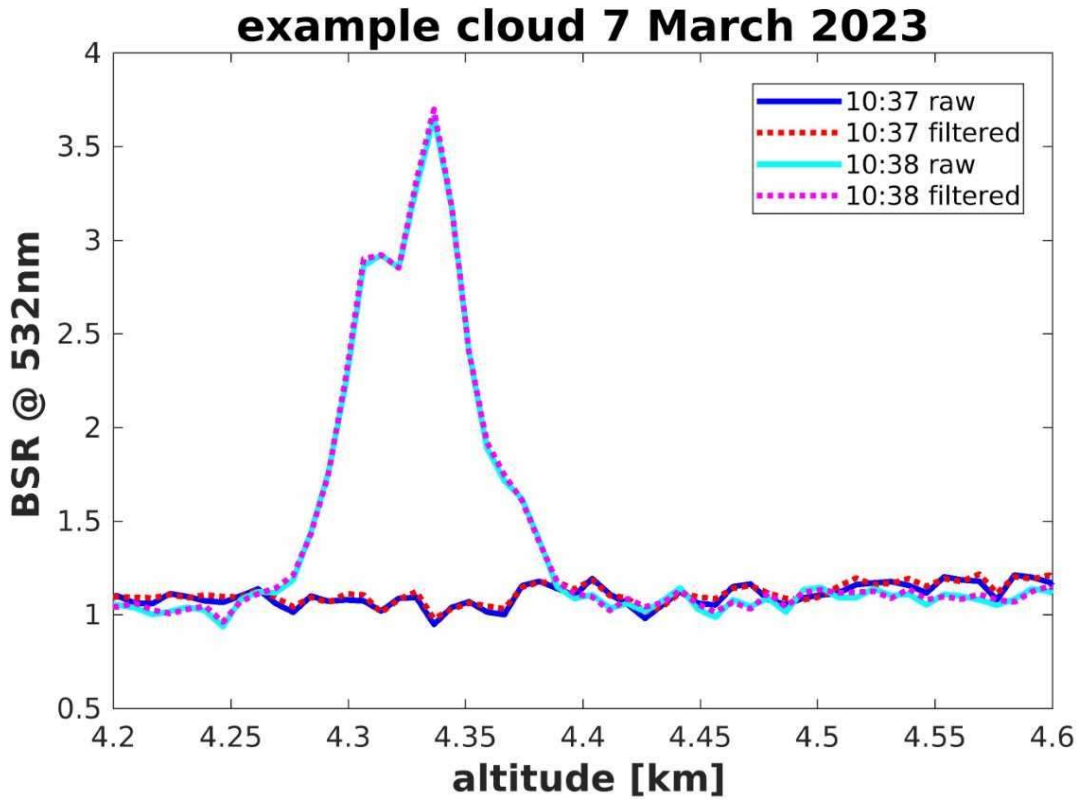
The paper is well written. Just some comments:

1) concerning fig.4, it would be important show also the ratio between the corrected and not corrected profiles both for the aerosol Power (i) and for the aerosol backscatter (iv), because it is not possible to evaluate the differences and draw conclusions just looking at the profiles.

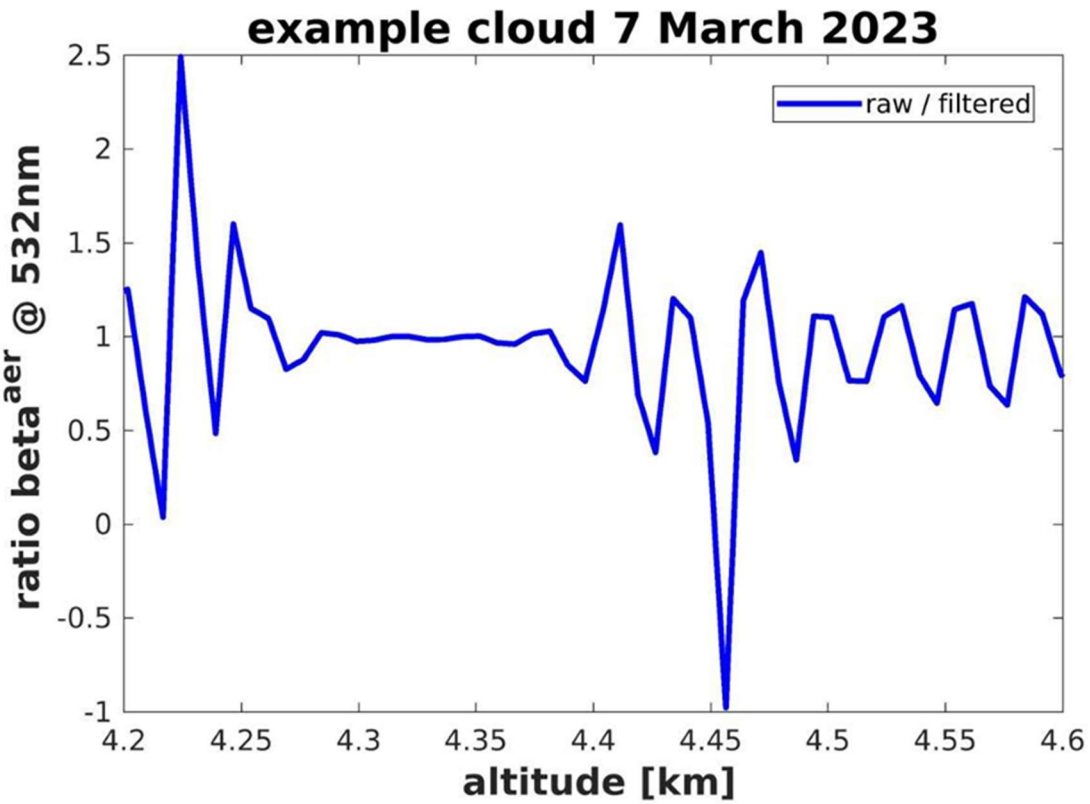
We show the ratio between the corrected and uncorrected aerosol backscatter profiles for a new case with cloud, please see below.

2) did the authors check the influence of the filter on the backscatter profile also in in presence of a strong aerosol layer? This would be important to evaluate the effect of the filter in presence of sharp and strong changes in the measured signals.

We have checked it as required. As expected, the method works, see the plots below. This is because a sharp edge of cloud bottom / top consists of many different frequencies in Fourier space. Hence filtering out one corrupt frequency does not change the solution. You can see in the figure below that the cloud is basically unaffected by filtering.



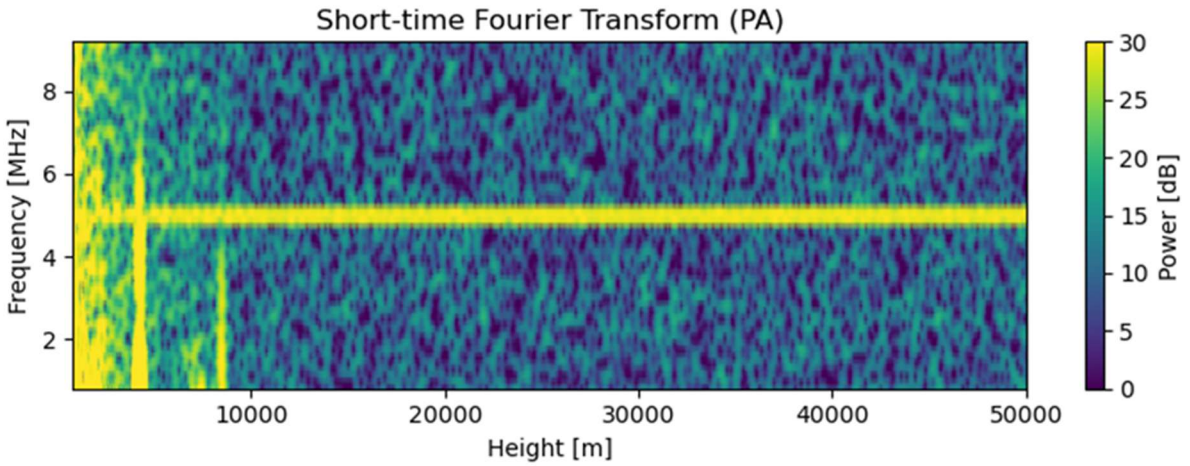
The next figure shows, as requested, the ratio between the original (raw) and filtered aerosol backscatter profile.



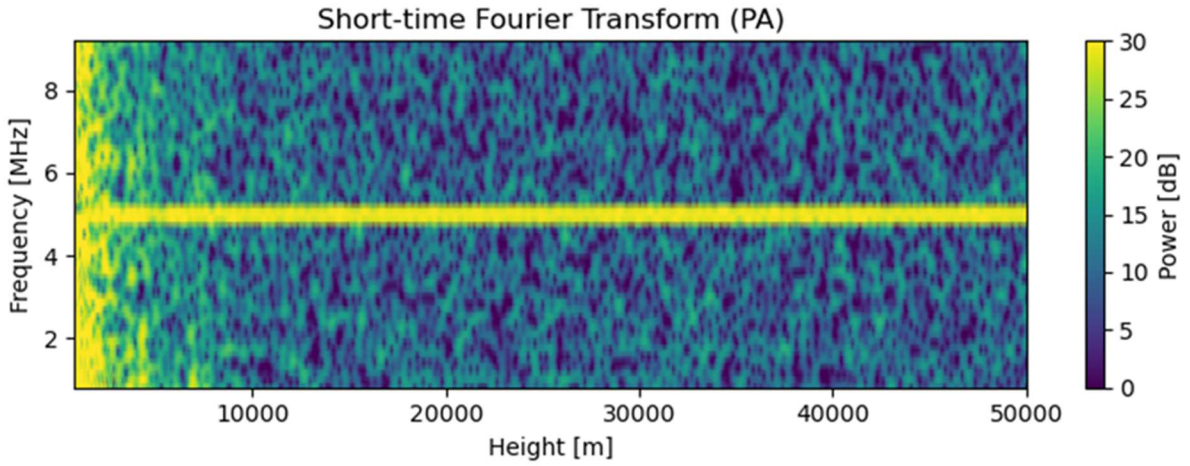
As 5MHz in a lidar refers to 30m you can see the oscillation of 30m in the plot below whenever the backscatter is very low. When the backscatter becomes larger, as in the cloud, the two solutions are basically identical, hence the ratio of the aerosol backscatter (raw / filtered) is close to 1. If requested we can show these plots in an attachment. (However we think that the results are as expected.)

The equivalent plot as the equivalent to Fig 4 in the manuscript look like this

Spectrum without cloud:



And the spectrum with cloud:



3) did the authors try to measure the dark signal and subtract it to the measured signal to compare the results?

We thank the reviewer for this comment! This is useful for the community. We only subtract background counting rates from signals > 60km altitude. As the RF interference originates from the transient recorders it occurs at the same height intervals in our case. Hence by a dedicated dark signal subtraction the impact of the RF interference can be reduced. (If it is strictly constant over time): We will clarify this in the new version of the manuscript. However, this assumes that environmental EM sources are strictly constant. Other users whose RF sources may came from external sources like two-way radios need to suppress the RF interference like stated in the manuscript. We will point this out in the new version.