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Comment

## ***Interactive comment on “A permanent raman lidar station in the Amazon: description, characterization and first results” by H. M. J. Barbosa et al.***

**H. M. J. Barbosa et al.**

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Dear anonymous referee #1,

About your concern on the quality check of the Raman inversion, please find our comments below.

Figure 12: The shown extinction and lidar ratio panel is in the current state no ready for publication. There is clearly a problem in the height region below 1 km due to overlap fluctuations. This can be seen in rather low extinction and even better in unrealistically low lidar ratio values. The author

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should really quality check these 2 panels and leave out regions at which the measurements are not trustworthy. Beside of that there are also sudden jump in the lidar ratio, e.g. on 09/03, which seem to be not from atmospheric variability. What happened there? Possibly as suggested above also a temporal averaging would be useful to avoid too much noise (probably half hour means would be enough). Also errors of the final products should be discussed and at least estimated.

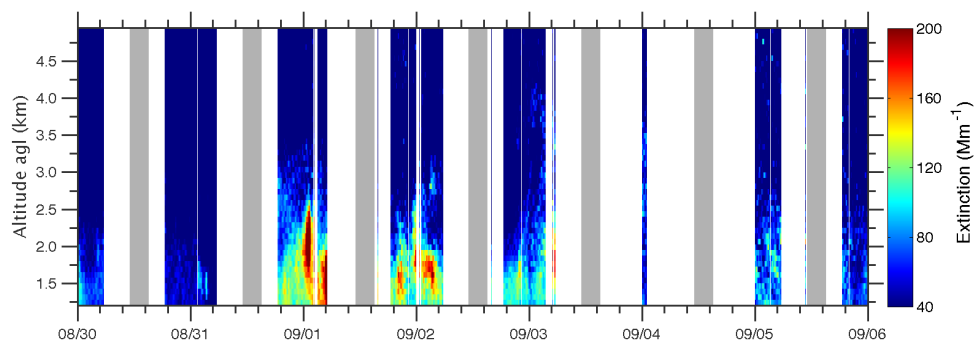
Values close to and below 1 km were shown because the errors there were discussed before. As can be seen in figure 10, at 1 km altitude the estimated error due to the overlap correction in the Raman extinction coefficient is about  $60 \text{ Mm}^{-1}$  which is about the same magnitude of the “measured” extinction. We can understand the referee concern, however, and we have modified our analysis algorithm to remove the regions with large relative errors. The new plots now reflect that.

About the fluctuations in the lidar ratio, we have investigated this issue. It comes from fluctuations in the rayleigh fit procedure of the noisy raman channel, that appears because we used single 1-min profiles for each inversion. We increased the averaging time to 5-min and reduced the vertical resolution to from 7.5 to 75m. The unphysical fluctuations are not seen anymore. Moreover, we added a new picture where we show the average profiles for the three days with most aerosol loading.

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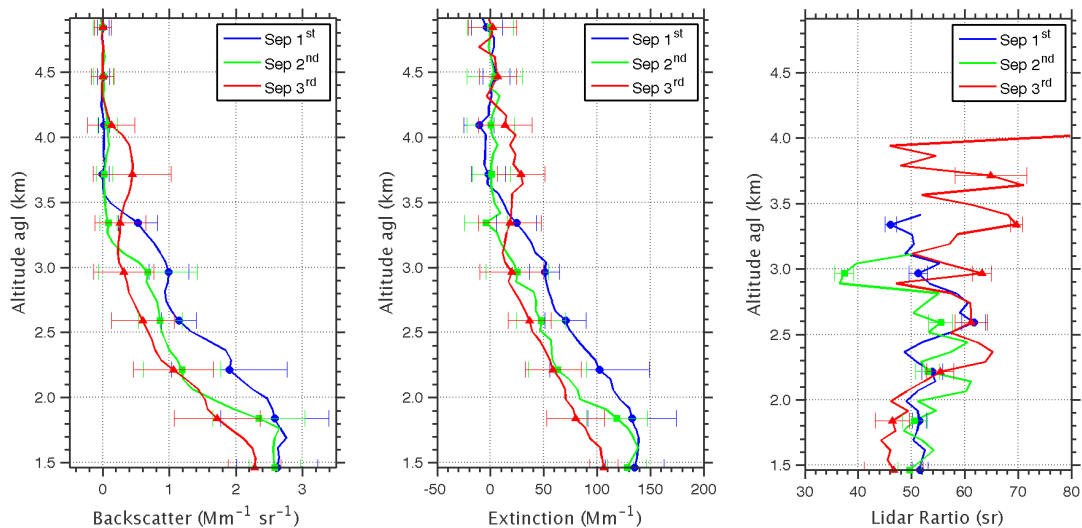
Interactive comment on Atmos. Meas. Tech. Discuss., 7, 769, 2014.

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**Fig. 1.** New Raman extinction result with coarser time and vertical resolution.

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**Fig. 2.** Average vertical profiles.

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