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Atmospheric Measurement Techniques Discussions

Interactive comment on "Aerosol profiling with the JenOptik ceilometer CHM15kx" *by* M. Wiegner and A. Geiß

M. Wiegner and A. Geiß

m.wiegner@lmu.de

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We want to thank reviewer #1 for his/her comments and useful suggestions – they helped us to improve the paper. We repeat the points raised by the reviewer and added our comments in italics.

There are only few points that eventually the authors should clarify: Overlap correction: It is not clear in the paper how the authors estimated the overlap correction. Do they simply integrate down to the 150m and then assume constant aerosol load below (so they don't use any overlap correction). Please be more specific.

We do not apply an overlap correction. We simply integrate down as assumed by the

reviewer – a procedure that is normally used, and that is not critical in our case due to the very low z_0. The range of 150 m is indeed quite small, thus possible errors are small as outlined in section 4.2. Note, that a function to correct for the incomplete overlap is not provided by JenOptik, and even if such a function would be available, it would not extend to the surface.

Lidar ratios: The authors present lidar ratios for certain cases deduced from the synergy with the Cimel. These have a reasonable mean value but a wide range. Are the low values (around 20sr) reasonable for Munich? How do these compare with ones estimated with the Raman lidar of Munich?

There is no easy answer to that question. The reason is that the Raman lidar methodology only provides lidar ratios at 532 nm and 355 nm. In Munich the corresponding values are mainly in the range between 40 sr and 70 sr. From scattering theory we know that the lidar ratio is likely to decrease with wavelength (the ceilometer's wavelength is 1064 nm). Insofar, the lidar ratios presented in Fig. 5 ranging between 30 sr and 65 sr (there is only one case with $S_p = 24$ sr) are possible. We have stated in section 4.2 that Fig. 5 is not meant to be representative due to the low number of data. As a consequence of the reviewer's question, we have added a sentence stating that no lidar ratios at 1064 nm are available from the Raman measurements.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 3395, 2012.