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

Anonymous Referee #2

Received and published: 26 June 2012

This paper presents results of great interest to the lidar aerosol remote sensing community. The results presented in this paper constitute a step forward toward the routine use of ceilometer networks for aerosol profiling.

I generally found this paper to be well-written with a logical structure. However, there is one aspect of the paper that needs to be improved. The issue of the effect of incomplete overlap at low altitude is well-addressed in Section 4.2 but in Section 2, this issue must also be adequately addressed. As it now stands, Section 2 is potentially misleading to non-expert readers and may even elicit confusion in expert readers. My concerns could be easily and directly addressed by adding text explicitly addressing this issue, e.g. by writing
\[ C_l \Rightarrow C_l \exp \left( -2 \int_0^{z_o} \alpha(z') \, dz' \right) \]

and explaining (as will be expanded upon in Section 4.2) that, for the celiometer used in this work, \( z_o \) is such that \( \exp \left( -2 \int_0^{z_o} \alpha(z') \, dz' \right) \approx 1. \)

This last point should be emphasized, as for other types of celiometer systems with a higher \( z_o \) this may not be valid, thus necessitating a potentially bothersome overlap correction.