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Interactive comment on "An overview of the diurnal cycle of the atmospheric boundary layer during the West African monsoon season: Results from the 2016 observational campaign" *by* Norbert Kalthoff et al.

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In this paper ceilometer measurements are used to determine the base heights of low level clouds. The authors use systems from two different manufacturers (Lufft, Campbell Scientific). To better understand the results presented in Section 4.1 and Figure 5 it is recommended to add some more details.

- What type of ceilometers has been used? I assume that a Lufft CHM15k Nimbus was deployed, but this should be confirmed. And a CS 135s?

- According to page 3 line 17 the cloud detection algorithms of the manufacturers have been applied. These algorithms might be conceptually different: one may define the cloud base height from the onset of the (strong) increase of the attenuated backscatter (β^*), from the maximum of β^*, from the inflection point of β^* below the maximum, or something else. This could lead to a (small?) bias in the cloud base height retrievals when comparing results of different systems. Thus, a brief comment on how the software works should be added; this could help to interpret the results.

- It seems to me that the reason of the low cloud layer at approximately 100 m (page 8, line 9) is an artefact in the overlap correction function of the signals automatically applied by the Lufft software (in case of a Nimbus system). Such artefacts are frequently occurring – not only for the Lufft system. The applied overlap correction function is (to my knowledge) available from Lufft on request (at least for the most recent systems). Even if a broad discussion is beyond the goal of this paper this issue should be briefly mentioned/discussed.

  I do not know which kind of overlap correction is applied to the data of the Campbell Scientific system, but this certainly can be found out from the manufacturer.

A few papers that might be of help in this context (Kotthaus et al. discuss the overlap issue for a Vaisala ceilometer, but it is interesting as well), more are existing:

- Hervo, M., Poltera, Y., and Haefele, A.: An empirical method to correct for temperature-dependent variations in the overlap function of CHM15k ceilometers, Atmos. Meas. Tech., 9, 2947-2959, https://doi.org/10.5194/amt-9-2947-2016, 2016.

- Kotthaus, S., O'Connor, E., Münkel, C., Charlton-Perez, C., Haeffelin, M., Gabey, A. M., and Grimmond, C. S. B.: Recommendations for processing atmospheric attenuated backscatter profiles from Vaisala CL31 ceilometers, Atmos. Meas. Tech., 9, 3769-3791, https://doi.org/10.5194/amt-9-3769-2016, 2016.

- Wiegner, M., Madonna, F., Binietoglou, I., Forkel, R., Gasteiger, J., Geiss, A., Pappalardo, G., Schäfer, K., and Thomas, W.: What is the benefit of ceilometers for aerosol remote sensing? An answer from EARLINET, Atmos. Meas. Tech., 7, 1979-1997, https://doi.org/10.5194/amt-7-1979-2014, 2014.

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