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Atmospheric Measurement Techniques Discussions

Interactive comment on "Lidar measurement of planetary boundary layer height and comparison with microwave profiling radiometer observation" *by* Z. Wang et al.

Anonymous Referee #1

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The manuscript addresses the validation of boundary layer heights derived from lidar measurements. A microwave profiling radiometer is used for comparison. Good correlation is found for convective boundary layers while larger discrepancies have been found for nocturnal boundary layers.

The manuscript needs major revisions.

1) the authors should shortly discuss to difference between "mixing-layer height" and "boundary-layer height". They should define which of these two heights is derived from the lidar and from the microwave profiler data.

2) no clear explanation is given how the boundary layer height is derived from the

microwave profiler data.

3) a discussion of the typical diurnal variation of the vertical structure of the boundary layer is missing. Phenomena such as the development of nocturnal residual layers could easily help to explain the large discrepancies found from the night-time observations.

4) the meteorological characterisation in Section 4.1 is not sufficient. The development of the boundary layer height does not depend just on cloudiness. Wind speed is an important parameter as well. Probably, also relative humidity is influencing the height indirectly via thermal counter-radiation.

5) there are many entries in the reference list of this manuscript that are not mentioned in the text. These references should be mentioned, because they are quite relevant for the subject discussed in this manuscript.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 1233, 2012.