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Interactive comment on "On the spatial variability of the regional aerosol distribution as determined from ceilometers" *by* Matthias Wiegner et al.

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It is good to see LIDAR data being used for representativity studies, which may help understand better the 4D distribution of aerosol. I wonder if you had an opportunity to look at backscatter at selected heights, and not just integrated backscatter? In our modelling study (https://www.atmos-chem-phys.net/16/6335/2016/), we found that representativity can vary quite a bit between column-integrated properties and profile properties. In particular, representation errors become larger closer to the surface.

I'd also like to point out that, apart from the LIDAR studies you mention, a lot of work on 1) spatio-temporal variability and 2) representation errors has been done using in-situ or satellite data. See the introduction of the aforementioned paper and a follow-up

study from 2017.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2020-332, 2020.