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Discussions

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Interactive comment on "Continuous vertical aerosol profiling with a multi-wavelength Raman polarization lidar over the Pearl River Delta, China" *by* Birgit Heese et al.

Anonymous Referee #1

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General comments

"Continuous Vertical Aerosol Profiling with a Multi-Wavelength Raman Polarization Lidar over the Pearl River Delta, China" by Heese et al. describes general characteristics of aerosol particles observed by a Raman lidar in China. The southern part of China is highly focused in the air pollutant studies and the fact indicated by this paper would aid understanding of the structure and transportation of air pollutants in the area. The contents of the paper is well organized and the method of the data analysis is almost acceptable. Thus the publication in ACP is recommended after minor revision.

Specific comments

C1

P1L12, coarse mode is mentioned here, but only small and medium size are mentioned in P9L16 for same angstrom range 1-1.5. Unify the statements.

P3L32, the interval 2-3h was written, but the original time resolution was not indicated.

P6L18, What are 'large, non-spherical particles'? Are they dried sea salt stated in P9L10?

P6L28 and Fig.4, is there any reason to choose 48 hours for backward trajectories here? Do authors just intend to show the air mass stayed there for long time? If trajectories are introduced to infer the origin of particles, 48 hours are insufficient.

P7L9 and Fig.5, does the particle extinction mean extinction of aerosol particles? In the figure we see several peaks around 7-8km. Are they cirrus or aerosol layers?

P8L2, How were the top heights of the lofted aerosol layers determined?

P9L5, Indicate literature to identify local sources using depolarization ratios and lidar ratios.

P9L19, If authors identify lower Angstrom 0.1-0.3 as marine particles, the lower left part in Fig.7b should be marked similarly.

P10L14, 1200 m was determined from Fig.5?

Technical corrections

P9L30, a mean lidar ratio 56+-6 'sr'

P12L7, 1.28+-0'.'42