

Interactive comment on “Long-term profiling of mineral dust and pollution aerosol with multiwavelength polarization/Raman lidar at the Central Asian site of Dushanbe, Tajikistan: Case studies” by Julian Hofer et al.

Anonymous Referee #3

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The long-term profiling of the dust and pollution aerosol has been conducted with multiwavelength polarization / Raman lidar at the Central Asia site of Dushanbe, Tajikistan as part of CADEX campaign. The site is located in the global dust belt, ranging from Sahara and Arabian deserts to the Taklimakan and Gobi deserts.

The present paper reported the case studies of CADEX campaign; AOT, Angstrom exponent, particle linear depolarization, lidar ratio and mass concentration for four cases. The sources and transport of the mineral dust were checked by back-trajectory and 3-D models. The present study will contribute a climatology of aerosol optical properties

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in the global dust belt. It is accepted as ACP.

I have some comments as follows:

In page 6, line 10-14, the estimation of dust mass concentration by lidar is described. Did you validate this estimation with another method, such as a direct sampling?

In page 8, line 22-24, "Its base was very sharp ... into the boundary layer took place". In page 9, line 16-20, "Apparently, the layer is divided in two parts...by the diurnal cycle of the boundary layer." Information of the ABL, such as an inversion layer, a mixed layer etc. is helpful for these descriptions. Can you show data of the structure of ABL, such as radiosonde?

In page 10, line 7-19, the contribution of local pollution is indicated. Please specifically show a possible local source, and a constitution of the anthropogenic aerosols at the Central Asia site.

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