The characterization of Asian dust by multi-wavelength lidar measurements in Kashi

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Asian dust has significant contribution to the global dust budget and strongly impact the climate and air quality, while very rare field campaigns have been conducted over this vast dust region covering Central and Eastern Asia. The Dust Aerosol Observation (DAO) campaign was carried out in Kashi and Beijing China, in April, May and June 2019. The purpose of this campaign is to provide comprehensive optical and microphysical properties of dust particles. This talk concerns mainly the dust observations of a multi-wavelength Mie-Raman lidar in Kashi. We present the vertically distributed dust properties and the profiles of depolarization ratios of Asian dust at three wavelengths are first measured. The comparison of the properties of Asian dust and Saharan dust, the two most important dust source on this planet, will be presented based on lidar measurements. The reported parameters will enrich the characterization of Asian dust and contribute to the study of the dust radiative forcing, dust environmental impacts and modeling.

References

[1] Veselovskii, I., P. Goloub, T. Podvin, *et al*., 2016: Retrieval of optical and physical properties of African dust from multiwavelength Raman lidar measurements during the SHADOW campaign in Senegal. *Atmos. Chem. Phys*. **16**, 7013–7028.

[2] Hu, Q., P. Goloub, I. Veselovskii, *et al*., 2019: Long-range-transported Canadian smoke plumes in the lower stratosphere over northern France. *Atmos. Chem. Phys*. **19**, 1173–1193.

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