

Comparison of aerosol characteristics derived from SONET and AERONET version-2 and -3

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Aerosol is an important component of the planetary atmosphere and plays a key role in the Earth's atmosphere energy balance and global climate change. Ground-based aerosol remote sensing is one of the most accurate remote sensing methods with the most accurate aerosol parameters [1,2]. However, it is a single-point measurement, and the measurement results can only represent a limited range from the observation site. Due to the large spatial and temporal distribution of aerosols, it is difficult to obtain a wide or even global aerosol characteristic by using single-point ground-based measurements. Therefore, the development of ground-based network observations can not only provide a wide range of high-precision aerosol products, but also provide a verification basis for satellite inversion results [3].

In this talk, aerosol characteristics retrieved from SONET and AERONET Version-2 and -3 are compared. The results show that the AOD calculated by the three systems are highly consistent, and the maximum difference is less than 0.007. The particle size distributions obtained by the three systems tend to be consistent, and the average difference is less than 17%. The average difference of single scattering albedo is less than 0.02 and the average difference of refractive index at the six sites is less than 0.04, indicating that the three systems have good consistency and the results are all reasonable.

References

- [1] Dubovik, O., and M. D. King, 2000: A flexible inversion algorithm for retrieval of aerosol optical properties from sun and sky radiance measurements. *J. Geophys. Res.* **105**, 20673–20696.
- [2] Li, Z. Q., H. Xu, K. T. Li, *et al.*, 2018: Comprehensive study of optical, physical, chemical, and radiative properties of total columnar atmospheric aerosols over China: an overview of Sun–Sky Radiometer Observation Network (SONET) measurements. *Bull. Am. Meteorol. Soc.* **99**, 739–755.
- [3] Holben, B. N., T. F. Eck, I. Slutsker, *et al.*, 1998: AERONET – a federated instrument network and data archive for aerosol characterization. *Remote Sen. Environ.* **66**, 1–16.

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