

Retrieval of aerosol properties from Airborne Hyper-Angular Rainbow Polarimeter (AirHARP) observations during the 2017 ACEPOL campaign

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Multi-angle polarimetric imaging of Earth's atmosphere can be used to retrieve microphysical parameters of clouds and aerosols [1–4]. Airborne Hyper-Angular Rainbow Polarimeter is a novel instrument developed at the Earth and Space Institute of the University of Maryland/Baltimore County to measure the Stokes parameters I , Q , and U in four spectral bands. It features hyper-angular imaging capability with 60 viewing angles at 0.67 μm and 20 viewing angles at 0.44, 0.55, and 0.87 μm across the full 114° (94°) along-track (cross-track) field-of-view. Here we report the retrievals of aerosol properties using the GRASP (Generalized Retrieval of Aerosols and Surface Properties) algorithm from AirHARP measurements collected during the NASA Aerosol Characterization from Polarimeter and Lidar campaign in 2017. GRASP is a versatile algorithm to retrieve aerosols and surface properties using various remote sensing and satellite observations [5]. The retrieved aerosol products include aerosol optical depth, particle size distribution, spherical fraction, aerosol volume concentration, and complex refractive index. We also report the comparison of our retrieved results with ground-based Aerosol Robotic Network observations, and aerosol products from a lidar instrument onboard the same flight, the High Spectral Resolution LIDAR 2.

References

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