



Retrieval of aerosol and cloud properties from multi-angle photo-polarimetric measurements: Present status and future developments

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There is growing consensus in the aerosol remote sensing community that Multi-Angle Photo-polarimetric (MAP) measurements are essential to unambiguously determine all aerosol properties relevant to quantify and understand the impact of aerosols on climate and air quality. This presentation will discuss the advanced algorithm development for aerosol and cloud retrieval from MAP instruments. This includes aerosol and cloud retrieval from the PARASOL mission (2004-2013) and its validation, estimation the Direct Radiative Effect of Aerosols (DREA) using PARASOL and other A-Train sensors, use of Neural Network techniques for cloud retrievals, and aerosol retrieval from airborne MAP instruments. Further, we will discuss the development of the SPEXone instrument for the NASA PACE mission (launch 2022) and its aerosol retrieval capabilities. SPEXone is a high accuracy MAP with 5 viewing angles with hyperspectral capability, that is expected to provide aerosol properties with unprecedented detail and accuracy. On the PACE mission SPEXone will be used in synergy with the Hyper-Angular Rainbow Polarimeter-2 (HARP-2) and the Ocean Color Instrument (OCI).