Retrieval of aerosol and surface from single-view multi-spectral polarimetric scanner POSP/GF-5B based on the GRASP algorithm

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The Particulate Observing Scanning Polarimeter (POSP) onboard the GaoFen-5B satellite is a single-viewing multispectral polarimetric scanning imager. The GF-5B satellite is on a near-polar, sun-synchronous orbit (705 km) with a descending node equatorial crossing at ~10:30 a.m. Local Time (LT). POSP has a field of view +/- 50 degree with a nadir resolution of ~6.4 km and a swath of ~1850 km, and it measures the stokes vector (I, Q, U) at nine spectral bands from UV to SWIR, specifically 380, 410, 442, 490, 670, 865, 1610, and 2250 nm. POSP is dedicated to provide high-precision polarimetric measurements as a complementary to the Directional Polarization Camera (DPC) on the same GF-5B platform. The UV-VIS-NIR-SWIR single-view polarimetric measurements from POSP alone provide also reliable information for aerosol and surface characterization. In this study, we describe the development of POSP aerosol and surface retrieval scheme based on the Generalized Retrieval of Atmosphere and Surface Properties (GRASP) algorithm. The overall development strategy benefits from the previous GRASP applications on the other sensors, such as POLDER/PARASOL, OLCI/Sentinel-3, TROPOMI/Sentinel-5p, etc. [1, 2, 3, 4]

References

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