Chinese Spaceborne Polarimetric Sensors In-Orbit Data Quality Assurance: Framework and Progress

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Polarimetry is one of the most promising types of remote sensing for improved characterization of atmospheric aerosol. The data quality of on-orbit polarimetric sensors is one of the two key factors that significantly influences the accuracy of inversion and application [1]. In recent years, China has successfully launched more than ten satellites equipped with polarimetric remote sensors, including GF-5/DPC (2018)[2], GFDM/SMAC (2020)[3], HJ-2AB/PSAC (2020)[4], GF-5B/DPC+POSP (2021)[5], DQ-1/DPC+POSP (2022)[6], and CM-1/DPC (2022), and so on. To meet the requirements of polarimetric remote sensing applications in orbit and multi-sensor data fusion, we are dedicated to establishing a comprehensive quality assurance (QA) system for on-orbit data from spaceborne polarimetric remote sensors. This system integrates in-orbit radiometric/polarimetric/geometric calibration and validation, uncertainty analysis, improved data preprocessing with comprehensive quality check (QC) flags and data quality dimensions, as well as data quality assessments during the operational phase, providing up-to-date preprocessed data for enhanced inversion and applications. In this study, we present the framework of the on-orbit data QA system for polarimetric remote sensors and report the progress currently achieved.

References

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