# Application of GF-5 satellite DPC Data to Retrieve the Aerosol and Surface Properties and analyze their interannual variation

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Polarized and multi-angle satellite sensors can effectively provide a series of different observations for a position simultaneously, beneficial for retrieval of complex aerosol properties. DPC is a Polarized and multi-angle sensor developed by China, which is similar to the POLDER-3/PARASOL. The Generalized Retrieval of Atmosphere and Surface Properties (GRASP) is an open-source algorithm for calculating various optical and microphysical properties of aerosol and surface, based on a statistically optimized strategy. In our pervious study, the aerosol optical depth (AOD) has been successfully obtained from DPC/Gaofen-5 satellite and Models/GRASP implementation, with the R of ~0.9 and the RMSE of ~0.066. Scattering angle, number of averaged pixels of retrieval units, and intensity and polarized fitting residuals show obviously impacts on the result in the retrieval. In addition, other complex optical properties such as fine-mode fraction (FMF), angstrom exponent (AE), and single scattering albedo (SSA) can also obtained from DPC/GRASP. In the future plan of development, multiple DPC sensors will be launched, and expected to be an important part in earth observation system of China for atmospheric parameter monitoring. Different from the former work, this time we will give a full year data of DPC observation in 2022, then use the aerosol and surface parameters to analyze their spatrial-time distribution and other characteristics.