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The detailed aerosol properties derived using GRASP Algorithm from multi-angular polarimetric POLDER/PARASOL observations

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The presentation introduces a new aerosol product derived from multi-angular polarimetric POLDER/PARASOL observations using recently developed GRASP algorithm The GRASP (Generalized Retrieval of Aerosol and Surface Properties) algorithm described by Dubovik et al. (2011, 2014) derives an extended set of aerosol parameters including detailed particle size distribution, spectral refractive index, single scattering albedo and the fraction of non-spherical particles. Over land GRASP simultaneously retrieves properties of both aerosol and underlying surface. The robust performance of algorithm was illustrated in a series of numerical tests and real data case studies. However, the algorithm is significantly slower than conventional look-up-table retrievals because it performs all radiative transfer calculations on-line. This is why the application of the algorithm for processing large volumes of satellite data was considered as unacceptably challenging task. During two last years GRASP algorithm and its operational retrieval environment has been significantly optimized, improved and adapted for processing extended set of observational data. Hence, here we demonstrate the first results of GRASP aerosol products obtained from large data sets of PARASOL/POLDER observations. It should be noted that in addition the core retrieved aerosol and surface parameters GRASP output may include a variety of user-oriented products including values of daily fluxes and aerosol radiative forcing.

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2. Dubovik, O., T. Lapyonok, P. Litvinov, M. Herman, D. Fuertes, F. Ducos, A. Lopatin, A. Chaikovsky, B. Torres, Y. Derimian, X. Huang, M. Aspetsberger, and C. Federspiel "GRASP: a versatile algorithm for characterizing the atmosphere", SPIE: Newsroom, DOI:10.1117/2.1201408.005558, Published Online: September 19, 2014. http://spie.org/x109993.xml .