



A Parametric Rainfall Retrieval Algorithm for GPM: Current Status

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The GPROF algorithm has recently been upgraded to use a database constructed from a combined radar/radiometer algorithm using the TRMM observations. The database is constructed in a very conservative manner, using the TRMM radar rainfall solution as a first guess and modifying this solution only when necessary to achieve consistency with the radiometric observations. To account for previous studies that examined differences between radar, radiometer and ground validation results, the a-priori database is constructed separately for distinct Sea Surface Temperature and Total Precipitable Water regimes. Within this classification, the database rainfall is slightly lower than PR for very warm SST and high TPW regimes while the database has significantly larger rain rates than PR for cold SST with high humidity values. The database rainfall is generally lower than the radar for very dry environments. The oceanic algorithm is still Bayesian but the improved representativeness of the a-priori database has eliminated the need for much of the empiricism such as the rain/no-rain thresholds or convective/stratiform partitioning that were necessary in older GPROF versions. The algorithm has been completed and applied to TMI, AMSR-E, SSMI, SSMIS and WindSat with very good success. Rainfall from these sensors agrees well with the radar derived rainfall in the Tropics but is uniformly higher at high latitude winters in a manner consistent with the database. Results are in good agreement with the Global Precipitation Climatology Project (GPCP).