



Performance of the Dual-frequency Precipitation Radar on the GPM core satellite

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The GPM core satellite was launched on February 28, 2014. This paper describes some of the results of precipitation measurements with the Dual-Frequency Precipitation Radar (DPR) on the GPM core satellite. The DPR, which was developed by Japan Aerospace Exploration Agency (JAXA) and National Institute of Information and Communications Technology (NICT), consists of two radars: Ku-band precipitation radar (KuPR) and Ka-band radar (KaPR). The performance of the DPR is evaluated by comparing the level 2 products with the corresponding TRMM/PR data and surface rain measurements. The scanning geometry and footprint size of KuPR and those of PR are nearly identical. The major differences between them are the sensitivity, visiting frequency, and the rain retrieval algorithm. KuPR's sensitivity is twice as good as PR. The increase of sensitivity reduces the cases of missing light rain. Since relatively light rain prevails in Japan, the difference in sensitivity may cause a few percentage points in the bias. Comparisons of the rain estimates by GPM/DPR with AMeDAS rain gauge data over Japan show that annual KuPR's estimates over Japan agree quite well with the rain gauge estimates although the monthly or local statistics of these two kinds of data scatter substantially. KuPR's estimates are closer to the gauge estimates than the TRMM/PR. Possible sources of the differences that include sampling errors, sensitivity, and the algorithm are examined.