Comparison of TRMM V6 and V7 (ITE225) Rain Rate Retrievals

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The NASA Precipitation Processing System (PPS) began delivering Version 7 (ITE_225) TRMM Precipitation Radar (PR) products to Precipitation Measurement Mission (PMM) science team members in late 2010. The first series of V7 data covered the period 2008-2009. In this study, TRMM GV data from Melbourne, Florida and Kwajalein, Republic of the Marshall Islands, was used utilized to validate the Version 7 TRMM products, and to provide important comparisons with Version 6 data. The TRMM GV data consists of instantaneous rain maps (2A53) at 2 km x 2 km horizontal resolution, extending 150 km from the respective radar (Wolff et al. 2005). PMM-matched Ze-R relationships (Rosenfeld et al. 1995) are used to produce the 2A53 rain maps used for comparison to the PR V6 and V7 data. Thus, the radar estimates are unbiased, relative to the gauges, on monthly (MELB) and yearly (KWAJ) time scales. Yearly PMM estimates at KWAJ are necessary due to the small number of available gauge locations there. Our analysis consisted of generating the following analysis: 1) Probability Distribution Functions; 2) Scatterplots; 3) Two-dimensional Heidke Skill Scores; 4) and bulk statistics, including means, correlations, biases and mean absolute deviations. Early results suggest that, relative to GV, the Version 7 products, provide biases closer to zero, smaller mean absolute deviations, slope of regressions lines nearer unity, and improved correlations than Version 6 products. In particular, the Version 7 shows significantly increased skills in estimating rain rates over land. PPS is currently planning to generate V7 products for the period 2001-2002, and if available, similar analyses will be presented.