Assessment of Global Rainfall Products Using TRMM Ground Validation Data

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In this study, we use four years (2003-2006) of Tropical Rainfall Measuring Mission (TRMM) Ground Validation (GV) data from Kwajalein, Republic of the Marshall Islands (KWAJ) and Melbourne, Florida (MELB), to assess the relative performance of several global rain estimation products, including TRMM-3B42, TRMM-3B42RT, CMORPH and PERSIANN. The comparisons are based on 3-hour estimates over 0.25 degrees. While all the global products use some combination of infrared- and passive microwave-based estimates, their unique methodologies of merging these data to develop their rain rate products leads to some stark differences, and some similarities, in their resultant rain rate distributions. By using TRMM GV data, we can assess the relative peformance of each product over a large enough area, and over an sufficient period of time, that robust statistics can be generated and interpreted. We will perform this analysis via comparisons of general statistics (means, variance, etc.), probability distributions, scatterplots, and two-dimensional Heidke Skill Score plots.