



Detailed evaluation of the research-version of TMPA three-hourly $0.25^\circ \times 0.25^\circ$ rainfall estimates over Oklahoma

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This study extensively evaluates the research-version of the TMPA three-hourly $0.25^\circ \times 0.25^\circ$ rainfall product for a six-year period (January 1998–December 2003) over a pixel containing 23 rain gauges from the Micronet network in Oklahoma, United States. Since the network average rainfall is characterized by small ($\sim 2\%$) error at the temporal scale of the product, the evaluation can be classified as direct validation. The authors consider three seasons: cold (January, February, March, November, and December), warm (April, May, and October), and hot (June, July, August, and September). The evaluation is based on scatter plots, comparison of the tail of the distributions, and different types of statistical measures of agreement, disagreement, bias, and categorical evaluation. The correlation coefficients between TMPA and the gauges are relatively small (between 0.3 and 0.6) but their tails of the distribution are in good agreement. Overall, the best agreement is for the hot season. This study also reveals that the TMPA should be considered as a 100-minute accumulation product, with the accumulation starting between 90 and 30 minutes before its nominal time, depending on the season. The authors also show that the satellite product displays a diurnal cycle not captured by the rain gauges.