

Title: Evaluation of Potential TRMM/GPM Orbit Boost Effects within Core Observatory Precipitation Products and Resulting Calibration Challenges for IMERG V08

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NASA's Integrated Multi-satellite Retrievals for GPM (IMERG) is a widely used high resolution global precipitation product that relies on retrievals from passive microwave sensors as the primary input precipitation estimates, so it is vital that they are homogeneously calibrated. IMERG performs this calibration in two steps. First, the GMI/TMI-to-other-satellite calibration climatologically adjusts the partner satellites' passive microwave (PMW) precipitation total amount and rate distributions to the respective core observatory GMI/TMI. Second, the PMW precipitation estimates are dynamically calibrated to the GPM Combined Radar-Radiometer Analysis (CORRA-G/T) by collocated observations of CORRA-G/T and GMI/TMI. However, observational discontinuities in the GPM and Tropical Rainfall Measuring Mission (TRMM) satellite such as orbit boosts and the TRMM radar A/B-side switch had effects on both the V07 CORRA-G/T and V07 GPROF GMI/TMI precipitation and thus potentially V07 IMERG.

Upgraded V08 versions of both CORRA-G/T and GPROF PMW precipitation are expected to be in evaluation by the meeting. The focus is on potential GPM/TRMM orbit boost effects exist within upgraded V08 versions of these products. Specifically, V07 CORRA-G/T demonstrated a decrease in precipitation amount due to altitude boost detection deficiencies of DPR/PR. For GPROF V07 GMI/TMI the respective boosts decreased/increased total precipitation amount. The IMERG team's goal is to evaluate the V08 CORRA-G/T and GPROF PMW products for similar effects from the respective orbit boosts. This presentation reports on the outcomes from these efforts, which may inform users of such products on possible discontinuities in their records.