

RELEASE NOTES OF GPM VERSION 05/TRMM VERSION 08 TMI CALIBRATION

This release of Tropical Rainfall Measuring Mission (TRMM) Version 08 (V08) data will become part of the Global Precipitation Measurement (GPM) data suite. The TRMM V08 TRMM Microwave Imager (TMI) calibration and correction are updated based on deep space and special maneuver data, as well as advanced algorithms used in GPM Microwave Imager (GMI) calibration. Updates include Antenna Pattern Correction (APC) and antenna emissivity correction (these have major impacts on brightness temperature, T_b) and a number of other updates described below. The magnitudes of T_b changes can be seen in Figure 1. The T_b s are increased around 2-3 K at the low end of T_b for most channels, reflecting an over warm-correction of V07 for cold T_b . Corrections at the warm end are small, except for 19 GHz channels.

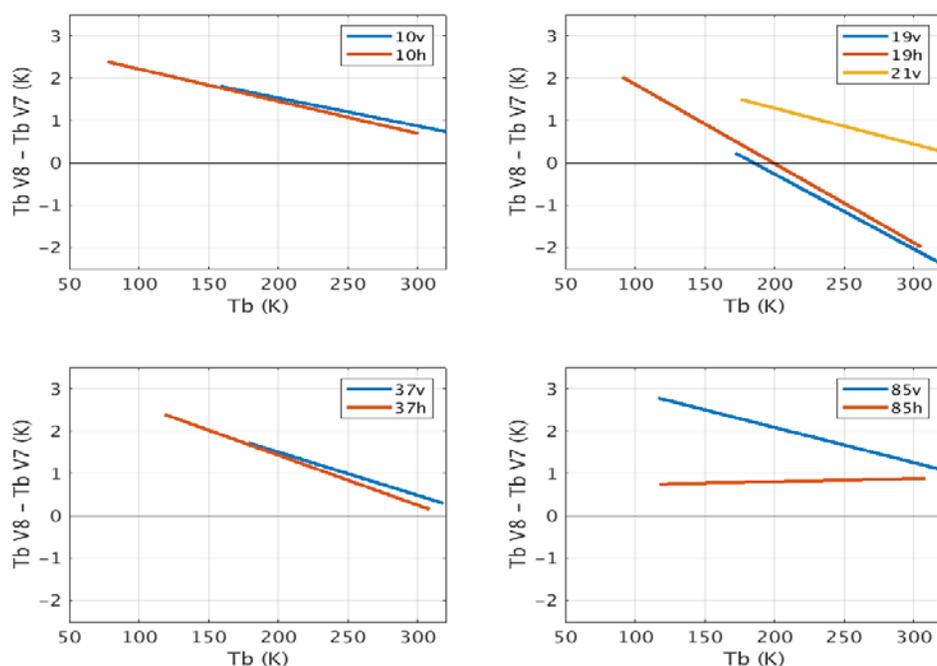


Figure 1. TMI T_b changes from V07 to V08.

1. Adjusted TMI APC. This adjustment is the major improvement from V07 to V08 in TMI antenna pattern correction. The adjustment is based on the data from TMI deep space and other special maneuvers, and refinements of the analysis from the GPM Inter-calibration Working Group (X-CAL). T_b changes vary from channel to channel and are functions of brightness temperatures.
2. Added TMI emissive antenna correction to replace the V07 empirical warm correction. The adjustment is based on the data from TMI deep space and other special maneuvers, and refinements of the analysis from X-CAL. T_b changes vary from channel to channel and are functions of brightness temperatures.
3. Used multiple scan calibration to replace the V07 single scan calibration. This reduced the along-track noise ± 0.5 K but has no impact on long-term average.
4. Added correction on warm intrusions (Moon and Radio Frequency Interference) onto cold load and Sun intrusions onto the hot load. These events typically last less than a few hundred scans for some orbits.