V05 IMERG Early and Late Run Release Notes

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The algorithm for the Integrated Multi-satellitE Retrievals for GPM (IMERG) Early and Late Runs has now been upgraded to Version 05. The transition to V05 happened on December 1 starting with 00 UTC data at PPS and the new data are flowing down to the GES DISC as well. Access (detailed below) and data fields continue to be the same as for Version 04, except the version number is 05B. [Although this is the initial release for Early and Late, it is labeled "B" for consistency with the current version of the Final Run.] Initial Processing began on 1 December 2017, 00 UTC, and retrospective processing has filled in the entire GPM era, starting with 12 March 2014. Version 05B supersedes all prior IMERG versions, and users are urged to shift to the new datasets as soon as practical.

Changes from Version 04 to 05

- Use GPROF V05 to compute precipitation estimates for all microwave sensors as input.
- Provide GPROF estimates from all constellation members in the microwave-only precipitation field (HQprecipitation) over the fully global domain (90ºN - 90ºS). Note: estimates over snowy/icy surface types are not masked out.
- Include these fully global GPROF estimates in the complete precipitation fields (precipitationCal, precipitationUncal) outside the standard IR domain (60°N-S), although without morphing or IR fill-in. Note: estimates over snowy/icy surface types are masked out.
- Refine gauge error estimates to provide proper weighting when combined with satellite-only estimates. [Final only]
- Add Quality Index for all 0.5-hour and monthly products. See "IMERG Quality Index" document (*https://pmm.nasa.gov/sites/default/files/document_files/IMERG_QI.pdf*) for a summary of these new fields.
- Continue the practice of thresholding GPROF (now V05) precipitation rates for all input precipitation estimates to adjust fractional coverage; all GPROF estimates are currently thresholded at 0.03 mm/hour.
- Continue the practice started with Version 04 of calibrating 2BCMB to GPCP V2.3 over ocean (at middle and high latitudes) and land (globally) to compensate for low (high) 2BCMB bias over non-tropical oceans (land).
- The Version 05 GPROF estimates for MHS and ATMS do not provide estimates for the 5 and 8 footprints (respectively) at each swath edge for the period starting at the beginning of the GPM era (12 March 2014). This is due to algorithm issues as revealed in early testing.
- The Version 05 GPROF-TMI estimates had not been computed for the GPM era when the IMERG Runs were retrospectively processed, so TMI is not presently included in the V05 IMERG datasets.
- Taken together, the restriction on MHS and ATMS swaths and the lack of TMI somewhat reduce the amount of microwave-based data contained in Version 05 IMERG, compared to previous versions.

Additional Access Information

The data archive sites have now populated the various repositories of original and value-added data with the new Version 05. See *https://pmm.nasa.gov/data-access/downloads/gpm* to find all of the various formats and their locations. Recall that access to the various systems (PPS, PPS near-real time, and GES DISC) requires separate simple, free, and automatic registrations to satisfy NASA data system requirements.

IMERG Early Run data are computed about 4-5 hours after observation time, and the native products have the prefix "*3B-HHR-E*". IMERG Late Run data are computed about 14 hours after observation time, and the native products have the prefix "*3B-HHR-L*". The complete file naming convention can be found at

http://pps.gsfc.nasa.gov/Documents/FileNamingConventionForPrecipitationProductsForGPMMissionV1.4.pdf .

The version number for the initial release is Version 05B. The field named *precipitationCal* contains the "complete" IMERG precipitation estimate.

Additional Notes

Recall that the Early and Late Runs necessarily use calibrations based on trailing accumulations of match-ups, since these cannot be computed into the future. In addition, the Early Run only has forward propagation of the microwave data (unlike both the Late and Final Runs), and neither has calibration to the monthly gauge data as in the Final Run. Both the Early and Late Runs used "seed" calibration files for the Kalman coefficients and the 2BCMB-GMI and HQ-IR calibrations from the respective last runs of V04A on 30 November 2017 to begin Initial Processing on 1 December 2017. Accordingly, users should expect the December 2017 estimates to be less accurate than following months of data for which the calibrations are populated with V05B data. Validation results will be posted as they are developed.