



First Results from the Integrated Multi-Satellite Retrievals for GPM (IMERG)

George Huffman (1), David Bolvin (1,2), Dan Braithwaite (3), Kuolin Hsu (3), Robert Joyce (4,5), Christopher Kidd (1,6), Eric Nelkin (1,2), Soroosh Sorooshian (3), Jianxin Wang (1,2), and Pingping Xie (5)

(1) Greenbelt, Maryland, United States (george.j.huffman@nasa.gov), (2) Science Systems and Applications, Inc., Lanham, Maryland, United States, (3) Univ. of California Irvine, Irvine, California, United States, (4) Innovim, Lanham, Maryland, United States, (5) NOAA/NWS Climate Prediction Center, College Park, Maryland, United States, (6) Univ. of Maryland / ESSIC, College Park, Maryland, United States

The Integrated Multi-satellitE Retrievals for GPM (IMERG) algorithm system estimates the time series of global precipitation from the international constellation of precipitation-relevant satellites and a surface precipitation gauge analysis (from Global Precipitation Climatology Centre). IMERG uses GPM Core Observatory data as a calibration reference for the constellation sensors. Computationally, IMERG is a unified U.S. algorithm drawing on strengths in the three contributing groups at NASA Goddard Space Flight Center, NOAA Climate Prediction Center, and Univ. of California Irvine.

The design, development, testing, and status is reviewed; IMERG provides $0.1^{\circ} \times 0.1^{\circ}$ half-hourly data for successive runs at 4 hours, 8 hours, and 2 months after observation time. These are referred to as Early, Late, and Final Runs, respectively. Initially, the spatial extent is 60°N-S , for the period March 2014 to the present. In early 2016 it will be extended to cover the period 1998 to the present, and later expanded to fully global. We expect to compute the current TRMM Multi-satellite Precipitation Analysis (TMPA) product into mid-2016 to ensure a smooth transition for users. Both the set of input data set retrievals and the IMERG system are substantially different than those used in prior products. The input passive microwave data are all being produced with GPROF2014, including microwave sounder for the first time. IMERG output will be illustrated using newly released research-quality "Final Run" IMERG data. This includes a variety of diagnostic fields that developers and users might find useful, including precipitation estimates, time of observation and source of the current half hour's microwave input data, and the current half hour's IR precipitation estimate. Compared against Multi-Radar Multi-Sensor validation data over the continental U.S., IMERG shows an improvement over the TMPA data. The IMERG time series over ocean demonstrates a smoother behavior than TMPA, although validation is considerably more challenging to perform.