Early Examples from the Integrated Multi-Satellite Retrievals for GPM (IMERG)

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

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

The U.S. GPM Science Team's Day-1 algorithm for computing combined precipitation estimates as part of GPM is the Integrated Multi-satellitE Retrievals for GPM (IMERG). The goal is to compute the best time series of (nearly) global precipitation from "all" precipitation-relevant satellites and global surface precipitation gauge analyses. IMERG is being developed as a unified U.S. algorithm drawing on strengths in the three contributing groups, whose previous work includes:

1) the TRMM Multi-satellite Precipitation Analysis (TMPA);

2) the CPC Morphing algorithm with Kalman Filtering (K-CMORPH); and

3) the Precipitation Estimation from Remotely Sensed Information using Artificial Neural Networks using a Cloud Classification System (PERSIANN-CCS).

We review the IMERG design and development, plans for testing, and current status. Some of the lessons learned in running and reprocessing the previous data sets include the importance of quality-controlling input data sets, strategies for coping with transitions in the various input data sets, and practical approaches to retrospective analysis of multiple output products (namely the real- and post-real-time data streams). IMERG output will be illustrated using early test data, including the variety of supporting fields, such as the merged-microwave and infrared estimates, and the precipitation type. We end by considering recent changes in input data specifications, the transition from TRMM-based calibration to GPM-based, and further "Day 2" development.