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Developing the Integrated Multi-Satellite Retrievals for GPM (IMERG)

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The Integrated Multi-satellitE Retrievals for GPM (IMERG) will provide the Day-1 algorithm for computing combined precipitation estimates as part of GPM. The focus is assembling the best time series of (nearly) global precipitation from the international constellation of precipitation-relevant satellites and global surface precipitation gauge analyses. It is planned that the time series will encompass both the TRMM and GPM eras, and that the coverage will be extended to fully global as algorithms are developed that provide skill in the difficult high-latitude environment. IMERG is being developed as a unified U.S. algorithm that takes advantage of strengths in the three groups that are contributing expertise:

1) the TRMM Multi-satellite Precipitation Analysis (TMPA), which addresses inter-satellite calibration of precipitation estimates and monthly scale combination of satellite and gauge analyses;

2) the CPC Morphing algorithm with Kalman Filtering (K-CMORPH), which provides quality-weighted time interpolation of precipitation patterns following storm motion; and

3) the Precipitation Estimation from Remotely Sensed Information using Artificial Neural Networks using a Cloud Classification System (PERSIANN-CCS), which provides a neural-network-based scheme for generating microwave-calibrated precipitation estimates from geosynchronous infrared brightness temperatures.

In this talk we summarize the code-level integration on which IMERG is based, including the important issues that drive the design and implementation, plans for testing and starting to run the system, and current status. One concept being pioneered by the IMERG team is that combination datasets should be computed multiple times at different latencies to serve the needs of different groups of users. Although reprocessing all of the latency "runs" complicates the reprocessing scenario, experience demonstrates that it is essential for the users. Fortunately, the IMERG team has worked with the Precipitation Processing System (PPS) to work out exactly such a reprocessing concept.