

AMS 2021

Harnessing long records of satellite observations for climate applications

<https://ams.confex.com/ams/101ANNUAL/webprogrampreliminary/Session57026.html>

## The Next-Generation Version 3 GPCP Products

George J. Huffman<sup>1</sup>, Ali Behrangi<sup>2</sup>, Robert F. Adler<sup>3</sup>, David T. Bolvin<sup>1,4</sup>, Eric Nelkin<sup>1,4</sup>, Yang Song<sup>2</sup>, Jian-Jian Wang<sup>3</sup>

<sup>1</sup>NASA/GSFC, Greenbelt, MD, USA

<sup>2</sup>University of Arizona, Tucson, AZ, USA

<sup>3</sup>University of Maryland, College Park, MD, USA

<sup>4</sup>Science Systems and Applications, Inc., Lanham, MD, USA

The long-standing Global Precipitation Climatology Project (GPCP) recently introduced its next-generation Version 3.1 Monthly product, which covers the period 1983-2019. Notable improvements include higher spatial resolution (0.5°x0.5°), geosynchronous IR estimates extended to the latitude band 60°N-S and based on the Precipitation Estimation from Remotely Sensed Information using Artificial Neural Networks-Climate Data Record (PERSIANN-CDR) algorithm, and high-latitude (outside 60°N-S) precipitation estimates based on improved calibrations of Television-Infrared Operational Satellite (TIROS) Operational Vertical Sounder (TOVS) and Advanced Infrared Sounder (AIRS) data. The satellite-only estimate is adjusted to the best available monthly climatologies, namely the Tropical Combined Climatology (TCC) at lower latitudes and the Merged CloudSat, TRMM, and GPM (MCTG) climatology at higher latitudes. Finally, V3.1 merges these climatologically-adjusted satellite-only estimates with the Global Precipitation Climatology Centre (GPCC) gauge analyses at 1°x1°.

In addition to the V3.1 Monthly product, the GPCP team is working towards a global Version 3 Daily product based on Integrated Multi-satellitE Retrievals for Global Precipitation Measurement (GPM) mission (IMERG) Final Run V06 estimates, where available, calibrated to the GPCP V3.1 Monthly estimate. Rescaled TOVS/AIRS data are used in high-latitude areas that lack IMERG estimates, which occur over snowy/icy surfaces outside 60°N-S. Since IMERG currently extends back to June 2000, daily PERSIANN-CDR data are used for the period January 1983–May 2000 to complete the record.

This presentation will provide early results for, and the latest status of, the Monthly and Daily GPCP products as a function of time and region. Key points include examining homogeneity over time and across boundaries between input datasets. One goal is to determine the suitability of the V3 products while we continue to produce the Version 2 GPCP products for on-going use.