

Let it Rain and Snow: Two+ Years of NASA's Global Precipitation Measurement (GPM) Mission Data

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Water is fundamental to life on Earth. Knowing where and how much rain and snow fall globally is vital to understanding how weather and climate impact our Earth's water and energy cycles. The Global Precipitation Measurement (GPM) Core Observatory spacecraft, a partnership with the Japanese, launched February 28, 2014. The GPM instruments are designed to extend the capabilities of the Tropical Rainfall Measuring Mission (TRMM, 1997-2015) by providing global and regional three-dimensional measurements of precipitation for scientific investigations and societal benefit. The cornerstone, or anchor, of the GPM mission is the GPM Core Observatory in a unique 65° non-Sun-synchronous orbit at an altitude of 407 km serving as a physics observatory and a calibration reference to improve precipitation measurements by a constellation of 8 or more dedicated and operational, U.S., Japanese and international passive microwave sensors. The non-sun-synchronous orbit allows for highly sophisticated observations of precipitation in the mid-latitudes where a majority of the population lives. GPM's requirements are to measure rain rates from 0.2 to 110 mm/hr and to detect and estimate falling snow. GPM expands the Tropical Rainfall Measuring Mission (TRMM)'s reach in terms of Earth coverage, inter-calibration of constellation member datasets, coordinated formal-partnership merged precipitation data sets, reduced latency for delivering data products, sophisticated satellite instrumentation, simplified data access, expanded global ground validation efforts and integrated user applications. GPM is an international satellite mission to unify and advance precipitation measurements from a constellation of partner satellite sensors to provide next-generation precipitation products everywhere every 3 hours (or less). As a science mission with integrated application goals, GPM will also help to monitor water resources, improve forecasting of extreme weather events that lead to floods, droughts, and landslides.

Since launch, GPM has provided unprecedented views of typhoons, extratropical systems, light rain, snowstorms and extreme precipitation. This NASA presentation will include new imagery and scientific insights resulting from the more than two years of GPM data, an overview of the mission concept and science activities, updates on algorithm status, data products and performance, together with information on international collaborations for radiometer inter-calibration and ground validation.

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