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NASA's Global Precipitation Measurement (GPM) Mission for Science and Society

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Water is fundamental to life on Earth. Knowing where and how much rain and snow falls globally is vital to understanding how weather and climate impact both our environment and Earth's water and energy cycles, including effects on agriculture, fresh water availability, and responses to natural disasters. The Global Precipitation Measurement (GPM) Mission, launched February 27, 2014, is an international satellite mission to unify and advance precipitation measurements from a constellation of research and operational sensors to provide "next-generation" precipitation products.

The joint NASA-JAXA GPM Core Observatory serves as the cornerstone and anchor to unite the constellation radiometers. The GPM Core Observatory carries a Ku/Ka-band Dual-frequency Precipitation Radar (DPR) and a multi-channel (10-183 GHz) GPM Microwave Radiometer (GMI). Furthermore, since light rain and falling snow account for a significant fraction of precipitation occurrence in middle and high latitudes, the GPM instruments extend the capabilities of the TRMM sensors to detect falling snow, measure light rain, and provide, for the first time, quantitative estimates of microphysical properties of precipitation particles.

As a science mission with integrated application goals, GPM is designed to (1) advance precipitation measurement capability from space through combined use of active and passive microwave sensors, (2) advance the knowledge of the global water/energy cycle and freshwater availability through better description of the space-time variability of global precipitation, and (3) improve weather, climate, and hydrological prediction capabilities through more accurate and frequent measurements of instantaneous precipitation rates and time-integrated rainfall accumulation.

Since launch, the instruments have been collecting outstanding precipitation data. New scientific insights resulting from GPM data, an overview of the GPM mission concept and science activities in the United States, updates on algorithm status and performance, together with information on international collaborations for radiometer inter-calibration and ground validation will be presented. Opportunities for scientific and user involvement will be provided.