

The Global Precipitation Measurement (GPM) Mission: Advancing precipitation measurement for science and society

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Too much or too little rain can serve as a tipping point for triggering catastrophic flooding and landslides or widespread drought. Knowing when, where and how much rain is falling globally is vital to understanding how vulnerable areas may be more or less impacted by these disasters. The Global Precipitation Measurement (GPM) mission is an international constellation of satellites coordinated through a partnership with NASA and the Japan Aerospace Exploration Agency (JAXA) to provide next-generation global observations of rain and snow. The GPM mission centers on the deployment of a Core Observatory satellite that serves as a reference standard to unify precipitation measurements from a constellation of research and operational satellites. This satellite launched from Tanegashima Space Complex in Japan on January 28th, 2014 and carries advanced instruments setting a new standard for precipitation measurements from space. The GPM Core Observatory satellite measures rain and snow using two science instruments: the GPM Microwave Imager (GMI) and the Dual-frequency Precipitation Radar (DPR). The GMI captures precipitation intensities and horizontal patterns, while the DPR provides insights into the three dimensional structure of precipitating particles. Together these two instruments provide a database of measurements against which other partner satellites' microwave observations can be meaningfully compared and combined to make a global precipitation dataset.

GPM has already provided unprecedented views of typhoons, extratropical systems, light rain, snow storms and extreme precipitation. Through improved measurements of precipitation globally, the GPM mission will help to advance our understanding and modeling of Earth's water and energy cycles, improve forecasting of extreme events that cause natural hazards and disasters, and extend current capabilities in using accurate and timely information of precipitation to directly benefit society.

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