



Recent results of the Global Precipitation Measurement (GPM) mission in Japan

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The Global Precipitation Measurement (GPM) mission is an international collaboration to achieve highly accurate and highly frequent global precipitation observations. The GPM mission consists of the GPM Core Observatory jointly developed by U.S. and Japan and Constellation Satellites that carry microwave radiometers and provided by the GPM partner agencies. The GPM Core Observatory, launched on February 2014, carries the Dual-frequency Precipitation Radar (DPR) by the Japan Aerospace Exploration Agency (JAXA) and the National Institute of Information and Communications Technology (NICT).

JAXA confirmed that the prime mission results of GPM/DPR total system achieved the success criteria and the performance indicators in June 2018. GPM/DPR moved to extended mission phase, and KaPR outer swath scan pattern was changed in May 2018. The new algorithm applying to the changed scan pattern is now under development.

DPR Level 2 algorithm version 06 was released in October 2018. The DPR Version 06 Level 2 product was developed by taking the continuity between Tropical Rainfall Measurement Mission, which is the predecessor of GPM, and GPM Core Observatory.

JAXA also develops the Global Satellite Mapping of Precipitation (GSMaP), as national product to distribute hourly and 0.1-degree horizontal resolution rainfall map. GSMaP has been used for various research fields and JAXA keeps it developed and improved, in cooperation with domestic/international partner agencies.

The GSMaP near-real-time version (GSMaP_NRT) product provides global rainfall map in 4-hour after observation, and an improved version of GSMaP near-real-time gauge-adjusted (GSMaP_Gauge_NRT) product has been published since Dec. 2018. The higher priority to data latency time than accuracy leads to wider utilization by various users for various purposes, such as rainfall monitoring, flood alert and warning, drought monitoring, crop yield forecast, and agricultural insurance.

JAXA started to provide the GSMaP real-time product called GSMaP_NOW by using the geostationary satellite Himawari-8 operated by the Japan Meteorological Agency (JMA) since November 2015. Since Nov. 2018 the domain of GSMaP_NOW has been extended to the region of the geostationary satellite Meteosat operated by the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) on November 2018. JAXA is further developing the GSMaP_NOW to provide global real-time rainfall product.

GSMaP products can be seen via website and easy to monitor the global rainfall with good latency. GSMaP since March 2000 up to 4-hour after observation is available from the "JAXA Global Rainfall Watch" website (<https://sharaku.eorc.jaxa.jp/GSMaP/index.htm>); while GSMaP_NOW product is from the "JAXA Realtime Rainfall Watch" web site (https://sharaku.eorc.jaxa.jp/GSMaP_NOW/index.htm).