Status of Satellite Precipitation Measurement in Japan

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Precipitation is one of the most important environmental parameters. The Tropical Rainfall Measuring Mission (TRMM) satellite is still in operation and its data was accumulated over 12-years to measure tropical/subtropical precipitation data and their diurnal variations. The PR hardware anomaly occurred in May 2009 and recovered in June 2009 by switching to a backup unit of FCIF/SCDP. New version 7 products for all data will be released in this year.

The Global Precipitation Measurement (GPM) started as an international project and a follow-on mission of the TRMM project to achieve more accurate and frequent precipitation observations than TRMM. The GPM-core satellite is a TRMM-like satellite carrying both active and passive microwave radiometers, jointly developed by Japan and the US. A Dual-frequency Precipitation Radar (DPR) on board the GPM-core satellite is being developed by Japan Aerospace Exploration Agency (JAXA) and National Institute of Information and Communications Technology (NICT), and consists of Ku-band (13.6GHz, KuPR) and Ka-band (35.5GHz, KaPR) precipitation radars to measure light rainfall and snowfall as well as moderate-toheavy rainfall. In an effective dynamic range in DPR, drop size distribution (DSD) information and more accurate rainfall estimates will be provided by a dualfrequency algorithm. Constellation satellites carry passive microwave sensors and are provided by partner agencies. The frequent precipitation measurement every hour at any place on the globe will be achieved by several constellation satellites with the GPM Microwave Imager (GMI) on board the core satellite and microwave radiometers (imagers and sounders) on board constellation satellites. The retrieval algorithms for instantaneous precipitation products and precipitation map are being developed with collaboration activities between Japan and the US targeted to the GPM core satellite have started to develop Level 2 rainfall algorithms for DPR, GMI and DPR-GMI combined products. The algorithms for global rainfall map have been underway both in Japan and the US. JAXA will produce and deliver hourly global precipitation map in real time in order to make useful for various research and application areas.

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