



Development of the DPR algorithms and products for GPM

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Global Precipitation Measurement (GPM) started as an international mission and follow-on mission of the TRMM project to obtain more accurate and frequent observations of precipitation than TRMM. An important goal for the GPM mission is the frequent measurement of global precipitation using a GPM core satellite and a constellation of multiple satellites. The GPM core satellite is also developed by the US and Japan, while the constellation satellites are developed by various countries. The accurate measurement of precipitation will be achieved by the Dual-frequency Precipitation Radar (DPR) installed on the GPM core satellite. DPR consists of two radars, which are Ku-band (13.6 GHz) precipitation radar (KuPR) and Ka-band (35.5 GHz) radar (KaPR). KaPR will detect snow and light rain, and the KuPR will detect heavy rain. In an effective dynamic range in both KaPR and KuPR, drop size distribution (DSD) information and more accurate rainfall estimates will be provided by a dual-frequency algorithm. The frequent precipitation measurement every three hours at any place on the globe will be achieved by eight constellation satellites with microwave radiometers (MWRs). JAXA/EORC is responsible for the GPM/DPR algorithm development for engineering values (Level 1) and physical products (e.g. precipitation estimation) (Level 2 and 3) and the quality control of the products as the sensor provider. It is also important for us to produce and deliver 3-hourly global precipitation map in real time in order to make useful for various research and application areas (i.e., the prediction of the floods). To secure the quality of estimates, the mission must place emphasis on validation of satellite data and retrieval algorithms. This is a very difficult issue and needs careful consideration and strategy.