Geophysical Research Abstracts
Vol. 15, EGU2013-6773-2, 2013
EGU General Assembly 2013

Current Status of Japanese Global Precipitation Measurement (GPM) Research Project

Misako Kachi (1), Riko Oki (1), Takuji Kubota (1), Takeshi Masaki (1), Satoshi Kida (1), Toshio Iguchi (1,2), Kenji Nakamura (1,3), Yukari N. Takayabu (1,4)

(1) Japan Aerospace Exploration Agency, Earth Observation Research Center, Tsukuba, Japan (kachi.misako@jaxa.jp), (2) National Institute of Information and Communications Technology, Koganei, Japan, (3) Hydrospheric Atmospheric Research Center, Nagoya University, Nagoya, Japan, (4) Atmosphere and Ocean Research Institute, The University of Tokyo, Kashiwa, Japan

The Global Precipitation Measurement (GPM) mission is a mission led by the Japan Aerospace Exploration Agency (JAXA) and the National Aeronautics and Space Administration (NASA) under collaboration with many international partners, who will provide constellation of satellites carrying microwave radiometer instruments. The GPM Core Observatory, which carries the Dual-frequency Precipitation Radar (DPR) developed by JAXA and the National Institute of Information and Communications Technology (NICT), and the GPM Microwave Imager (GMI) developed by NASA. The GPM Core Observatory is scheduled to be launched in early 2014. JAXA also provides the Global Change Observation Mission (GCOM) 1st - Water (GCOM-W1) named "SHIZUKU," as one of constellation satellites. The SHIZUKU satellite was launched in 18 May, 2012 from JAXA's Tanegashima Space Center, and public data release of the Advanced Microwave Scanning Radiometer 2 (AMSR2) on board the SHIZUKU satellite was planned that Level 1 products in January 2013, and Level 2 products including precipitation in May 2013.

The Japanese GPM research project conducts scientific activities on algorithm development, ground validation, application research including production of research products. In addition, we promote collaboration studies in Japan and Asian countries, and public relations activities to extend potential users of satellite precipitation products. In pre-launch phase, most of our activities are focused on the algorithm development and the ground validation related to the algorithm development. As the GPM standard products, JAXA develops the DPR Level 1 algorithm, and the NASA-JAXA Joint Algorithm Team develops the DPR Level 2 and the DPR-GMI combined Level2 algorithms. JAXA also develops the Global Rainfall Map product as national product to distribute hourly and 0.1-degree horizontal resolution rainfall map. All standard algorithms including Japan-US joint algorithm will be reviewed by the Japan-US Joint Precipitation Measuring Mission (PMM) Science Team (JPST) before the release.

DPR Level 2 algorithm has been developing by the DPR Algorithm Team led by Japan, which is under the NASA-JAXA Joint Algorithm Team. The Level-2 algorithms will provide KuPR only products, KaPR only products, and Dual-frequency Precipitation products, with estimated precipitation rate, radar reflectivity, and precipitation information such as drop size distribution and bright band height. At-launch code was developed in December 2012. In addition, JAXA and NASA have provided synthetic DPR L1 data and tests have been performed using them.

Japanese Global Rainfall Map algorithm for the GPM mission has been developed by the Global Rainfall Map Algorithm Development Team in Japan. The algorithm succeeded heritages of the Global Satellite Mapping for Precipitation (GSMaP) project, which was sponsored by the Japan Science and Technology Agency (JST) under the Core Research for Evolutional Science and Technology (CREST) framework between 2002 and 2007. The GSMaP near-real-time version and reanalysis version have been in operation at JAXA, and browse images and binary data available at the GSMaP web site (http://sharaku.eorc.jaxa.jp/GSMaP/). The GSMaP algorithm for GPM is developed in collaboration with AMSR2 standard algorithm for precipitation product, and their validation studies are closely related. As JAXA GPM product, we will provide 0.1-degree grid and hourly product for standard and near-realtime processing. Outputs will include hourly rainfall, gauge-calibrated hourly rainfall, and several quality information (satellite information flag, time information flag, and gauge quality information) over global areas from 60°S to 60°N. At-launch code of GSMaP for GPM is under development, and will be delivered to JAXA GPM Mission Operation System by April 2013. At-launch code will include several updates of microwave imager and sounder algorithms and databases, and introduction of rain-gauge correction.