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Downscaling for Global satellite mapping of Precipitation (GSMaP) by Infrared imager

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New geostationary weather satellite, such as The Himawari-8, 9 and the Geostationary Operational Environmental Satellites-R series, have multi-channel high-resolution IR imagers. The observation interval of these imagers are less than 30 minutes. Near future new imagers on Geostationary weather satellite will cover the earth.

Global precipitation information is an important tool for water management or earth science. Spaceborne sensors is one of the most convenient tools of global observation. The sensors cover global and provide uniform quality data. Precipitation estimation use microwave radiometer in low earth orbit (LOE). A microwave radiometer has high spatial resolution. However, one drawback of the microwave radiometer in LOE is narrow observation area. Whole earth observation by a microwave radiometer on LOE satellite need some days. Therefore, global precipitation map is made from combined satellite data. However, combined data of microwave radiometer on LOE don't cover global in one hour. One of the global precipitation map is the Global satellite mapping of Precipitation (GSMaP) [1,2,3]. Precipitation estimation of the GSMaP made from microwave radiometer data. GSMaP Moving Vector with Kalmanfilter (MVK) and Near real time compensate precipitation by IR information [4]. Spatial resolution of the GSMaP MVK is 0.1 degree. Time resolution of the GSMaP MVK is one hour. This study shows downscale technique for GSMaP precipitation map by High-spatial and temporal resolution IR data. In the study, we use IR datasets of Himawai-8. IR datasets of Himawari-8 are available every 2.5 minutes in the Japan region. In the presentation, we will also show validation the high resolution GSMaP and ground-radar network in Japan.

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