Development of the high resolution GSMaP by the Himawari-8

*Tomoaki Mega[1], Tomoo Ushio[1]

1. Tokyo Metropolitan University

There is a new generation infrared (IR) imager on new-generation gestationary weather-satellite such as the Himawari-8 and the Geostationary Operational Environmental Satellite-R series. The imagers observe multi-channel passive imaging radiometer. The imagers observe wave a full disk with several km in about ten minutes. In Near-future, the IR imager observation should cover the globe.

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 a 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). Precipitation estimation of the GSMaP made from microwave radiometer data. The GSMaP Moving Vector with Kalmanfilter (MVK) and Near real time compensate precipitation of no observation area by IR information. Spatial and temporal resolution of the GSMaP MVK achives 0.1 degree and one hour. This study shows downscale technique for GSMaP precipitation map by High-spatial and temporal resolution IR data of the Himawari-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.

Keywords: Precipitation, GSMaP, Microwave Radiometer, Infrared Radiometer, Algorithm

