

Application of ground observation data in next GSMaP Gauge algorithm

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The map of global precipitation amount is one of the important information. The ground-based observation, however, does not cover all Earth. Developed countries operate radar network and rain gauge. Although some developing country installed a few rain gauge or some radars, any developing countries cannot operate radar network and high-density rain gauge network continuously and distribute observation data on time. Observation area of a radar or a rain gauge is local. Development and launching of satellite is expensive. However, characteristic of space-borne observation is to cover whole earth and stable condition.

JAXA is developing and providing near real time global rainfall maps (GSMaP) using the combined Microwave infra-red algorithm with some low orbit satellites. Estimation precipitation by remote sensing of passive microwave radiometer (PMR) is difficult over land. PMR estimation has larger error than ground-based observations. Gauge adjustment GSMaP (GSMaP Gauge) algorithm reduces errors by daily rain gauge. GSMaP Gauge estimated precipitation by precipitation model and daily rain map. Thus quality of GSMaP Gauge depend quality of daily rain map. Available rain gauge map is not uniform quality, because rain-gauges, which real time the map use, are limited number in time.

The plan of the future GSMaP Gauge is to use ground data before the time. The future GSMaP Gauge algorithm uses these data for estimation of the rain model parameters. In no observation area the algorithm interpolate model parameter around ground observation area. The model parameters can improve estimated rain. We will introduce to apply the various ground data in the GSMaP Gauge algorithm.

Keywords: precipitation, satellite