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雨量計補正全球降水マップ　(GSMaP Gauge)
Gage Adjusted Global Satellite Mapping of Precipitation (GSMaP Gauge)

妻鹿 友昭 [1*] ; 牛尾 知雄 [1] ; 久保田 拓志 [2] ; 可知 美佐子 [2] ; 青梨 和正 [2] ; 重 尚一 [4]
MEGA, Tomoaki[1*] ; USHIO, Tomoo[1] ; KUBOTA, Takuji[2] ; KACHI, Misako[2] ; AONASHI, Kazumasa[2] ; SHIGE, Shoichi[4]

[1] 大阪大学工学研究科, [2] 宇宙航空研究開発機構, [3] 気象研究所, [4] 京都大学理学研究科
[1]Graduate School of Engineering, Osaka University, [2]Japan Aerospace Exploration Agency, [3]Meteorological Research Institute,
[4]Graduate School of Science, Kyoto University

Fresh water is one of the most important resources for human. Precipitation is the main source of fresh water. Precipitation is also heating atmosphere by latent heat and one of important energy transport mechanism of atmosphere. Knowledge of world precipitation activity is important information for not only human activity, but also earth science.

Passive Microwave Radiometer (PMR) is a small and low power consumption sensor, thus many space-borne PMRs observe precipitation from low earth orbit. Space-born PMR provides uniform quality and stable observation data all over the world. PMR have become the precipital sensors for global precipitation retrieval, since these emission and scattering signals have a more direct relationship with precipitation rates than infrared radiometer (IR). The Global Satellite Mapping of Precipitation (GSMaP) project is developing PMR algorithm to provide global precipitation map with space-born PMRs. The GSMaP's goal is to develop the algorithm of high precision and eventually to produce a global precipitation map with high temporal (one hour) and special resolution (0.1 degree). PMR swathes, however, do not cover all surface in one hour. Therefore, it is necessary to utilize a gap-filling technique to generate precipitation maps with high temporal resolution. GSMaP derives Moving Vector (MV) from two successive IR images. GSMaP algorithm interpolates precipitation between gaps when PMRs overpass successive swath with MV by Kalman-filter. GSMaP algorithm now produces 0.1-grid-resolution precipitation map every one hour. Some evaluations, however, show the tendency of underestimation compared to some ground based observations, because PMR precipitation estimation over land has difficulty due to emission variability in surface. Rain gauge provides reliable data, and a rain gauge collects precipitation for certain period at a fixed location. PMR observes signals from precipitation instantaneously. We are developing the GSMaP gauge adjusted product (GSMaP Gauge). The GSMaP Gauge algorithm fits the GSMaP precipitation map to NOAA Climate Prediction Center (CPC) global rain gauge data set. The CPC data set is provided daily with low resolution (0.5-grid-degree). Quality of the CPC data set is not uniform (Quality of gauge-based analysis depends on density of rain gauge). We fill the gap of the precipitation estimation between the satellite and rain gauge attributable to the retrieval difficulty, the spatial and temporal resolution difference. The GSMaP Gauge succeeded to reduce the under estimation of the GSMaP algorithm. In this presentation, we introduce the GSMaP Gauge and its performance.

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