

Evaluation of Estimated precipitation product by machine learning method using Himawari 8

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GSMaP is a useful global precipitation product provided 1 hour resolution.

GSMaP estimates the precipitation by IR observation of the geostationary satellite to interpolate a gap of the microwave radiometer (MWR).

However, there is difference in the precision between MWR and IR data source.

This difference is due to the correction of rainfall intensity using only cloud top temperature (altitude) information. This difference is due to the fact that cirrus clouds without rainfall are detected as raining areas, and difficulty to detect and estimate warm rain.

In October 2014, the third generation Himawari-8 geostationary meteorological satellite was launched, and the infrared multi-band observations are available in the Asian monsoon region. Using Himawari-8 and GPM KuPR data as training data, we created a precipitation product estimated by Random Forest machine learning. The purpose of this study is to improve the accuracy of estimating heavy rainfall caused by warm clouds that are difficult to estimate with a single IR band observation.

Keywords: precipitation product, geostationary satellite