

EVALUATION OF CLOUD TYPE CLASSIFICATION BASED ON SPLIT WINDOW ALGORITHM USING HIMAWARI-8 SATELLITE DATA

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Abstract	<p>Precise evaluation of cloud types is indispensable for the detailed analysis of the Earth's radiation budget. The split window algorithm (SWA) is an algorithm that has been widely employed for cloud type classification from meteorological satellite imagery. In this study, we apply the SWA to analyze the clouds that appear in the Japan area using the imagery of Himawari-8 meteorological satellite. The brightness temperature (BT) information from band 13 (BT13, 10 μ m) and band 15 (BT15, 12 μ m) are employed with the BT difference (BTD) between these two bands (BTD13-15). For daytime analysis, the albedo of band 1 (0.47 μ m) is also used to discriminate the cloudy and cloud-free areas. The validation of the resulting cloud type (SWA13-15), which includes ten classes including cloud-free condition, is carried out using the space-borne lidar data concurrent with the satellite observations. In addition, two different classifiers, namely, the sequential minimal optimization (SMO) and Naive Bayes (NB) classifiers are tested with the results of SWA. When about 10% of 2 million data points are used for training the classifiers, the test results reveal that the correctly classified points are 97.0% and 89.5% for the first dataset (observed in July 2015) and 97.4%, and 92.1% for the second dataset (July 2016) for SMO and NB, respectively.</p>
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