



Introduction to a real-time cloud detection based on the ground-based infrared thermometer and the microwave radiometer at ARM SGP site

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A fast cloud detection for the utilization of ground based remote sensing instrument such as microwave radiometer is important for the real time application such as assimilation to the numerical prediction model. For this, an algorithm based on the spectral and temporal characteristics of clouds in the downwelling infrared radiance readily available with the infrared thermometer (IRT) equipped in the microwave radiometer has been developed for a specific IRT. Characteristics and applicability of the algorithm for a different types of instrumentation with an augmented validation data are demonstrated using the data obtained at ARM (Atmospheric Radiation Measurement) SGP (the Southern Great Plains) site. From the comparison, it is shown that the dynamic range of IRT (down to -100 oC) is important, while improvement in the spectral test could improve the detectability of high thin clouds. For a further simplification of the algorithm, utilization of the retrieved precipitable water vapor from the microwave radiometer is under investigation and the detailed analysis is going to be presented during the conference.