Validation of Seasonal Precipitation Properties in Korean Peninsula using GPM and Ground Instruments

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Abstract

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1. Introduction

The GPM (Global Precipitation Measurement) core satellite is one of efficient instrument for global precipitation mapping. Observation products based on GPM DPR (Dual-frequency precipitation) and GMI (GPM Microwave Imager) allow the analysis of precipitation over Korean peninsula where the dense ground radars (GR) and gage networks (GN) were operated.

Due to the ground validation (20 of GPM measurements is essential and is still challenging issue, we performed the statistical characteristic analysis of GPM validation using long-term period databases from GPM and ground instrument

2. Data types of GPM and ground instruments

GPM GV domain centered in Korean peninsula consisting of the dense GR and GN

3. Methodology

3.1 GV procedure of reflectivity and precipitation intensities for GPM

3.2 Validation of Seasonal Precipitation Properties in Korean Peninsula using GPM and Ground Instruments

4. Results

4.1 The GV of mean 3D reflectivity structures between GPM and ground radar networks in rain region (1.0–2.5 km)

4.2 The statistical results of vertical profiles between GPM and GR

5. Summary and future works

5.1 The reflectivity measurements of GPM KuPR are 3–5 dB higher than GRs and the CORRs is above 0.4–0.6 in rain region (below 2.5 km) regardless of the seasonal variability (except the winter period).

5.2 The uncertainties of standard indices for precipitation decrease in the large spatiotemporal scales.

5.3 Snowfall observations based on reflectivity of GPM (GR) are larger than those of GPM DPR (GRs) at snowfall intensity above 1 (0.5) mm h⁻¹.

5.4 TRMM PR and more various cases of GPM KuPR will be investigated to explain climatological property based on spaceborne radar.

Reference


Park, S., E.-H. Jung, and G. Lee. 2011: Comparison of Reflectivity Profiles between TRMM-PR and Operational Radar Network Mosaic over South Korea, Preprints, 38th Int. Conf. on Radar Meteorology, Breckenridge, Co, USA, 205.