

Impact study of DPR SLH nudging method for data assimilation in the JMA Local NWP system

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GPM DPR Spectral Latent Heating (GPM-SLH) profile is a very valuable product with three-dimensional latent heating information of precipitation system. The data assimilation of this GPM-SLH is expected to improve the precipitation prediction in numerical weather prediction. The impact of SLH data assimilation is investigated in the Local NWP system which includes the high-resolution numerical prediction model called Local Forecast Model (LFM) of Japan Meteorological Agency.

The purpose of the operation of LFM is to provide information on very-short range precipitation forecast and aviation weather forecasting. The initial condition for the LFM is created by hourly data assimilation in the Local NWP system because the forecast immediacy is important for the achievement of the LFM's aims. Thus the forecast of LFM from the initial condition has latest information of real atmosphere by the hourly assimilation. However, this data assimilation system consists of simple 3D-VAR combined with prediction which is capable of performing speedy calculation for rapidly updating the forecast.

GPM-SLH nudging method corrects the latent heating in cloud microphysics scheme while the numerical prediction model is running in the assimilation window. It is a very efficient method that can input SLH information into the model with keeping immediacy of forecast. In the Local NWP system, the nudging method was implemented and impact studies of SLH assimilation were conducted in typical cases of mid-latitude precipitation system. In this presentation, I will show the result of impact study of GPM-SLH assimilation and the problems to be addressed.